Telephone advice nursing - communication, patient satisfaction and tool development

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To my family

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ABSTRACT

Background: Telenursing has rapidly expanded in many countries. In Sweden, a national telephone advisory nursing service reaches the entire nation and receives approximately 4,5 million calls per year. The six phase nursing process – assessment, nursing diagnosis, setting goals, planning, implementation and evaluation – can be used when managing a caller's health problem. In telenursing, a person-centred approach makes for more satisfied and appreciative callers. The core component of interaction is the verbal communication between the telenurse and caller. Several studies have revealed the need for the development of communication competence in telenursing. Structured analyses of conversations between telenurses and callers is one way to increase telenurses' awareness of their communication and interpersonal competence. This type of analysis requires a valid formative self-assessment tool. To evaluate communicative effectiveness, the patient perspective of the interpersonal aspects of interaction are described as a necessary component, and satisfaction surveys designed for a telenursing context are recommended. Therefore, a questionnaire is needed that evaluates the effects of telenurse communication training from the caller's perspective.

Aims: The overall aim of these two studies was to develop tools to enable improvements and evaluations in communication and interpersonal competence in telenursing from the perspective of both the telenurse and the caller.

Study 1: To develop a self-assessment tool aiming to raise telenurses' awareness of their communication and interpersonal competence and highlight areas in need of improvement.

Study 2: To develop and assess content validity of a theoretically anchored questionnaire that explores caller satisfaction in TAN as a result of the interaction between the caller and the telenurse.

Methods:

Study 1: The development and the evaluation of content validity of the Telenursing Self-Assessment Tool (TSAT) started with a literature search

and domain identification, which were used to generate the items. The assessment of the content validity was performed in two steps. First, an expert group completed two rounds of assessments using Content Validity Index (CVI). Second, telenurses tested the tool and assessed the content validity using CVI. Thereafter, the telenurses participated in consensus discussions. Refinements of the tool were done after every assessment.

Study 2: The development and the evaluation of content validity of the Telenursing Interaction and Satisfaction Questionnaire (TISQ) started with a literature search and domain identification, which were used to generate the items. The assessment of the content validity was performed in two steps. First, cognitive interviews were performed with the callers, the target population. Next, experts evaluated the content validity using CVI. Refinements of the tool were done after every assessment. The Interaction Model of Client Health Behavior (IMCHB) provided theoretical guidance and support.

Results:

Study 1: The TSAT with 58 items was developed. The items were structured according to the nursing process and the tool was judged as having good content validity.

Study 2: The TISQ consisting of 60 items based on the IMCHB was developed. The questionnaire was found to exhibit good content validity.

Conclusions: This thesis describes the development and assessment of content validity of two theoretically anchored tools aimed to improve and evaluate communication and interpersonal competence in telenursing from the perspective of both the telenurse and the caller. The TSAT is meant to create learning opportunities, to provide self-direction, feedback, and coaching, and to guide the telenurse through the nursing process using a person-centred approach. The TISQ aims to explore the callers' satisfaction and the callers' perceptions of the interaction with the telenurse. With better knowledge about this, communication improvement and education in telenursing can be tailored to enhance caller satisfaction.

LIST OF PAPERS

- I. Johnson C, Wilhelmsson S, Börjeson S, Lindberg M. Improvement of communication and interpersonal competence in telenursing - development of a self-assessment tool. *Journal of Clinical Nursing* 2015;24(11/12):1489-501
- II. Mattisson Marie¹, Johnson Christina¹, Börjeson Sussanne, Årestedt Kristofer, Malou Lindberg. Development and content validation of the Telenursing Interaction and Satisfaction Questionnaire (TISQ). Submitted.

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ABBREVIATIONS

CDSS	Clinical Decision Support System
CVI	Content Validity Index
I-CVI	Item CVI
IMCHB	Interaction Model of Client Health Behavior
S-CVI	Scale CVI
TAN	Telephone Advice Nursing
TAN 1177	The Swedish TAN service, officially called 1177 Healthcare Guide by phone
TISQ	Telenursing Interaction and Satisfaction Questionnaire
TSAT	Telenursing Self-Assessment Tool

PREFACE

This thesis is about telephone advice nursing (TAN) in the context of the national 1177 Healthcare Guide by phone in Sweden. When I began working as a telenurse in the early 1990s, I was a newly graduated registered nurse. The work was very interesting but also demanding, challenging, and sometimes risky. I realized the difficulty of assessing patients without being able to see and examine them. During this time, I would have appreciated access to more evidence-based guidance. However, telenursing was seldom prioritized in health care, and it was common that the least experienced nurse was given the telenursing assignment.

