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Clinician behaviors in telehealth care delivery: a systematic review

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Abstract Literature on telehealth care delivery often addresses clinical, cost, technological, system, and organizational impacts. Less is known about interpersonal behaviors such as communication patterns and therapeutic relationship-building, which may have workforce development considerations. The purpose of this study was to conduct a systematic literature review to identify interpersonal health care provider (HCP) behaviors and attributes related to provider–patient interaction during care in telehealth delivery. Electronic searches were conducted using five indexes/databases: CINAHL, ERIC, PsychInfo, ProQuest Dissertations, PubMed; with hand-searching of the immediate past 10 years of five journals. Search concepts included: communication, telehealth, education, and health care delivery. Of 5261 unique article abstracts initially identified, 338 full-text articles remained after exclusion criteria were applied and these were reviewed for eligibility. Finally, data were extracted from 45 articles. Through qualitative synthesis of the 45

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articles, we noted that papers encompassed many disciplines and targeted care to people in many settings including: home care, primary and specialist care, mental health/counseling, and multi-site teams. Interpersonal behaviors were observed though not manipulated through study designs. Six themes were identified: HCP-based support for telehealth delivery; provider–patient interactions during the telehealth event; environmental attributes; and guidelines for education interventions or evaluation of HCP behaviors. Although unable to identify current best practices, important considerations for practice and education did emerge. These include: perceptions of the utility of telehealth; differences in communication patterns such as pace and type of discourse, reliance on visual cues by both provider and patient especially in communicating empathy and building rapport; and confidentiality and privacy in telehealth care delivery.

Keywords Communication · Education · Health care delivery · Qualitative systematic review · Telehealth

Introduction

Telehealth has rapidly emerged as an effective tool for increasing access and reducing barriers to a broad spectrum of health and related services. Clinicians can use it to extend services to rural and underserved areas, to provide privacy during care episodes to people with stigmatized health conditions, and to reduce the time and travel costs of patients and providers thereby increasing the cost effectiveness of many types of services (Sood et al. 2007). Applications of telehealth have become common throughout the health care sector including diagnosis, care management, and patient education in dentistry, counseling, physical therapy, ophthalmology, chronic disease monitoring, and other areas and disciplines (Institute of Medicine 2012). Implementation of the Affordable Care Act with its emphasis on coordinated care approaches such as accountable care organizations (ACOs) and patient-centered medical homes (PCMHs) is an important policy impetus to telehealth use (Kvedar et al. 2014), leveraging its ability to achieve scale and relative geographic independence.

Transmission technologies used in telehealth include terrestrial telephone networks, synchronous closed-circuit videoconferencing systems, high amplitude radio frequency, the internet, and a large number of internet-based modalities including store-and-forward imaging, streaming media, wireless communications, and many others (Ackerman et al. 2010). These technologies take advantage of a variety of sending and receiving devices such as telephones, computers, and increasingly small portable personal communication devices. Most recently, the introduction of high-speed fiber optic broadband networks and real-time diagnostic imaging and related technologies has greatly advanced the technical capabilities, and thus the reach, of telehealth (Davidson and Santorelli 2012). Another force expanding the reach of telehealth includes the rapid adoption of electronic health records (EHRs) that has been driven by U.S. federal "meaningful use" policy and supported by over $27 billion in incentive payments to providers. The EHR systems make data available to telehealth providers without the limitations the physical records and clinical images of traditional services (Ahern et al. 2011). For each technology introduced, the complexity of sociotechnical interactions between systems of care, providers, and patients increases.

While definitions of telehealth vary, many identify it as a mode of delivery independent from the substance of the clinical service delivered. A commonly used definition provided

by the National Telehealth Policy Resource Center identifies telehealth as "a collection of means or methods for enhancing health care, public health, and health education delivery and support using telecommunications technologies" (National Telehealth Policy Resource Center 2015). Other definitions are broader, extending usage beyond clinical patient care to "…health-related education, public health, and health administration" (Health Resources and Services Administration 2015).

There is a large and growing body of published literature that uses clinical, technological, or economic approaches to understanding the quality, outcomes, cost, and organizational impacts of telehealth (LeRouge et al. 2007). Telehealth training, such as certification courses from The National School of Applied Telehealth, often includes content to meet program and operational goals such as telecommunications or telemonitoring equipment and technology challenges related to telehealth delivery (www.setrc.us/index.php/education). However, questions remain about changes in the process of care including provider–patient interactions as research focusing on communication patterns and therapeutic relationships in telehealth is limited (Bashshur 1995; Demiris et al. 2005; Miller 2001). Bulik and Shokar (2010) highlighted the importance of doctor-patient communication during telehealth delivery and the lack of related curriculum. In a multi-method study, LeRouge et al. (2015) found patients rated communication processes as well as technology-related skills to be most important for telemedicine. In their resulting taxonomy of quality attributes, they identified clear directions, team coordination, and planning for the encounter as critical components. It appears that preparation, communication skills and therapeutic relationship-building merit further research to improve clinical services within the complexity of telehealth interactions.

The primary aims of this study were to describe interpersonal clinician behaviors and attributes of care in telehealth delivery related to provider–patient interaction such as communication skills, professionalism, and 'telepresence' and to identify related educational guidelines for health professionals. To this end, we conducted a systematic review of the literature in hopes of identifying current research on provider skills in telehealth delivery. This research may, in turn, lead to translational work, clinician education (basic and continuing), establishment of best practices and professional norms, and in the end, provision of effective high quality care.

