Factors Affecting the Acceptance of Telehealth Services by Heart Failure Patients: An Integrative Review

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Abstract

Background: While telehealth has been shown to improve heart failure patients' health outcomes, patients' acceptance of telehealth at the point of referral is reported to be low. Little is known about the factors related to patients' initial acceptance or refusal of telehealth services. The aim of this review was to synthesize evidence on the factors affecting heart failure patients' decision making to accept telehealth services in a home setting.

Methods: An integrative literature review was conducted. Six electronic databases and three grey literature sites were searched. Two reviewers independently reviewed articles for inclusion. Articles were included if they reported original data related to the acceptance of telehealth services among heart failure patients at home.

Results: Five studies met the inclusion criteria and were included in the review. Key findings indicated that patients generally hold positive views about telehealth. Factors that may affect the adoption of telehealth include concerns over equipment or technology, concerns over service change, ease-of-use, knowledge of the benefits of telehealth, access to care, cost, and privacy.

Conclusions: Despite evidence of effectiveness for telehealth, there is a high rate of telehealth refusal among patients. Understanding factors associated with heart failure patients' decisions regarding telehealth can help healthcare organizations structure education programs and other interventions to improve acceptance rates.

Keywords: telehealth acceptance, heart failure, patients' decision making, home healthcare

Introduction

Heart failure (HF) affects about 5.7 million adults in the United States. It costs the nation an estimated \$30.7 billion each year and contributed 1 in 9 deaths in 2009.¹ About half of people who develop HF die within 5 years of diagnosis,¹ with HF-related deaths on the rise since 2012.² Early diagnosis and treatment can improve the quality and length of life for people who have heart failure.¹ Home healthcare has been increasingly used to bridge the gap between acute care settings and the home, thus alleviating the patient care burden and assisting with disease self-management. Of the Medicare beneficiaries discharged from postacute care to use other services, 37.4% are sent home with home health services.³ HF is one of the most common primary diagnoses for home health recipients.⁴ However, patients with HF are also at risk of increased rehospitalization. One intervention that has been shown to assist in reducing this rate is telehealth.

Telehealth is the use of electronic information and telecommunication technologies to support clinicians and patients at a distance.⁵ Telehealth has the potential to help monitor the illness of individuals with chronic disease and has been studied in patients with several chronic diseases managed at home, such as HF, diabetes, asthma/chronic obstructive pulmonary disorder (COPD), and hypertension.⁶ The use of telehealth has been shown to improve patient outcomes and reduce care costs.^{7,8} A recent meta-analysis of 15 systematic reviews published between 2003 and 2013 indicates that telehealth reduces HF-related hospital admissions compared with usual care.⁹ In addition, a more recent study reports a significant reduction, from 19.3% to 5.2% in 3 years, in all-cause 30-day readmissions for HF patients using telehealth.¹⁰

A key factor in the success of telehealth interventions is patient acceptance of the technology and its use in monitoring symptoms. Given the proven benefits of telehealth as an intervention, the low reported acceptance or usage rate of telehealth raises a concern. One review of telehealth studies summarizing multiple trials reports that up to 70% of patients asked to try telehealth refused to participate or prematurely discontinue utilization.¹¹ However, few studies have examined the reasons for acceptance or refusal of telehealth, especially among HF patients who need

daily symptom management at home. Research addressing this question is important given the current efforts to expand telehealth benefit coverage among Medicare recipients.¹²

The purpose of this integrative review was to synthesize the evidence from studies that have explored HF patients' decision making to accept telehealth services in the home.

Methods

The review followed the five-stage integrative review process described by Whittemore and Knafl¹³: (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis, and (5) presentation.

Search

Six electronic databases (Medline, CINAHL, Cochrane Library, Embase, Scopus, and Web of Science) and three grey literature databases (OpenGrey, The Grey Literature Report, and ClinicalTrials.gov) were searched using both medical subject headings (MeSH terms) and key words (*Table 1*). Studies that were published in English after 2000 were included in the review. This date threshold was set in recognition of the technological limitations before that time.¹⁴ Reference list and citation searching were used to identify further articles.