Some years later when I was working as a district nurse in a primary healthcare centre, I was asked to participate in a project to develop a pilot site for a new national telephone advisory service in Sweden. This work was a very inspiring as this work prioritized and addressed many of the challenges in telenursing. I enjoyed seeing the quality being emphasized. During the following years, I had the opportunity to participate in the development of a variety of aspects of the service, such as national development of the CDSS, guidelines for telephone triage, quality evaluations, education, and communication issues. However, the issue was the lack of theoretical evidence. Some of the national guidelines were based on practical experience alone. Communication and interpersonal competence, paramount in telenursing since the interaction is solely verbal, was highlighted and the recommended work method was based on significant experience but on very little evidence-based science. When I got the opportunity to become a research student, it was a very exciting challenge. My personal goal with this work was that it would contribute with a little piece of new knowledge to enable quality improvement within communication and interpersonal competence in telenursing.

INTRODUCTION

Telenursing and Telephone Advice Nursing (TAN)

In many countries, telenursing has rapidly expanded as a strategy to maximize care systemization and overcome healthcare barriers (Souza-Junior et al. 2016). Since 2009, telenursing is a MeSH term defined as “[d]elivery of nursing services via remote telecommunications”. These services can be provided by telephone, the Internet, video, or other techniques and may consist of retrieving and analysing relevant client data using various technical solutions and these services include triaging health problems by phone or the Internet (College of Registered Nurses of Nova Scotia 2017).

In this thesis, Telephone Advice Nursing (TAN), one application of telenursing, is defined as a telephone-based assessment of the patient’s health-related needs and an appropriate response to these needs. In this thesis, the person who makes the phone call is referred to as the ‘caller’ and could be either the ‘person’ with the health problem or a person calling on behalf of the person with the health problem. The word ‘patient’ is used when referring to the person with the health problem and is also used when cited references do not distinguish between ‘caller’ and ‘patient’ and only use the word ‘patient’. Both registered nurses in primary care and hospital clinics as well as in medical call centres may provide TAN. In this thesis, registered nurses who provide TAN are referred to as telenurses.

In several countries, TAN is integrated in the existing health structure (Souza-Junior et al. 2016); for example, in the UK the principal entry point for access to urgent care is a free national telephone-based 24-hour service that provides assessment and triage. Non-clinical call handlers perform the first assessment and when it is deemed necessary, the call is transferred to a telenurse (Turner et al. 2015). Similarly, Australia has a free national 24-hour helpline for non-urgent health concerns staffed by telenurses. An online interactive symptom checker, available via the Web or mobile app, provides advice on what to do next: whether to administer self-care advice or seek professional care. The symptom checker is integrated with the helpline so that the patient’s registered symptoms can be transferred to the helpline telenurse if a call is recommended (Health Direct Australia 2016). Canada also provides a free 24-hour helpline for non-urgent healthcare advice; in some regions, these helplines are staffed only by telenurses but in

other regions a “health service navigator” answers the calls and connects the caller with a telenurse when required (811 Helpline ua).

In Sweden, a national TAN service was introduced in 2003. In 2013, it was fully implemented and reaches the entire nation 24-hours a day through the telephone number 1177 (TAN 1177). TAN 1177 is part of the national Healthcare Guide 1177 that also offers healthcare information, personal e-services, and advice online (1177 Vårdguiden 2015). TAN 1177, which receives approximately 4,5 million calls per year, offers information and advice about symptoms and diseases (Inera 2018; The Swedish Association of Local Authorities & Regions 2005). TAN 1177 is organized in various ways as each of the 21 county councils are responsible for running their own TAN 1177. Both the work method and assignment can differ between the county councils. However, the county councils collaborate in a national network and national guidelines within TAN 1177 describe a recommended work method, including both communication matters and the use of a nationally developed computerized Clinical Decision Support System (CDSS). Specially trained telenurses using CDSS independently assess and triage healthcare needs, provide self-care advice, refer the caller to an appropriate level of healthcare, and document relevant data in the patient’s 1177 healthcare record.