Methods

We undertook a systematic literature review following the steps outlined in the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses; Moher et al. 2009). Given the lack of research related to effectiveness and the prevalence of observational studies, we applied an interpretive methodology to describe the phenomenon of provider–patient interaction similar to the descriptive synthesis described by Evans (2002). The search methods, data extraction, and analysis are described below.

Search methods

In order to be comprehensive in our search, we identified two concepts: telehealth and education, and conducted electronic searches in five indexes/databases: CINAHL COMPLETE, ERIC (EBSCO). PsychInfo, ProQuest Dissertations, and PubMed. In the health-based databases, CINAHL COMPLETE and PubMed, synonyms were harvested for each of the two concepts from the controlled vocabulary. Harvested synonyms for each individual

concept were combined with the Boolean operator OR. Then both concept lists were combined using the Boolean operator AND. Searches were run in CINAHL and PubMed databases first in October of 2014, then re-run in October of 2015 (see "Appendices 1 and 2"). The concepts telehealth and education along with a similar list of synonyms were used to search in ProQuest dissertations in all fields (title, abstracts, keywords) except full text (see "Appendix 3"). For the remaining two data bases, ERIC (EBSCO) and PsychInfo, which are not health or medicine specific, we searched for concepts of "communications" and "health care delivery" together as a broad stand-in for the "telehealth" concept. Again, individual terms were combined with the Boolean operator OR, and concept lists were combined using the Boolean operator AND (see "Appendices 4 and 5").

In addition to the database search, we selected five telehealth-related journals and hand-searched the past 10 years of those journals (see "Appendix 6"). Hand-searching these journals yielded 550 articles. Once duplications from all searching methods were eliminated, it was determined that 5064 articles were included for preliminary review. After analysis of the initial review materials one year elapsed. To capture the most recent findings, the search processes were repeated, without the additional hand-searching, in early October 2015. From the October 2015 search, there were 197 newly identified articles and dissertations culled for the preliminary review. Researchers conducted screening and data extraction from the identified articles (n = 5261).

Inclusion/exclusion criteria

One might assume that health care provider (HCP) behaviors and attributes impacting the provider–patient interaction during telehealth include preparation, communication, and interpersonal skills, similar to face-to-face encounters. However, to identify what surfaced from analysis of articles focused on clinician delivery of telehealth care we tried to suspend our assumptions and used an inductive process to identify themes that emerged from the literature. The research team developed a set of criteria (Fig. 1) to determine article eligibility for the review. We excluded articles that had foci falling outside our purpose. Initially, one researcher reviewed all abstracts to identify components of interest according to the inclusion/exclusion criteria (Fig. 1).

The excluded abstracts reported on topics such as comparative effectiveness of treatment protocols; technology development; transmission of images for diagnosis (e.g. radiology, pathology, surgery); social media; or distance education of clinicians.

To further assess the eligibility of articles for this sample, two authors independently reviewed the full article version of each included abstract and then used an open, hermeneutic process to deliberate about content and quality attributes (Strauss and Corbin 1990). The criteria for eligibility at this stage mirrored those of the first screening to determine alignment with the study purpose to describe HCP preparation and proficiency with patient interactions. Articles were deemed eligible regardless of study design. The researchers consulted with each other to ensure consistency of decision-making for articles to be included in the sample.

Data extraction and analysis

Three of the researchers extracted relevant data from articles in the final sample, with independent review of each article by two people and periodic meetings among research team members to compare notes and confirm the data collection process. Then data from