STUDY SELECTION

Inclusion criteria: Studies reporting original data related to the acceptance of telehealth among HF patients in home care.

Exclusion criteria: Studies only using telephonic interventions (which were not considered to be telehealth), studies conducted in settings outside the home setting (e.g., hospital or primary care physician offices) or not with HF patients as part of the sample were excluded.

Two researchers independently screened titles and abstracts to identify articles that potentially met the inclusion criteria. Full text articles that were potentially relevant for the review

were retrieved and reviewed independently by two authors with articles selected for final review selected by consensus.

QUALITY ASSESSMENT OF INCLUDED STUDIES

Due to the variety of methods used in the included studies, the Mixed Methods Appraisal Tool (MMAT) Pluye et al.,¹⁵ was used to assess the quality of included studies.

DATA ANALYSIS

A constant comparison method was used to group and subgroup the extracted data by themes.¹³ This approach to data analysis for the integrative review is compatible with research using a variety of data and diverse methodologies for not only qualitative, but also quantitative or mixed-method studies, as the approach allows for interactive comparisons across primary data sources.¹³ To facilitate analysis, data were extracted from the studies and placed into an evidence table. Next, data were compared item-by-item and similar data were categorized and grouped together.

Results

The initial search yielded 208 articles. After duplicates were removed, 185 remained for title and abstract screening. After screening and full text review five studies were included in the final review (*Figure 1*).

STUDY CHARACTERISTICS

Two studies were qualitative using individual interviews and focus groups.^{16,17} Another study was a part of a randomized control trial (RCT) and used questionnaires to measure perceptions of telehealth¹⁸ and the remaining two studies used mixed methods.^{19,20}

SAMPLING METHOD

Two of the studies were conducted in the U.S.^{18,20} and the others were carried out in Australia,¹⁶ the United Kingdom,¹⁷ and Canada.¹⁹ Except for one study, the HF diagnosis of all the participants were identified through various ways, such as checking the medical records of the participants or by clinician verification of the patients' HF diagnoses. Although participants were primarily recruited from hospitals, cardiology clinics, and community groups, one study used patients' self-reported HF diagnosis.²⁰ One study purposely recruited participants from different ethnic groups to reflect the diverse ethnic backgrounds of the study area in Australia.¹⁶ Two studies focused on patients with HF only and three used patients with mixed chronic conditions (COPD, diabetes, and wound care). These three studies did not provide findings for HF patients separately; so the results of these studies were analyzed together and compared with studies that reported findings from HF patients only.

Table 1. Search Terms and Structure

#1 Telehealth or "telemedicine" or telecare or telemonitor*
#2 "Heart Failure" or congestive heart failure
#3 #1 AND #2
#4 "Patient acceptance of healthcare" or patient acceptance of technology or "attitude to computers" or "attitude to health" or "decision making" or "patient participation" or "behavior" or "health behavior"
#5 #3 AND #4
#6 Limit #5 to English language
#7 Limit #6 to 2000-current
MeSH terms in quotes: wildcard operators represented by*.

Fig. 1. PRISMA flow diagram.

SAMPLE CHARACTERISTICS

The average age of the patients included in the studies ranged from 54.6 to 74.3, with the majority of participants being male and white.^{17,19,20} Two studies reported the education level of their sample, with 49% to 60% of participants reporting some college level education.^{19,20} One study also analyzed the chronic condition status of participants in addition to their HF, and reported hypertension as having the highest comorbidity at 73.3%, followed by coronary artery disease (26.7%) and diabetes (20%).²⁰

QUALITY OF INCLUDED STUDIES

Overall, the quality of qualitative studies^{16,17} was good, meeting three out of four criteria (Table 2). However, the quality of the mixed methods^{19,20} and RCT¹⁸ studies were low, meeting one out of four criteria.

The two mixed-method studies^{19,20} showed weaknesses in different design categories. The study by Hall et al.²⁰ had weaknesses associated with clarity in sampling strategies and appropriateness of measurements used for the quantitative element of the study. In contrast,⁹ the study by Seto et al.¹⁹ was judged to be weak in the qualitative component of the study, failing to adequately describe how findings related to the context or researchers' influence.