Telephone advisory call

A telephone advisory call could be described as an institutional conversation with a predetermined purpose and routines where participants have specific roles, albeit asymmetric (i.e., the telenurse leads the conversation), with different rights and obligations (Linell 1990). Because the telenurse relies on organizational rules and available healthcare resources when assessing and triaging healthcare needs, the telenurse has the responsibility to prioritise who will receive certain healthcare; that is, the telenurse serves as a gatekeeper. This responsibility often causes telenurses to experience conflicting demands of being both care provider and gatekeeper of limited healthcare resources (Holmström & Dall’Alba 2002; Purc-Stephenson & Thrasher 2010). In addition, the telenurse has medical knowledge and knowledge about the healthcare organisation that the caller does not, further reinforcing an uneven power distribution (Leppänen 2010).

Institutional conversations also contain certain phases with specific activity structures and characteristics. A telenurse can rely on the nursing process – a recommended, scientifically based and systematic problem - solving process that has gradually evolved since it was first described in the

late 1960s (Yura & Walsh 1987). Today, the process can be described with six phases: assessment, nursing diagnosis, setting goals, planning, implementation, and evaluation (Rutenberg & Greenberg 2012). When using the nursing process in TAN, the phases can be described as follows. In the first phase, assessment, the telenurse gathers all relevant information based on the interview with the caller (Rutenberg 2000) as well as on symptomatic signs or other background sounds (Wahlberg, Cedersund, Wredling 2005). The second phase, nursing diagnosis, can be described as the telenurse's clinical judgement of the patient's need and an assessment of the urgency. In the third phase, the goal or desired outcome of the encounter is set up. In the fourth phase, a plan of action is developed. In the fifth phase, the plan is implemented. In the implementation phase, the telenurse should have a dialogue about desired medical care and self-care information and/or refer the patient to the appropriate level of care (American Academy of Ambulatory Care Nursing 2012; Moscato et al. 2003; Rutenberg & Greenberg 2012). This phase may also include health education (Mayo, Chang & Omery 2002; Wahlberg 2004) and support (Wahlberg, Cedersund & Wredling 2005). Larson-Dahn (2001) and Kaminsky (2013) emphasize that health promotion must be included in TAN, which complies with the Code of Ethics for Nurses (International Council of Nurses 2012). In the sixth phase of the nursing process, evaluation, the telenurse makes sure that the caller understands the plan of action and that the telenurse and caller agree on the plan. The caller's opinion and the outcome could also be investigated in other ways such as through follow-up calls (American Academy of Ambulatory Care Nursing 2012; Chang, Mayo & Omery 2002; Rutenberg 2000). When this research was initiated, the recommended work method within TAN 1177 did not correspond with the nursing process.

Interaction and communication in TAN

The Oxford English Dictionary (2018) defines the word "interaction" as "reciprocal action or influence" and "communication or direct involvement with someone or something". Communication can be described as one specific component of interaction that involves an exchange of information both ways. An interaction must not contain communication. Nurse-patient interaction is described as the fundamental base where the nursing process as well as an essential component of what defines nursing care is accomplished (Evans 2016).

The first model of communication, the transmission model, was presented in the late 1940s and originated in the telecommunication field. It describes communication as the process of sending and receiving a mes-

sage. Multiple variables were later added to the original model – e.g., channel, encoding, decoding, and feedback. In the 1960s, factors influencing the communication were presented – e.g., communicative skills, awareness, attitude, social background, and cultural background. In healthcare, communication is studied from a variety of angles and many interpersonal communication theories have been developed (Bylund, Peterson & Cameron 2012). Communication can be assessed based on the degree of control and involvement that the patient and provider possess. During the last decades, a shift has been observed from a paternalistic style, where the provider has greater control in the interaction and the patient has a low degree of involvement, to a more patient-centred style. In this style the patient is seen more like a partner in the interaction (Street & Epstein 2008).

The complicated relations between interaction and health outcomes are described by Cox (1982) in the Interaction Model of Client Health Behavior (IMCHB) (Figure 1).

Figure 1. Interaction Model of Client Health Behavior (Cox 1982). Reprinted with permission by Wolters Kluwer Health inc.

In this model the client-profession interaction is considered as a major influence on the outcomes and is described in four components: 1) Health information includes the importance of information and knowledge adapted to each individual in regard to meaning, amount, and amenable; 2) Affective support refers to attending to the patient's emotional reaction; 3) Decisional control raises the importance of enabling the patient to share

the decision making; and 4) Professional/Technical competence refers to the relevant competencies of the professionals (Cox 1982).