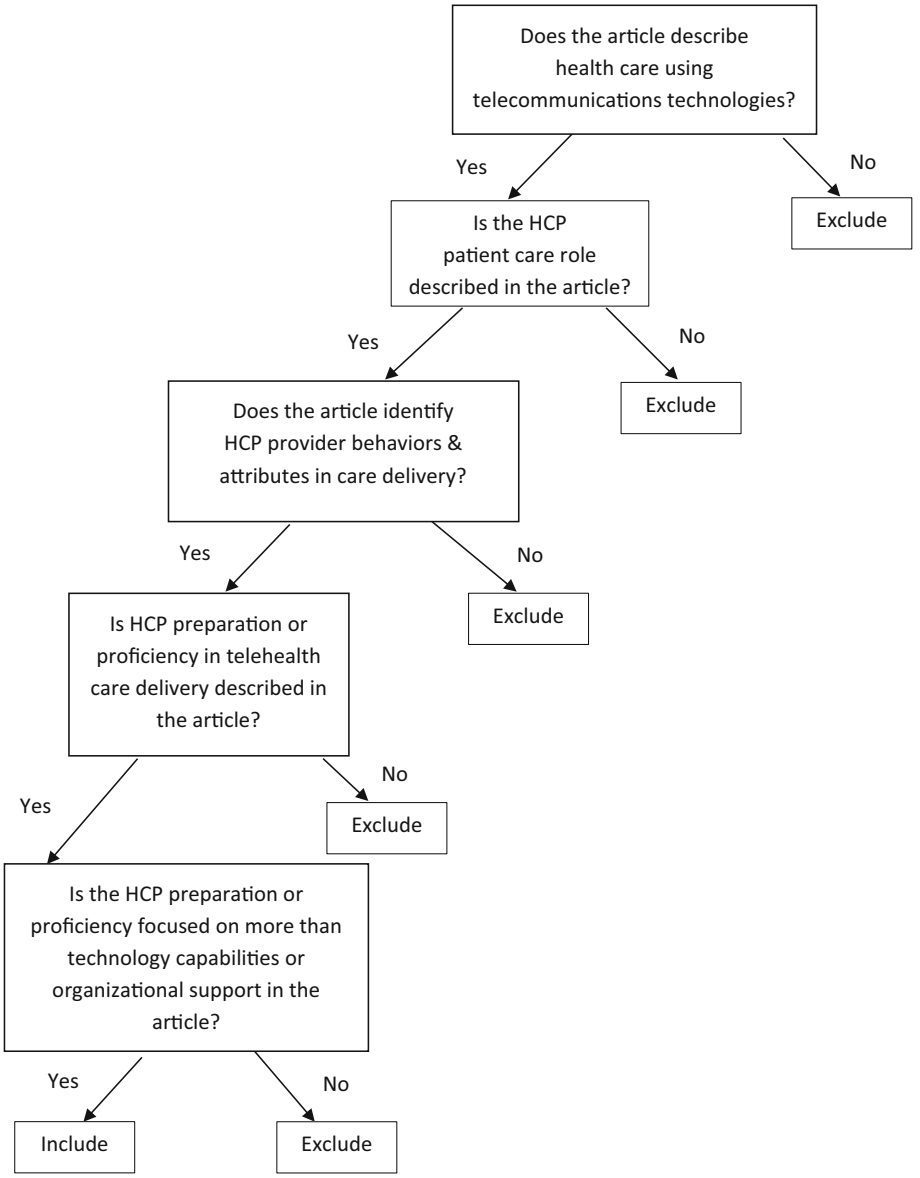

Fig. 1 Decision tree for inclusion/exclusion of HCP behaviors and attributes in telehealth articles

each article were entered into comprehensive data extraction forms. Analysis of data occurred through inductive reasoning in an iterative process with research team discussions. As patterns emerged from review of study data, the researchers synthesized them into descriptive themes. Through a series of discussions among all the researchers, data were classified and themes were revised.

Results

Database searching yielded 7160 articles (see Table 1) and hand-searching coupled with preliminary work yielded another 613 articles. Once duplicates were removed, 5261 articles were screened (first screening). Next, 338 full-text articles were reviewed for sample eligibility and 45 articles remained for data extraction. The PRISMA diagram is displayed in (Fig. 2) (Moher et al. 2009).

After multiple appraisals of data extraction forms (available upon request to the authors) from the 45 articles, researchers identified six themes:

1. Preinteractional (Pre) such as attitudes, competencies, and cultural awareness;
2. Verbal communication (Verbal) such as behavioral skills, timing, and types of clinican talk;
3. Nonverbal communication (Non-verbal) such as eye contact, visual cues, and empathetic gestures;
4. Relational (Relate) such as rapport and relationship building;
5. Environmental (Environ) such as physical surroundings and privacy; and.
6. Educational (Edu) such as pre-professional or continuing development and evaluation of interpersonal skills with provider–patient interactions.

To assure that the themes represented the data well, we cross-checked the data extraction forms to confirm that all relevant data fit into one, and only one, of the six themes although data in each article often reflected more than one theme.

We divided the articles into three types: primary source/study (Table 2); literature review (Table 3); or article related to educational efforts (Table 4). Findings are displayed within these three groupings and include research design and distribution of data across the six themes as appropriate Although several of the 45 articles did not explicitly identify a research design, we categorized the study design using Creswell's taxonomy of qualitative, quantitative, and mixed methods approaches (Creswell 2014).

Three of the six themes, were most prevalent: verbal, non-verbal, and relational themes (see Table 5). The environmental theme, including physical surroundings, client confidentiality, or privacy concerns, emerged as an unexpected finding. The educational theme included different disciplines, e.g. medical, counseling, nursing, and teams. In general, many of the articles noted, sometimes as a direct research finding, the need for formal training in telehealth.

Table 1 Database search results

Database	Search results Oct. 2, 2014 (last 10 years)	Re-run search Oct 1–2, 2015 date 9/1/2014–10/31/2015	Totals of searches run
CINAHL complete	217 (196)	38	255 (234)
ERIC (EBSCO)	15 (1)	0	15 (1)
Proquest dissertations	107 (107)	49	156 (156)
PsychInfo	1792 (1186)	91	1883 (1277)
PubMed	4832 (2981)	20	4852 (3001)
Totals	6963 (4471)	197	7160 (4668)

() Numbers within parentheses refer to results once date limitations were applied to results