For the RCT both the original study²¹ and the included article, which was a part of the RCT study that used questionnaires to analyze HF patients' perception of telehealth,¹⁸ were appraised. In both articles, authors failed to provide adequate details about domains of study design such as sequence generation and allocation concealment. In addition, it reported a dropout rate of 22%.

FACTORS RELATED TO PATIENT TELEHEALTH ACCEPTANCE

Overall, four out of the five included studies reported positive patient attitudes toward the use of telehealth.^{16,18–20} Regardless of study population (whether with HF-only patients or with mixed chronic conditions) the themes derived from a synthesis of study findings related to decision making regarding acceptance of telehealth were the same and are, therefore, reported together. Common factors arising from the synthesis were: concerns over equipment or technology, concerns over service change, ease of use, access to care, knowledge of telehealth and its benefits, cost, and privacy (Tables 3 and 4).

CONCERNS OVER EQUIPMENT OR TECHNOLOGY

Most studies addressed patients' concerns over operating the equipment itself or potential issues with technology. This theme was divided into two sub-themes according to whether the concerns were related more to the features of the device or

Table 2. Quality Appraisal Results of All Included Studies Using Mixed Methods Appraisal Tool					
AUTHOR (YEAR)	COMPONENTS	QUALITY CRITERIA	YES	NO	CANNOT TELL
Seto et al. (2010) ¹⁹	Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	X		
		1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?		X	
		1.3. Is appropriate consideration given to how findings relate to the context, for example, the setting, in which data were collected?			X
		1.4. Is appropriate consideration given to how findings relate to researchers' influence, for example, through their interactions with participants?			X
	Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?	X		
		4.2. Is the sample representative of the population understudy?	X		
		4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?		X	
		4.4. Is there an acceptable response rate (60% or above)?	X		
	Mixed methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?	X		
		5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?		X	
		5.3. Is appropriate consideration given to the limitations associated with this integration, for example, the divergence of qualitative and quantitative data (or results*) in a triangulation design?		X	
Hall et al. (2014) ²⁰	Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	X		
		1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	X		
		1.3. Is appropriate consideration given to how findings relate to the context, for example, the setting, in which data were collected?	X		
		1.4. Is appropriate consideration given to how findings relate to researchers' influence, for example, through their interactions with participants?		X	
	Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?		X	
		4.2. Is the sample representative of the population understudy?		X	
		4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?		X	
		4.4. Is there an acceptable response rate (60% or above)?	X		
	Mixed methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?		X	
		5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?	X		
		5.3. Is appropriate consideration given to the limitations associated with this integration, for example, the divergence of qualitative and quantitative data (or results*) in a triangulation design?		X	

continued →

Table 2. Quality Appraisal Results of All Included Studies Using Mixed Methods Appraisal Tool *continued*

AUTHOR (YEAR)	COMPONENTS	QUALITY CRITERIA	YES	NO	CANNOT TELL
Rahimpour et al. (2008) ¹⁶	Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	X		
		1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	X		
		1.3. Is appropriate consideration given to how findings relate to the context, for example, the setting, in which data were collected?	X		
		1.4. Is appropriate consideration given to how findings relate to researchers' influence, for example, through their interactions with participants?		X	
Sanders et al. (2012) ¹⁷	Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?	X		
		1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?	X		
		1.3. Is appropriate consideration given to how findings relate to the context, for example, the setting, in which data were collected?	X		
		1.4. Is appropriate consideration given to how findings relate to researchers' influence, for example, through their interactions with participants?		X	
Demiris et al. (2001) ¹⁸	Quantitative randomized controlled (trials)	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?		X	
		2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?		X	
		2.3. Are there complete outcome data (80% or above)?	X		
		2.4. Is there low withdrawal/dropout (below 20%)?		X	

to the abilities of the patient. Concerns identified regarding the device or technology itself encompassed device malfunction or issues with access to the device or services. Demiris et al.¹⁸ reported that several telehealth eligible candidates refused to participate because of concerns over the equipment. Sanders et al.¹⁷ also found that technological aspects of the equipment were a primary concern expressed by patients, which was not mitigated by explanations from healthcare providers. Additionally, patients also expressed concerns regarding inappropriate automated instructions from the telehealth device that might cause unnecessary emergency room visits in another study.¹⁹ Issues involving access to technology, such as mode of connection to internet, was also mentioned as a concern related to telehealth use.²⁰