In TAN, the core component of interaction is the verbal communication between the telenurse and caller. The telenurse is responsible for making a correct assessment and ensuring the goals in each phase of the encounter are achieved. To accomplish this, despite the lack of visual contact and the relatively short encounter with TAN, telenurses require special knowledge in communication. Therefore, researchers highlight the telenurse's communication and interpersonal competence (Barbosa et al. 2016; Holmström et al. 2016; Larson-Dahn 2000; Röing & Holmström 2015; Snooks et al. 2008; Wahlberg et al. 2005; Valanis et al. 2007). Communication competence is sometimes defined in terms of specific tasks such as using effective questioning skills to interview the caller, whereas interpersonal competence can be described as a process of interaction that includes treating the caller with respect, expressing empathy, paying attention, and demonstrating a caring attitude (Duffy et al. 2004). Both communication and the interpersonal competence highly affect the outcome of the telephone call (Ernesäter et al. 2012; 2014; Kaminsky, Röing & Björkman 2017; Larson-Dahn 2001; Moscato et al. 2007; Wahlberg & Wredling 2001; Valanis et al. 2007).

Both patient satisfaction and patient safety depend on the telenurse's communication competence. The most common reasons for malpractice claims in TAN are telenurses' failure to listen to the caller, to communicate relevant issues concerning the health problem, and not asking the caller enough open-ended questions (Ernesäter et al. 2012; 2014). Hence, several studies have revealed a need for the development of communication competence in TAN (Ernesäter et al. 2012; Moscato et al. 2007; Rahmqvist, Ernesäter & Holmström 2011; Röing Rosenqvist & Holmström 2013). Moreover, telenurses emphasize the importance of developing specific competences for relationship building and communication in TAN (Snooks et al. 2008).

Valanis et al. (2007) suggest that performance standards should be established, which can encourage effective communication behaviours, and ways of measuring these behaviours should be developed and used regularly. Wahlberg et al. (2005) suggest that all telenurses should listen to recordings of their telephone calls on a regular basis in order to improve their communication competence. By using a standardized tool to analyse audio-recordings, strengths and weaknesses in communication can be identified (Duffy et al. 2004).

All telephone calls to TAN 1177 are automatically audio-recorded and in some regions the telenurses are expected to analyse their own encounters with callers regularly as a way to improve their communication and interpersonal competence. The telenurses perform the analyses either by themselves or together with a specially trained coach. As guidance, an assessment tool based on the recommended work method is used. However, neither the recommended work method nor the tool used for analysing calls have been scientifically developed or tested.

Person centeredness

The concept person-centeredness is sometimes used interchangeably with patient-centeredness, and a clear differentiation between the two concepts is not always provided (Slater 2006; Waters & Buchanan 2017). Neither of the two concepts are exactly defined terms (Holmström & Röing 2010, Slater 2006; Waters & Buchanan 2017).

Patient-centeredness is often described as a bio-psychosocial view of the patient's health problem that includes open-ended questions, discussions about how the illness impacts the patient, viewing the patient as an individual, sharing power and responsibility, striving for common ground about the implementation, focusing on the personal relationship between the professional and the patient, an awareness about the impact of the professionals' personality, health promotion, and motivation (Anderson 2002; Holmström & Röing 2010; Mead & Bower 2000).

The concept person-centeredness emphasizes the patient as an active and involved part in his or her care and in the decision-making process and not a passive receiver of a medical intervention (Ekman et al. 2011). In a current review comparing the two concepts, several variables were concordant such as empathy, respect, communication, engagement, relationship, shared decision-making, holistic focus, and individualized focus. The main difference between the concepts turned out to be the goal with the care. Person-centred care aims to generate a meaningful life whereas patient-centred care aims to promote a functional life (Håkansson Eklund et al. 2018).

Shared power and responsibility are part of a person-centred approach that has been shown to increase patient satisfaction as well as other positive health outcomes (Stewart et al. 2000). Studies have shown that in TAN callers appreciate being listened to, being involved in the decision-making

process, being reassured by the telenurse, and feeling confident in the telenurse's advice (Moscato et al. 2003; Ström, Marklund & Hildingh 2009). These examples are in line with the above descriptions of patient- and person-centeredness. In this thesis, the term 'person centeredness' will be used.