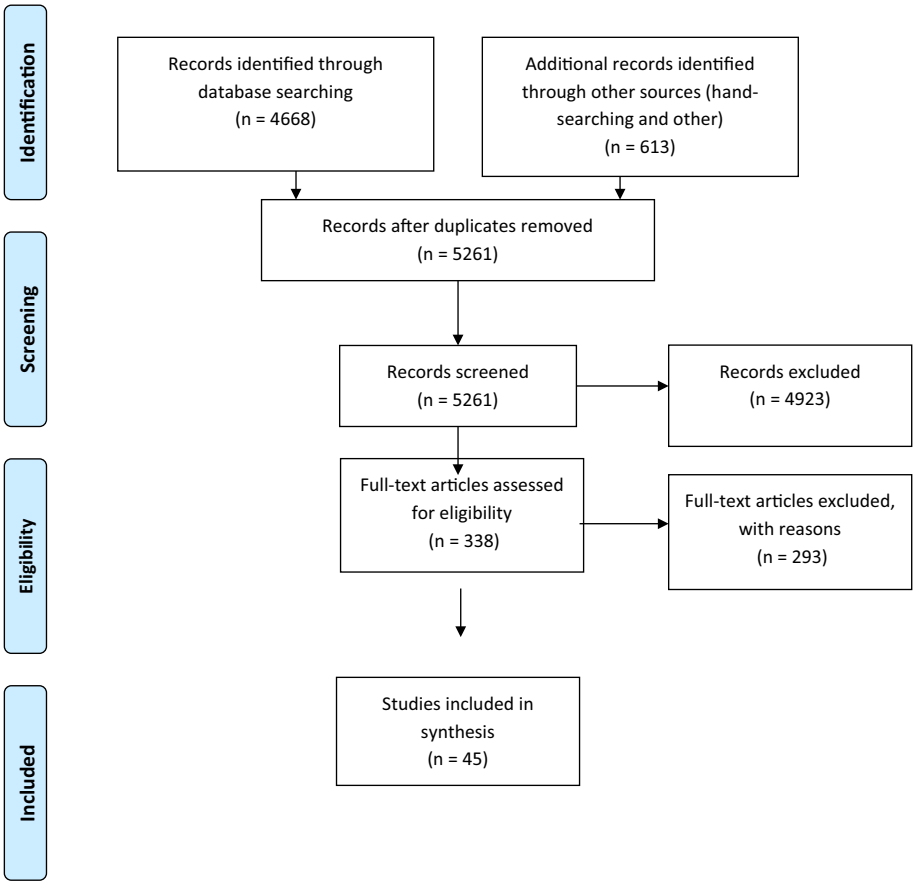

Fig. 2 PRISMA diagram for telehealth search

Preinteractional-a positive viewpoint about the benefits of telehealth can outweigh perceived drawbacks

Preinteractional elements are comprised of several different HCP characteristics including beliefs, attitudes, confidence, and cultural competence that precede a positive approach toward working with patients through telehealth. The data indicated a relationship between clinician belief that telehealth services benefitted patients and the ease with which the clinician adapted to a role in telehealth which seemed to hold across types of clinicians (Browning et al. 2009; Ens et al. 2010; Gaggioli et al. 2005; Greenberg 2009; Pols 2010). For example, Browning et al. (2009) surveyed nurses working in a home health agency (n = 39) and found that the nurses' self-perception of readiness to implement telehealth using remote telemonitoring was associated with their understanding of how telehealth services would improve quality of care, patient outcomes, and patient participation in self-care (Browning et al. 2009). In his interview of nurses (n = 9), Pols (2010) also found that feedback about patient outcomes may contribute to more positive views about telehealth. In a large survey, when physicians (n = 361) were apprised of telehealth's ability to improve access to care they more easily accepted telehealth practice. The surveyed

Table 2 Overview of primary source/studies identified in the review

HCP	Primary source papers (references)	Research design+	Main modality	Themes*				
				Pre	Verbal	Non-verbal	Relate	Environ
Pulmonary physicians	Agha et al. (2009)	QUAN: experimental	Two-way audio and video		■	■	■	
Home health nurses	Browning et al. (2009)	QUAN: nonexperimental	Telephone, telemonitoring	■				
Stroke nurses	Buckley et al. (2004)	Mixed: explanatory	Videophone technology	■			■	
Primary care physicians	Bulik (2008)	Mixed: explanatory	Telemedicine, video		■	■		
Community health nurses	Courtney-Pratt et al. (2012)	Mixed: explanatory	Telephone, computers	■	■			■
Multisite clinical teams	Dermiris et al. (2004)	QUAN: survey	Video conferencing, teleradiology					■
Dermatology physicians	Demiris et al. (2005)	QUAN: Non-experimental	Video conferencing		■			
FAS disorder team	Ens et al. (2010)	QUAL: Case study	Video conferencing	■	■	■		■
Counseling team	Ford et al. (2012)	Mixed: explanatory	Skype/video chat	■		■	■	
Physician	Gaggioli et al. (2005)	QUAN: Survey	Electronic communication	■				
Network nursing	Greenberg (2009)	QUAL: grounded theory	Telephone triage	■	■	■	■	
VA health team	LeRouge et al. (2015)	MIXED: exploratory	Video conferencing		■	■		■
Internal med physician	Liu et al. (2007)	QUAN: experimental	Video consultation		■	■		
Medical center team	Meyer et al. (2012)	QUAL: case study	Telecommunications hub					■
Call center nurse	Moscato et al. (2007)	QUAN: experimental	Telephone		■		■	
Surgical trainees	Nestel et al. (2007)	QUAN: Survey	RP6 robot		■	■		■
Homecare nursing	Pols (2010)	QUAL: grounded theory	Telecare devices	■			■	■
Home health nursing	Roing et al. (2012)	QUAL: Case study	Telephone hotline		■			
Poison control team	Rothwell et al. (2012)	QUAL: phenomenology	Telephone	■	■		■	
Mental health team	Sands et al. (2013)	QUAN: Survey	Telephone				■	
Home health team	Sharma and Clarke (2014)	QUAL: Phenomenology	Telephone, telemonitoring		■		■	

Table 2 continued

HCP	Primary source papers (references)	Research design[+]	Main modality	Themes*				
				Pre	Verbal	Non-verbal	Relate	Environ
Physicians	Suzuki et al. (2006)	QUAN: nonexperimental	Video phone			■		
Heart failure nursing	Wakefield et al. (2008)	QUAN: experimental	Telephone, videophone		■		■	

[+] Creswell (2014)