Concerns associated more with the patients were more complex and related to low self-efficacy, anxiety, or technical competency. In a study by Rahimpour et al.,¹⁶ patients expressed low levels of confidence in using telehealth, although they thought they could use the system (direct quotes are displayed in Table 4). Hall et al.²⁰ also indicated low computer use self-efficacy as a barrier to telehealth use. Both studies also

reported patient anxiety, with one more specifically finding that patients perceive telehealth as a computer and expressed their computer anxiety.¹⁶ Technical competency was another barrier identified in the studies. Those patients who expressed lack of technical competency tended to indicate their estrangement from modern technologies and cite generational differences to explain diverging levels of technical abilities.¹⁷

CONCERNS OVER SERVICE CHANGE

Satisfaction with other current services was also identified as a barrier to telehealth use in some studies.^{17,19,20} Adding telehealth to current services was regarded as a threat to relationships with existing healthcare providers^{17,20} or patients had concerns about creating an excessive burden for their clinicians by using telehealth.¹⁹ Patient preference for maintaining their daily routines without disruption was also identified as a barrier to acceptance of telehealth in their HF management.

EASE-OF-USE

For ease-of-use, user-friendly interfaces and physical dexterity were mentioned as device- and patient-centered

Table 3. Summary Table of Included Studies

FIRST AUTHOR	YEAR	COUNTRY	STUDY DESIGN	SAMPLE	DISEASE CONDITIONS	TYPES OF TH USED	KEY FINDINGS
Demiris et al. ¹⁸	2001	USA	RCT	28 patients: 17 in experimental group, 11 in control: eligible for skilled nursing home care with primary or secondary diagnosis of one of the three clinical areas of interest	CHF, COPD, chronic wound-care	BP, pulse oximeter, spirometer, electronic diary using television, telephone, and web page	Most positive attitude toward TH use: saving time for nurses and patients, convenient, monitor condition well, easier contact to nurse, addition to regular care, reduce cost. Concern over privacy, difficulty to use, and device malfunction
Hall et al. ²⁰	2014	USA	Mixed method (Individual interviews and questionnaires)	15 patients: adult HF patients recruited from hospitals, cardiology clinics, and community groups	CHF	Home monitoring devices (ex. BP machine, weight scale)	Increased access to care, earlier indication of a worsening condition, increased knowledge, and greater convenience; financial cost, access issues, satisfaction with current self-care routine, mistrust of technology, and reliance on routine management by their current healthcare provider
Rahimpour et al. ¹⁶	2008	Australia	Qualitative (focus groups)	77 patients over 40 years old; primary diagnosis of CHF, class II to IV of NYHA, or COPD, or both	CHF, COPD	Weight, BP, ECG, Spirometer, pulse oximeter	Cost, ease of use, clinical support, low self-efficacy and anxiety
Sanders et al. ¹⁷	2012	UK	Qualitative (Individual interviews)	22 patients who refused TH trial: recruited from the three areas (Cornwall, Kent, east London)	HF, DM, COPD	BP, blood glucose, blood oxygen level, weight, peak flow	Requirements for technical competence and operation of equipment; threats to identity, independence and self-care; expectations and experiences of disruption to services
Seto et al. ¹⁹	2010	Canada	Mixed method (Individual interviews and questionnaires)	94 patients with questionnaires, 20 with interview: older than 18 years, not being on the heart transplantation list, and being expected to survive more than 1 year	HF	Weight, BP, ECG using Mobile phone	Providing a system that was easy to use with clear tangible benefits, maintaining good patient-provider communication; difficulty of use for some patients due to lack of visual acuity or manual dexterity, overburden to clinicians, inappropriate automated instructions, security/privacy
BP, blood pressure; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; DM, diabetes mellitus; ECG, electrocardiogram; NYHA, New York Heart Association; RCT, randomized control trials; TH, telehealth.							