The involvement of the caller in the decision-making process provides more satisfied callers and according to the Swedish healthcare legislation, healthcare professionals are required to promote patient involvement (Moscato et al. 2003; SFS 2014; Ström, Marklund & Hildingh 2009). The concept 'shared decision making' is described as a collaborative approach between healthcare professionals and patients, where the best evidence is integrated with the patients' values and preferences for dealing with their health problems (Moore & Kaplan 2018). Although there is a shared decision-making process, the extent of how much involvement the patient has can vary, but the goal is often expressed as a process of active participation from both patient and professional and shared deliberation in order to reach a joint or shared decision (Sandman & Munthe 2010). Ekman et al. (2011) emphasize the partnership as fundamental for a shared decision, and the first step is to listen to and explore the patient's narrative. Shared information from both parties, including not just the medical aspects of the health problem but also the patient's experiences and preferences, is necessary as it is part of mutual planning (Ekman et al. 2011).

With a person-centred approach, the paternalistic view is abandoned in favour for a model where the power is moved to the person by providing the knowledge to enable relevant decisions (Slater 2006).

Patient satisfaction

The IMCHB defines patient satisfaction as one outcome of healthcare (Figure 1) and is described as a complex compound of different patient-related and healthcare provider-related factors (Batbaatar et al. 2015;). Chow et al. (2009) describe patient satisfaction as components and determinants, where components refer to the aspects of actual care delivered; affability, ability and availability, and determinants refer to patient characteristics and expectations of care. Eriksen (1995) defines the concept 'patient satisfaction' as 'the patient's subjective evaluation of the cognitive/emotional response that results from the interaction of the patient's expectations of nursing care and their perception of actual nurse behaviours/characteristics'. There is, however, no officially accepted definition of the concept patient satisfaction (Batbaatar et al. 2017; Gill & Whyte 2009).

In many studies, healthcare provider communication competence has been shown as a predictor for patient satisfaction (Batbaatar et al. 2017). Also in TAN the telenurse's communication competence has been shown to affect patient satisfaction (Ström et al. 2011). According to one study, if callers' expectations regarding a telenurse's listening skills, clarity, collaboration, and medical competency were met, then their satisfaction was significantly higher (Moscato et al. 2007). Despite the many studies on patient satisfaction, the determinants of patient satisfaction are not fully understood (Batbaatar et al. 2017; Gill & Whyte 2009).

The concepts 'patient satisfaction' and 'perceived healthcare quality' are often used interchangeably. A separation when measuring the two concepts is recommended by Gill and White (2009), who also argue for a greater focus on the patient's perception of the specific health service quality and not just measures of satisfaction.

When telenurses regularly analyse their own communication performance in the interaction with callers using a self-assessment tool, the aim is to improve their interpersonal and communication competence. The effects of such quality work must be evaluated to identify if any improvement has occurred. There are several outcomes described in the IMCHB (Figure 1) but the patient perspective of the interpersonal aspects of interaction is described as a necessary component when evaluating the effectiveness of communication (Schirmer et al. 2005). Rahmqvist et al. (2011) recommend using satisfaction surveys specially designed for a telenursing context to evaluate the effects of communication training programs for telenurses. Today, TAN 1177 does not use a scientifically based method for evaluation.

In this thesis, all aspects of perceptions and satisfaction refer to the person participating in the interaction with the telenurse whether or not he or she is the patient.

Rational

Thus, there is a need for evidence-based development of telenurses' communication competence. One recommended way for telenurses to become more aware of their communication and interpersonal competence and thereby enable improvements is for them to assess their conversations with callers. This type of analysis requires a valid formative self-assessment tool. In addition, a questionnaire to evaluate the effects of telenurse communi-

cation training from the caller's perspective is also needed. When the present studies were initiated, no valid instruments to fulfil these purposes were found.

The overall aim of these two studies was to develop tools to enable improvements and evaluations in communication and interpersonal competence in telenursing from the perspective of both the telenurse and the caller.

Specific aims

Study 1:

To develop a self-assessment tool aiming to raise telenurses' awareness of their communication and interpersonal competence and highlight areas in need of improvement.

Study 2:

To develop and assess content validity of a theoretically anchored questionnaire that explores caller satisfaction in TAN as a result of the interaction between the caller and the telenurse.

METHODS/RESULTS

Study 1

The study to develop the Telenursing Self-Assessment Tool (Figure 2) was based on the methods for instrument development (Lynn 1986; Polit & Beck 2006; 2012; Waltz, Strickland & Lenz 2005). Content validity was assessed in two stages: the development stage and the assessment stage. The assessment stage was separated into two steps: an assessment by an expert group and an assessment and test by telenurses. The telenurses also participated in consensus discussions.

Figure 2. The development process for the Telenursing Self-Assessment Tool (TSAT) in study 1.