* The sixth theme, Educational, is addressed in Tables 3 and 4

Table 3 Literature reviews of telehealth delivery identified in the review

HCP	Review papers (references)	Themes					
		Pre	Verbal	Non-verbal	Relate	Environ	Edu
Nursing	Edirippulige (2010)	■					■
Mental health	Grady et al. (2011)	■		■	■	■	
Physician	Miller (2002)	■	■	■	■	■	
Providers	Miller (2001)		■	■			
Telenurses	Pellegrino and Kobb (2005)	■	■				
Telenurses	Purc-Stephenson and Thrasher (2010)*		■		■		■
Home care nurses	Shea and Effken (2008)		■		■		■
Clinic physicians	Doolittle and Allen (1997)		■		■		■
Psychologists	Johnson (2014)		■		■		
Psychologists	Simpson and Reid (2014)*		■	■	■	■	
Therapists	Anthony (2015)	■					■

* Systematic review

Table 4 Descriptions of education activities and competency assessment of providers in telehealth delivery

HCP	Citation	Research design[+]	Educational activities
Medical students	Bulik and Shokar (2008)	Mixed: explanatory	Online courses, videoconferencing
Counselors	Finn and Barak (2010)	QUAN: survey	Reading, workshops, programmes
Physician	Gattoni and Tenzek (2010)	Literature review	Technology competence, SPs, cognitive simulations
Behavioral health teams	Gifford et al. (2012)	QUAN: nonexperimental	Training video vignettes
Psychiatry residents and fellows	Glover et al. (2013)	QUAN: survey	Telepsychiatry rotation
Mental health teams	Godleski (2012)	QUAN: survey	Web-based modules, meetings, training, conferences
ICU nursing	Goran (2011)	QUAN: survey	Competency assessment
Advanced nursing students	Rutledge et al. (2014)	QUAL: case Study	Skype or Breeze, simulation
Mental health nursing	Johnson et al. (2014)	MIXED: explanatory	Self-assessment for telenursing
Psychology doctoral students	McCord et al. (2015)	QUAL: case study	Practicum training, competency assessment
DNP students	Erickson (2014)	QUAN: survey	Classroom, clinical practice, self-assessment

[+] Creswell (2014)

physicians also reported a willingness to consider changing roles and expectations in care delivery when they could see how the change helped patients (Gaggioli et al. 2005). From these studies it appeared that generally, open attitudes about one's work, such as a

Table 5 Distribution of themes present in the three types of papers

Theme	Primary source/study (total = 23)	Literature review (total = 11)	Educational (total = 11)
Preinteractional	9	5	0
Verbal communication	14	8	0
Nonverbal communication	7	4	0
Relational	10	7	0
environmental	7	3	0
Educational	0	0	11

willingness to examine changing roles also included a positive approach toward re-examining one's responsibilities (Pols 2010; Rutledge et al. 2014). Creativity around care crossing disciplines (Rutledge et al. 2014), and traits of open-mindedness, adaptability, and flexibility (Brink-Muinen et al. 2002) were also correlated to HCP acceptance of telehealth.

Confidence, or self-efficacy, also emerged as an important preinteractional element. Researchers found that a lack of confidence in telehealth and associated technology could be a potential barrier to its use among home health nurses (Browning et al. 2009; Buckley et al. 2004; Courtney-Pratt et al. 2012), physicians (Demiris et al. 2005), and counselors (Ford et al. 2012). Courtney-Pratt et al. (2012) highlighted the need to make clinicians aware of the impact of telehealth as a means to increase efficacy. Through semi-structured interviews, Ens et al. (2010) found that fetal alcohol syndrome disorder team members (n = 28) displayed more positive attitudes about the benefits of telehealth services when they perceived that access to families in remote locales outweighed technology glitches with videoconferencing. Also, to ease the process of making connections with people in distant locations, increased cultural awareness was identified as a need in three papers (Ens et al. 2010; Ford et al. 2012; Rothwell et al. 2012). This included the importance of the cultural context of the patient's locality, community resources local to the patient, language differences, and dietary differences (Ford et al. 2012). As a prime example, the poison control team needed to know about cultural patterns of foraging for food in relation to poisonous mushrooms in a distant region (Rothwell et al. 2012).

Verbal communication—clinician-patient interactional dynamics vary

In this review, three general areas of verbal communication emerged: types of discourse; importance of verbal skills; and the need for clear communication. Findings about the form and timing of verbal communication varied across studies. For example, Agha et al. (2009) characterized telehealth visits as less patient-centered, more verbally dominated by physicians, and patients more frequently requested information be repeated (Agha et al. 2009). When comparing telehealth to face-to-face care delivery, Bulik (2008) reported, "…[t]elemedicine patients commented that they noticed less small talk and socialization during telemedicine visits—providers appeared to get down to work almost immediately" (Bulik 2008, p. 171). Liu et al. (2007) observed shorter average visit time with videoconferencing versus face-to-face visits (13.6 versus 20.6 min) as did Dermiris et al. (2005) (9 versus 11 min).

The types and quality of verbal interaction between clinicans and patients varied from study to study. For example, using the Davis Observation Code, Dermiris et al. (2004) reported greater self-disclosure and more small talk by physicians using videoconferencing

vs. face-to-face visits. In contrast, Liu et al. (2007) observed lower levels of physician verbal behaviors including empathy and praise types of utterances with videoconferencing rather than face-to-face using the Brink-Muinen method, Brink-Muinen et al. 2002).Wakefield et al. (2008) compared two modes of communication (telephone and videophone) and identified differences in task-oriented behaviors and affective (social-emotional) behaviors using the Roter Interaction Analysis System. Interestingly, telephone conversation was found to have more patient utterances, and for nurses more open-ended questions, friendly jokes, and indications of listening (Wakefield et al. 2008).