Table 4. Data Analysis Table

COMMON FACTORS	ORIGIN (PATIENT VS. DEVICE)	DETAILS, INCLUDING "QUOTES" (AUTHOR, YEAR)
Concern over the equipment or technology	Device-centered	Device malfunction (Demiris et al., 2001; Sanders et al., 2012; Seto et al., 2010) ¹⁷⁻¹⁹
		Access to device or service (Demiris et al., 2001; Sanders et al., 2012; Seto et al., 2010) ¹⁷⁻¹⁹
	Patient-centered	Low self-efficacy and anxiety (Hall et al., 2014) ²⁰
		"...we need to know how to operate it..." or "...I couldn't even turn it on.... I am at this stage of my life where I am not going to learn it... I think it is impossible for older people to understand how the system works..." (Rahimpour et al., 2008) ¹⁶
		Technical competency
		"... younger people obviously that are computer wise..." (Sanders et al., 2012) ¹⁷
Concerns over change to current services		Satisfaction with current services (self-care or physician) (Hall et al., 2014; Sanders et al., 2012) ^{17,19,20}
		Overburden to clinicians (Seto et al., 2010) ¹⁹
Ease of use	Patient-centered	Physical dexterity (Seto et al., 2010) ¹⁹
	Device-centered	User friendly interface (Demiris et al., 2001) ¹⁸
Knowledge		Knowledge about telehealth (Demiris et al., 2001; Hall et al., 2014; Rahimpour et al., 2008; Seto et al., 2010) ^{16,18-20}
		Knowledge about telehealth benefits: convenience, saving time, motor symptoms well (Demiris et al., 2001; Hall et al., 2014; Rahimpour et al., 2008; Seto et al., 2010) ^{16,18-20}
Access to care		Easier to contact nurses (Demiris et al., 2001; Hall et al., 2014) ^{18,20}
		Access to device (Demiris et al., 2001; Hall et al., 2014) ^{18,20}
Privacy/security		Reasonable measures will be taken (Seto et al., 2010) ¹⁹
		Violation of privacy (Demiris et al., 2001) ¹⁸
Cost		Device price (Hall et al., 2014; Rahimpour et al., 2008) ^{16,20}
		Maintenance, care cost (Demiris et al., 2001; Rahimpour et al., 2008) ^{16,18}

factors, respectively.^{18,19} Patients' motor skills and vision can be a barrier to telehealth acceptance. Patients with limited physical dexterity cannot use the telehealth device properly without someone's help at home. Hand tremors or limited vision were examples of physical constraints that can affect patients' acceptance of telehealth. However, help from outside or a user-friendly interface can address these concerns. If the patients live with a family member or formal caregiver, who can assist them in using the telehealth device, the physical limitation was no longer an issue.

KNOWLEDGE OF TELEHEALTH AND ITS BENEFITS

Three studies mentioned that having knowledge of telehealth and its benefits facilitates telehealth acceptance among HF patients.^{16,18,19} Having used telehealth previously or hearing of it before being referred to telehealth seems to increase acceptance. A pre- and post-telehealth use study by

Demiris et al.¹⁸ reported that the experience with telehealth leads to change of perception in a more positive way. The potential benefits of telehealth perceived by patients were increased access to care, earlier indication of a worsening condition (in other words monitoring conditions well), increased knowledge, saving both nurses' and patients' time, and greater convenience.²⁰ Regardless of whether these benefits are proven to the patients or not, awareness itself of the potential benefits of telehealth can be a facilitator for increased acceptance of telehealth.

ACCESS TO CARE

Positive perceptions of telehealth with regard to access to service or care was displayed in two studies.^{18,20} Patients expressed expectations that the use of telehealth will make it easier to contact nurses, therefore, increasing access to care they needed. However, in the same study, Hall et al.²⁰ also

reported concerns over access to care due to issues involving access to technology.