TSAT Development stage

The development stage began with a literature search to identify the domain communication and interpersonal competence in telenursing with an impact on caller satisfaction and patient safety. Based on the literature

search, a summary describing the dimensions in communication and interpersonal competence in relation to TAN interaction was prepared. Next, an item pool was generated from the summary and assembled into a usable form according to the nursing process, version one of the tool.

TSAT Assessment stage: the expert group

The objective of the assessment stage was to evaluate content validity for each item in the tool and for the entire tool. As a first step, ten experts were asked to assess the items and the entire tool in a structured process. The experts were chosen to reflect a range of opinions and had varied experience in this area – e.g., researchers with a focus on TAN or communication within healthcare; both nurses and general practitioners; men and women; individuals with experience of calling TAN 1177; and experienced telenurses. Each expert assessed the tool individually without any interaction with the other experts. The experts were asked to consider whether each item was relevant and appropriate. They rated each item on a four-point scale: 1 = an irrelevant item; 2 = the item is relevant but in need of major adjustment; 3 = the item is relevant but in need of minor adjustment; 4 = extremely relevant item. The experts were also asked to suggest improvements and to assess if the items covered the content area and, if not, suggest new items.

Based on the ratings by the experts, a Content Validity Index (CVI) was computed for each item and for the entire tool. The CVI for each item (I-CVI) was calculated as the proportion of experts who rated the item as 3 or 4. The lowest accepted value of the I-CVI depends on the number of experts included in the assessment. With ten experts, at least eight had to rate an item as 3 or 4 to establish an accepted I-CVI value of 0,8. Items with a low value of I-CVI were revised or removed. The CVI for the entire scale (S-CVI) was calculated as the average value of all the I-CVI values, called S-CVI/Ave. After the first assessment, S-CVI/Ave was 0,87. Our goal was to achieve an S-CVI/Ave value of 0,9 or higher as recommended in the literature. The written proposals from the experts were analysed and discussed by the research team and changes were made in accordance with consensus. Some clarifications in the introduction text in the tool, concerning the nursing process, were added due to comments from the experts. A second version of the tool was developed and sent to the same experts for assessment, using an identical process. After the second assessment, the S-CVI score was 0,91, which is above the required level. Comments from the experts led to some refinements and a third version of the tool was developed. The nursing process was further clarified in this version.

TSAT Assessment stage: the telenurses

A group of ten telenurses were asked to test and assess the items and the entire tool in a structured process. The telenurses were chosen to represent a variety of experiences, number of years in the profession, age, and educational background. The telenurses were all working at one TAN 1177 site. The telenurses themselves selected calls to be analysed with the requirement that they should involve counselling regarding personal health problems. Each telenurse tested the tool by analysing four audio-recorded encounters. Additionally, they were asked to rate the level of understanding for each item and the relevance of each item in order to develop their communication competence.

The same method as described above (CVI) was used. The telenurses' suggestions were analysed, which resulted in reformulation and deletion of items and one new item was added. The revised tool, version four, was sent to the same group of telenurses and important amendments were highlighted during two sessions of consensus discussions. The consensus discussion led to some reformulations and addition of one new item. The information text concerning the nursing process was further explained. This resulted in the fifth and final version of the tool.

The Telenursing Self-Assessment Tool (TSAT)

The final self-assessment tool is meant to guide the telenurse to use the nursing process and include suggested communicative and interpersonal variables to be used in the different phases. The tool is divided into five sections. The first four sections are characterized by their own specific activity structures in the interaction and communication between the telenurse and the caller and follow a six-phase nursing process (Figure 3). Every section starts with a short introduction text addressed to the telenurse.

The first section, 'Opening the call', includes variables to strengthen the establishment of a positive contact with the caller. The second section, 'Listening and assessing', contains variables to support active listening, exploration of the health problem from various angles, exploration of the caller's thoughts and wishes, and attaining agreement on the health problem. The third section, 'Defining diagnosis and goals, planning and intervention', includes variables to strengthen the caller's participation in the planning, decision making, and intervention, personal adaption of information given, and a health promoting approach. The fourth section, 'Evaluation and con-

clusion’, includes variables to strengthen safety netting and the caller’s understanding. The fifth section, ‘Overall issues’, consists of variables essential for the whole conversation.

Nursing process		Assessment	Nursing diagnosis	Setting goals	Planning	Implementation	Evaluation
Sections in the Telenursing self-assessment tool	Opening the call	Listening and assessing	Defining diagnosis and goals, planning and intervention				Evaluation and conclusion

Figure 3. An overview of the phases in the nursing process and the sections in the Telenursing Self-Assessment Tool (TSAT).