Several studies highlighted verbal skills deemed to be important depending on the mode, such as using telephones for communication (Courtney-Pratt et al. 2012; Rothwell et al. 2012; Wakefield et al. 2008), and the pattern of dialogue, such as with information-gathering (Greenberg, 2009; Roing et al. 2012; Rothwell et al. 2012). Employing focus groups with clinicians, Ens et al. (2010) reported that the difficulty in assisting patients who do not understand medical language might be exacerbated by language barriers or technical problems. While Rothwell et al. (2012) suggested more training and practice could help develop skills specific for telephone communication, the specific aspects of verbal communication that increase the need for language clarity were not described.

Nonverbal Communication—both clinician and patient rely on cues

Non-verbal patterns of communication were the focus of seven articles (Agha et al. 2009; Bulik 2008; Ens et al. 2010; LeRouge et al. 2015; Liu et al. 2007; Nestel et al. 2007; Suzuki et al. 2006). Examples of non-verbal patterns of communication included eye contact, body positioning, movement, facial gestures, voice quality and vocal tone (Miller 2002; LeRouge et al. 2015) described the importance of equipment quality and placement to support a 'telepresence' that includes non-verbal interpersonal skills such as virtual eye-contact. The difference in angle between the participant's camera and where the participant looks onscreen, or gaze angle, should also be considered (Grady et al. 2011). Suzuki et al. (2006) used a gaze-point recorder to study picture size and eye contact with cellular videophones. Similarly, Nestel et al. (2007) described how physicians could project their personalities and express emotion even through a robot (RP6) for care delivery.

Of note, differences were noted when comparing telehealth care episodes with face-to-face visits. Bulik reported that providers felt less control over the non-verbal aspects of telehealth sessions (Bulik 2008). Liu et al. (2007) suggested that clinicians should exaggerate motions such as nods and other actions. As noted in the ATA guidelines, "[a]djusting to the medium may require flexibility and creativity in conferring empathetic gestures" (Grady et al. 2011, p. 136). Gifford et al. developed eight competencies for therapists practicing in behavioral telehealth programs, with one competency focusing on nonverbal aspects of communication (Gifford et al. 2012; Moscato et al. 2007). The need to develop a 'video presence' included staying visually attentive, exaggerating facial expressions at times, and ensuring a clear view of the therapist's face and body language (Moscato et al. 2007).

Relational—building rapport happens

Positive study outcomes with building rapport and fostering collaboration during telehealth care episodes were reported across different research designs and communication modes (Agha et al. 2009; Buckley et al. 2004; Ford et al. 2012; Greenberg 2009; Rothwell et al. 2012; Sharma and Clarke 2014). Buckley et al. (2004) interviewed family caregivers and

telehealth nurses about utilization of home care and noted the importance of establishing rapport and trust for the provider–patient relationship. The authors reported that greater rapport increased the likelihood that home caregivers would initiate calls to nurses (Buckley et al. 2004). Studies reported ease with rapport-building through telephone communication as well as face-to-face appointments (Buckley et al. 2004; Pols 2010; Wakefield et al. 2008). With an experimental study, Wakefield et al. (2008) determined that conversation may be enhanced through a telephone and that non-verbal communication continues when listening is the focus. However, focus group discussions with telephone-based poison center staff described that when working without visual cues there is a need to balance more detailed and close-ended questioning styles with allowing the client to talk (Rothwell et al. 2012). They emphasized the importance of a pleasant, yet direct manner to ease stress (Rothwell et al. 2012).

Four articles specifically reported on the closeness of the telehealth-based provider–patient relationship indicating that therapeutic interactions allow for alliances, collaborative decision-making, and good patient outcomes (Moscato et al. 2007; Pols 2010; Sands et al. 2013; Wakefield et al. 2008). Moscato et al. (2007) analyzed recorded phone calls to a medical office call center and later administered satisfaction surveys to the callers ($n = 2519$; 45 percent response rate) (Miller 2002). They found that caller satisfaction was higher when nurses met expectations in these five dimensions: caring; listening; clarity; collaborating; and competency (Miller 2002). Sands et al. (2013) included negotiation skills as part of a therapeutic approach important in mental health telephone triage. Building partnerships was noted as important when nurses tried to promote patient self-management from a distance (Wakefield et al. 2008). The authors noted, "[t]elehealth does not necessarily change the care providers give; rather, it changes the communication channel between clinicans and patients in order to minimize geographic barriers to care and potentially improve delivery of service" (Wakefield et al. 2008, p. 285). Pols (2010) explored the role of nursing in telehealth and noted qualitative differences from face-to-face care and concluded that relationship building occurred, through telephone communication alone, and was more important than data transfer from a monitoring device.