COST

Cost was mentioned in three studies.^{16,18,20} Demiris et al.¹⁸ reported that most patients believed telehealth would reduce care cost, whereas the other two studies^{16,20} expressed cost as a concern to patients. Costs associated with telehealth include technical and clinical maintenance support expenses and the price of the device itself.

PRIVACY

Seto et al.¹⁹ reported that in general, patients did not have major security concerns about using the monitoring system as long as reasonable measures were taken to protect the confidentiality of their information. However, Demiris et al.¹⁸ reported that from their pretest before using telehealth, about 50% patients in the control group and 40% in the experimental group agreed that use of telehealth can violate their privacy.

Discussion

The results of this review indicate that most HF patients have positive attitudes toward home use of telehealth and there are some key factors that affect their decision making on accepting or refusing telehealth services at home. These factors include concerns over the equipment or technology, concerns over service change, ease-of-use, access to care, knowledge of telehealth and its benefits, cost, and privacy. The factors affecting patients' decision making regarding acceptance or refusal of telehealth were consistent, irrespective of patient diagnosis.

A number of studies have explored patients' satisfaction with telehealth after they have actually used the technology, rather than reasons for initial acceptance/refusal (as discussed in this paper). A study with HF and COPD patients who enrolled in telehealth service revealed that motivation, security, relevancy of content, and communication are major factors related to patients' participation in telehealth.²² Another study examining HF and arrhythmia patients identified security, freedom, and increased awareness of their own symptoms as factors that affected patients' telehealth adoption.²³ Although there appear to be common factors from these studies that also impact on patients' initial decisions to accept or refuse telehealth services, such as security, other factors such as relevancy of content (for example, the advice given daily while using telehealth) were only identified by studies exploring views after telehealth has been used. This suggests that there are specific issues that need to be addressed

by staff at the point of referral that may not be identified if we only rely on evidence from studies exploring successful telehealth users.

Understanding factors affecting HF patients' acceptance of telehealth can be considered as relevant to the broader field of technology acceptance. According to the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al.,²⁴ four major concepts play a role in user's behavioral intention to use technology. Among these four concepts, Performance Expectancy (PE) includes constructs of perceived usefulness and relative advantage; both factors that are related to knowledge on telehealth benefits which affects patients' telehealth acceptance. In addition, another concept, Effort Expectancy (EE), is defined as "the degree of ease associated with the use of the system" and directly linked to ease of use factors in the results of this review. While the UTAUT can provide some theoretical underpinnings to explain patient's acceptance or refusal to accept telehealth, we have identified unique factors (concerns over changes to current services and privacy) that specifically relate to this specific decision.

Future research could explore telehealth acceptance more broadly across healthcare consumers. To our knowledge, this is the first integrative review to focus on telehealth acceptance; so factors influencing decisions on telehealth across all patients with different diagnoses or particular disease groups are lacking. Extending the patient population to other chronic diseases, to identify if there are unique characteristics associated with HF patients' decision making surrounding telehealth could also provide additional insights. Finally, future reviews that examine studies of patients with specific disease conditions other than heart failure could also provide valuable insights, as the high patient refusal identified in our review may be related to disease complexity as well as severity.

LIMITATIONS

The findings in this review are based on relatively few studies and the quality of several of the included studies was poor. Only five articles met all the inclusion criteria and although all five had common factors related to patients' decision making of telehealth acceptance, the limited number of articles, together with the overall study quality means the results have to be treated with caution.

Conclusions

Despite evidence of effectiveness for telehealth, up to 70% of patients are reported to refuse telehealth services.¹¹ Given the Centers for Medicare and Medicaid Services (CMS)' proposal to expand services eligible for Medicare reimbursement

for the fiscal year 2017 to telehealth,¹² understanding factors associated with HF patients' decisions on acceptance is important. This review highlights the limitations in our current understanding of the factors that may impact a patients' decision to accept or refuse telehealth on initial referral. Further studies with a more rigorous methodological approach, with larger samples of HF patients would help to develop interventions to improve telehealth acceptance rates in the patient populations that may benefit from the service.

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Disclosure Statement

No competing financial interests exist.

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