Study 2

The process of developing Telenursing Interaction and Satisfaction Questionnaire (TISQ) was divided into two stages – development and judgement-quantification (Figure 4). In the second stage, judgement-quantification, the process was separated into two steps: cognitive interviews with callers and evaluation by an expert group (Grant & Davis 1997; Lynn 1986; Polit, Beck & Owen 2007; Streiner, Norman & Cairney 2015; Willis 1999). The theoretical model by Cox, IMCHB, guided the whole development process.

Figure 4. The development process for the Telenursing Interaction and Satisfaction Questionnaire (TISQ) in study 2

TISQ Development stage

An initial literature search was conducted to identify the domain satisfaction with TAN with specific focus on the interaction process. Variables relevant for satisfaction in healthcare were registered and sorted according to IMCHB, representing all categories in the model. From this pool of variables, the research group identified variables relevant for TAN. The identified variables were converted to an item pool and structured into a suitable sequence, version one of the questionnaire.

TISQ Judgment-quantification stage: callers

Cognitive interviews designed using the verbal probing technique were conducted with six callers. The callers were selected to achieve a variation in terms of sex, age of the patient, estimated complexity of the problem, etc. The selection and invitation were made by telenurses at TAN 1177.

The questionnaire was presented to the callers and they were instructed to read and answer every question aloud and encouraged to think aloud about their interpretation of the items and answering alternatives.

Open-ended verbal probes were used to expand the answers. All interviews were recorded and transcribed verbatim and were used to help develop the questionnaire. When miscomprehensions of wording or context were revealed, revisions were made to items, answering alternatives, headlines, the order of the questions, and instruction texts. All revisions were made after consensus discussions in the research group and with respect to IMCHB. This refinement resulted in the second version of the questionnaire.

TISQ Judgment-quantification stage: experts

Further evaluation of the questionnaire was performed using CVI as described in Study 1 above. Sixteen experts were invited to participate individually in a structured content validity process. The experts were chosen to reflect different viewing angles and they had varied professions and experience, including researchers in the fields of telenursing, quality of care, communication in nursing and instrument development, employees representing different organizational levels at the TAN 1177, and experts in psychology and evaluations of healthcare quality.

The experts were instructed to rate relevance of each item and the entire questionnaire, judge clarity of items and comprehensiveness of the questionnaire, and suggest any additional items. The experts were also encouraged to share comments. Responses were received from 12 experts. A CVI was computed based on the ratings from the experts both for each item and for the entire questionnaire. The CVI value for the entire questionnaire was above acceptable level. Items with a low value of I-CVI were revised or removed (Lynn 1986; Polit & Beck 2006). The experts' comments and suggestions were also analysed and a third version of the questionnaire was developed. All revisions were made after reaching consensus in the research group and with respect to the IMCHB and results from previous stages in the development process. No further evaluation of CVI was performed after the revision.

Telenursing Interaction and Satisfaction Questionnaire (TISQ)

The items in TISQ are sorted into four sections. The first section includes items on the caller's appraisal of the situation and expectations prior to the call. The second section contains items about the caller's perceived interaction with the telenurse and are divided into four subgroups according to IMCHB: affective support, health information, decisional control, and professional/technical competence. A satisfaction item directly follows each of the four subgroups on perceived interaction. The third section in TISQ consists of items covering overall caller satisfaction with the call. The fourth

section includes descriptive items of the specific call and the caller's demography.

Ethical considerations

These studies were performed according to the Principles of the Declaration of Helsinki (World Medical Association 2013). All involved callers, individuals in the expert groups, and telenurses were given information about the studies and that their participation was voluntary. All individuals in the panels of experts, telenurses, and callers were guaranteed that all data would be treated confidentially. No information reported in this thesis can be linked to any individual person. Since the first study was a theoretical development of a self-assessment tool without patient participation, ethical approval was not considered necessary. The study was part of a quality improvement project and was authorized by the manager of the unit. The second study was approved by the regional ethical review board in Linköping, Sweden (No. 2015/298-31).