Environment—clinicians need to consider their surroundings

This fifth theme included findings that differed somewhat from the focus on provider-based support and communication skills. Seven papers higlighted the importance of the environment that surrounded the HCP during telehealth care delivery(Courtney-Pratt et al. 2012; Dermiris et al. 2004; Ens et al. 2010; Meyer et al. 2012; Nestel et al. 2007; Pols 2010; Roing et al. 2012). First, the patient may appreciate assurances of privacy and confidentialty that extend beyond the transmission of data (Dermiris et al. 2004; LeRouge et al. 2015; Meyer et al. 2012). Also, for a HCP, the delivery of telehealth care through telephone calls in a shared space may be problematic (Courtney-Pratt et al. 2012). Privacy of conversations through the use of headphones is one of the tele-elements of care delivery suggested by Meyer et al. (2012). These researchers also noted that the number of ancillary participants in a telehealth session may need to be explained differently than in a face-to-face visit (Meyer et al. 2012). Also, the patient may look for a familiar setting such as an HCP office, rather than an unfamilar space, such as a board room, which could be the place that technical equipment is located (Courtney-Pratt et al. 2012; Ens et al. 2010). Other factors included keeping the environment distraction free (Ens et al. 2010) and limiting interruptions during the visit (Dermiris et al. 2004). Interestingly, Pols (2010) considered

that the distance of telehealth may make some patients feel safer and this was noted in findings of literature reviews (Grady et al. 2011; Simpson and Reid 2014).

Lastly, on further review, we determined that the six themes coalesced around four major concepts: provider-based support for telehealth delivery (theme 1); provider–patient interactions during the telehealth event (themes 2, 3, and 4); environmental components unrelated to technology important for the telehealth care episode (theme 5); and educational interventions or evaluation of clinician interpersonal skills and interactions (theme 6).

Discussion

Describing interpersonal clinician behaviors for telehealth delivery was challenging despite the growing body of telehealth literature. While we used very broad search concepts, this PRISMA-based systematic review of literature about interpersonal provider behaviors and educational guidelines found that only 45 papers were deemed eligible (less than one percent of the papers identified through search methods). Our review confirms that we are in the developmental stages of research in this field.

Our analysis of the current literature neatly revealed six themes. The need for interpersonal skills education in telehealth delivery (our sixth theme) was clearly and consistently expressed in the papers we reviewed, across disciplines and settings. As essential as this theme appears, there is a lack of consensus about what that learning objectives are necessary to form clinicians with excellent interpersonal skills. For example, differences between questioning style and visit duration identified in this review may indicate the influence of preparation and clinician attitudes on interpersonal skills which merit further study when investigating clinical outcomes.

Within the remaining five themes, potential content for competency assessment and educational programming emerged. Provider–patient interactions (verbal communication, nonverbal communication, and relational themes) was recurrent and deemed important educational foci. This finding was not surprising and reinforces the need to consider visual cues and listening style with telehealth delivery. Pre-interactional and environmental themes were unanticipated and included highly descriptive discussions. All themes merit further consideration for study of telehealth services and professional education.

Telehealth is often used to extend services to remote sites, effectively putting providers and patients together in care episodes where it is hard to discern the influences of setting and culture on the patient's health and well-being. Problems may arise when a HCP feels cut off from cultural cues from a patient's healthscape and could negatively affect the provider's willingness to embrace telehealth. Understanding issues like this, and developing adaptive mechanisms, could make telehealth more readily accepted by clinicians as a mode of care provision.

While falling short of identifying best practices, this review points to several important issues that need further investigation and could translate easily to teaching points. For example, data in the environmental theme suggest that clinicians should discuss the progression of the telehealth care episode with patients. In particular, an introduction to plot-out the sequence of the care episode with the patient could help orient the patient to telehealth systems and establish better communication. Providers may take this extra care because telehealth is novel to their patients, intending to put their patients at ease. More likely providers do this intuitively, adapting the nature of the communication itself, because they perceive differences in semiotic rules in telehealth encounters. This finding

points out the need to more deliberately study how providers adapt interpersonal messaging with patients so they convey and receive the intended meanings through a shared system of communication.

There is a great deal at stake as telehealth becomes more ubiquitous. Will telehealth be an extension of effective high quality care on par with traditional face-to-face services, or will telehealth create a second tier of care for remote and isolated populations? Telehealth holds enormous promise in increasing access and reducing barriers to care. From this review we can say that as yet, it does not appear that telehealth delivery has been seamlessly incorporated into the mix of existing services and professional education. Without consideration of the interpersonal behaviors and attributes of care inherent in telehealth, there may be a risk that telehealth continues to be viewed as a second, sometimes less desirable, option.

Limitations

Very few papers addressed the focus of this review as a primary objective. Also, few experimental studies were found in this search of telehealth and education. As a consequence, it was not possible to generalize which behaviors or even which types of behaviors are, or should be, important in the provision of health care through the mode of telehealth. With those challenges, in contrast to routine application of the PRISMA framework, alternate analysis of the research evidence was employed with a narrative synthesis. Rather than testing a specific intervention with this systematic review, a textual approach to synthesis was applied to reveal the current state of knowledge on this topic with a broader focus (Popay et al. 2006).

Implications

When a systematic review reveals little published material on a topic, as this one has, it is important to consider issues that have not and perhaps should be addressed. While it is clear that telehealth can be one of the most effective tools for lowering barriers and increasing access to a broad spectrum of health and related services; it is also clear that across disciplines and settings, clinicians are grappling with adapting interpersonal behaviors and care attributes to provide clear communication, establish therapeutic relationships, and achieve quality outcomes while their patients are at a distant location. In addition, there is a gap in professional preparation for this mode of care delivery.

The “success” or “failure” of telehealth to positively impact patient care outcomes may very well be more dependent on interpersonal attributes than on technological access. In practice, clinicians rely on positive relational behaviors to engage patients and to obtain good clinical information. The heterogeneous nature of these findings suggest that interpersonal training for providers could play a role as a variable in future patient-centered outcomes studies. The four conceptual areas identified in this review may provide a framework that encompasses clinician behaviors and attributes of care in telehealth delivery: provider-based support for telehealth delivery; provider–patient interactions during the telehealth event; environmental components unrelated to technology important for the telehealth care episode; and educational interventions or evaluation of clinical interactions.

In spite of the many benefits telehealth offers and in spite of the rapid application of telehealth throughout the health sector, we find that the need to define best practices continues. It will require theoretically based research, translational work, evidence-based

clinician education (basic and continuing), and the establishment of professional norms. We suggest that this state of knowledge needs to advance before the effectiveness of telehealthcare, as a type of care, can be fully understood, evaluated, and implemented.

Appendix 1: CINAHL complete

Concept	Concept list
Telehealth	(MH "Telemedicine") OR (MH "Telepsychiatry") OR (MH "Telehealth")
Education	(MH "Nursing Skills") OR (MH "Communication Skills Training") OR (MH "Social Skills Training") OR (MH "Social Skills") OR (MH "Communication Skills") OR (MH "Skill Acquisition") OR (MH "Skill Retention") OR (MH "Competency Assessment") OR (MH "Clinical Competence") OR (MH "Job Characteristics") OR (MH "Defining Characteristics (NANDA)") OR "characteristics" OR (MH "International Organization for Standardization") OR (MH "American National Standards Institute") OR "standards" (MH "Practice Acts") OR "best practices" OR (MH "Patient Bedside") OR (MH "Nursing as an Art"))

Appendix 2: PubMed

Concept	Concept list
Telehealth	"Telemedicine"[Mesh] OR "Remote Consultation"[Mesh] OR "communication technology" OR telehealth OR telepsychiatry
Education	(("Inservice Training"[Mesh] OR "Teaching"[Mesh] OR "Schools, Nursing"[Mesh] OR "Staff Development"[Mesh] OR training OR "Education"[Mesh] OR "education"[Subheading] OR "Nursing Education Research"[Mesh]) AND ("Health Personnel"[Mesh] OR "Caregivers"[Mesh] OR "Physicians"[Mesh] OR "Physicians, Primary Care"[Mesh] OR "Physician Assistants"[Mesh] OR "Osteopathic Physicians"[Mesh] OR "Occupational Health Physicians"[Mesh] OR "Physician's Role"[Mesh] OR "Medical Staff, Hospital"[Mesh] OR "General Practitioners"[Mesh] OR "Professional Competence"[Mesh] OR "Clinical Competence"[Mesh]))

Appendix 3: Proquest dissertations

Concept	Concept list
Telehealth	(health OR psychiatry OR medicine)
Education	("Nursing Skills" OR "Communication Skills Training" OR "Social Skills Training" OR "Social Skills" "Communication Skills" OR "Skill Acquisition" OR "Skill Retention" OR "Competency Assessment" OR "Clinical Competence" OR "Job Characteristics" OR "Defining Characteristics " OR characteristics OR "International Organization for Standardization" OR "American National Standards Institute" OR standards OR "Practice Acts" OR "best practices" OR "Patient Bedside" OR "Nursing as an Art") AND all((telehealth OR telepsychiatry OR telemedicine OR telecommunications))

Appendix 4: ERIC

Because the database did not offer TELEHEALTH or TELEMEDICINE as actual terms in the thesaurus, we were required us to parse out TELEHEALTH to two ideas into communications and health delivery.

Concept	Concept list
Telehealth	(DE "Communications" OR DE "Communicative Competence (Languages)" OR DE "Telecommunications")
Health care delivery	(DE "Health" OR DE "Nursing" OR DE "Nursing Education" OR DE "Nursing Students" OR DE "Health Sciences" OR DE "Health Services" OR DE "Health Personnel")
Education	(DE "Professional Development" OR DE "Training" OR DE "Competence" OR DE "Competency Based Education" OR DE "Praxis")

Appendix 5: PsychInfo

Because the database did not offer TELEHEALTH or TELEMEDICINE as actual terms in the thesaurus, we were required us to parse out TELEHEALTH to two ideas into communications and health delivery.

Concept	Concept list
Telehealth	Exp Communication Systems/or exp Information Technology/or exp Communication/or exp Telemedicine/or exp Online Therapy/or exp Teleconferencing/or exp Telecommunications Media/(221513)
Health care delivery	Exp Health Care Delivery/or exp Health Care Services/or exp Nursing/or exp Nurses/or exp Mental Health Services/or exp Health Personnel/or exp Health Care Utilization/or exp Mental Health/or exp Health/or exp Health Care Delivery/or exp Geriatric Psychiatry/or exp Social Psychiatry/or exp Consultation Liaison Psychiatry/or exp Adolescent Psychiatry/or exp Community Psychiatry/or exp Psychiatry/or exp Professional Consultation/(results 317244)
Education	Exp Education/or exp Competence/or exp Counselor Characteristics/or exp Clinical Psychology Graduate Training/or exp Self Instructional Training/or exp Social Skills Training/or exp Inservice Training/or exp Communication Skills Training/or exp Mental Health Inservice Training/or exp Personnel Training/or exp Community Mental Health Training/or exp On the Job Training/or exp Psychotherapy Training/or exp Human Relations Training/or exp Psychoanalytic Training/or exp Training/or exp Clinical Methods Training/or exp Professional Competence/(Results 261205)

Appendix 6: Hand searching

Journal titles
Health Communications
Health Management Technology
Journal of Continuing Education in the Health Professions
Journal of Telemedicine and Telecare
Telemedicine and E-health

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