DISCUSSION

The overall aim of these two studies was to develop tools to enable improvements and evaluations in communication and interpersonal competence in telenursing from the perspective of both the telenurse and the caller. In the first study, we developed the Telenursing Self-Assessment Tool (TSAT) aimed at raising telenurses' awareness of their communication and interpersonal competence as advocated by previous studies. To our knowledge, the self-assessment tool is the first scientifically developed formative tool that helps telenurses analyse their own calls regularly in a defined work routine. Among telenurses, the possibility to listen to and receive feedback on their own calls is seen as a prerequisite for developing professional communicative skills (Björkman et al. 2017). As a formative tool, TSAT guides the telenurse to follow the nursing process, to use a person-centred approach, and to use communicative methods and interpersonal behaviour to enhance caller satisfaction and patient safety. The TSAT might generate reflective thinking and considerations about alternative communication strategies among the telenurses. To enable evaluations of such telenurse communication training, we developed the Telenursing Interaction and Satisfaction Questionnaire (TISQ) as recommended by previous studies. This tool evaluates not only caller satisfaction but also caller perceived interaction. Since few studies have systematically explored callers' perceptions of the interaction with telenurses and how it relates to satisfaction with calls, an aim with this questionnaire was to enable better understanding of this relations. In addition, Gill and White (2009) recommended exploring patient's perceptions rather than solely measuring patient's satisfaction. To our knowledge, this tool is the first comprehensive questionnaire that assesses both the caller's satisfaction and the perception of the interaction in TAN.

Person centeredness

The TSAT has a person-centred approach that is considered as a desirable behaviour in healthcare and has been shown to increase both patient satisfaction, self-efficacy, and health status (Fors et al. 2016; Stewart et al. 2000). In a person-centred approach, the patient is seen as a person with resources and capabilities (The University of Gothenburg Centre for Person-centred Care 2016). This view complies with IMCHB's assumption that the client is capable of making competent, informed, and independent

choices about their healthcare behaviour (Cox 1982). The IMCHB also postulates that the client, within their internal and external limitations, should be given the maximum amount of control to determine their actions taken to preserve health status. In this regard, the professional is less of a decision maker and more of a counsellor, teacher, or technician. This approach is also in line with the self-care deficit nursing theory where the individual (patient) is viewed as an actor with power and capabilities (Orem 1997). A central idea in the theory is that mature human beings have learned and continually learn to meet necessary components of their own therapeutic self-care demands (Orem 1997). Similarly, the TSAT views the caller as a responsible and capable individual and encourages a shared decision-making. Moore & Kaplan (2018) describe a shared decision-making as a three-stage process: 1) the professional encourage or invite the patient to collaboration; 2) professional and patient exchange information about goals, experiences, and treatment options and collaborate to reach a common plan for action; and 3) the plan is affirmed and summarized by the professional and the patient to ensure mutual understanding). Several items in the TSAT represent all three stages.

The tool is meant to guide the telenurse to use a person-centred approach and it includes items about the whole process of shared decision-making, adapting information individually, and empathy. The tool also includes a specific item about avoiding being paternalistic. However, it may be questioned if it is possible to influence the telenurse's view of humans based on individual items in a self-assessment tool, as the matter may be too complex. The tool is supposed to generate reflection, to raise the awareness of possible alternative actions and approaches within the interaction, to raise awareness about own behaviour, and to stimulate a desire for more knowledge. The understanding and comprehension about the underlying view of the caller, the interaction, and the role of the professional are paramount. Thus, the TSAT is one part of the vast complex area of understanding and managing communication and interpersonal interactions. To maximize improvement of communication and interpersonal competence, systematic self-assessments of authentic calls with TSAT should be combined with in-depth education about the tool's fundamental values.

To evaluate person-centred care, the patient's own view is considered necessary (Street 2017). Using the TISQ, callers assess both their own perception of the interaction and the satisfaction with the interaction. The interaction-section in TISQ corresponds well with focus areas in existing measures of person-centred care such as shared understanding and decision-making, provision of tailored information, empathy, interest in patient's view, and emotional support (Street 2017; van der Eijk et al. 2012).

Improvement of communication and interpersonal competence in TAN

Several studies have propounded a variety of recommended actions to be taken in TAN to enhance patient safety, satisfaction, and agreement. However, there has not been any scientifically developed guidelines available as regards to the entire process in a TAN encounter. Since the development of TSAT is based on a thorough and continuously updated literature search and highly qualified experts and telenurses who assess the content validity in four steps, the content in the tool is considered relevant. Therefore, TSAT is an attempt to introduce a standard for the communication process in TAN, a strategy also suggested by Valanis et al. (2007). The purpose of such a standard is to encourage effective communication as well as to enable the assessment of the quality of the communication.

The nursing process was chosen as a structure in the TSAT since it is a well-established and tested cognitive process of problem solving used in all nursing areas (Yura and Walsh 1988). During each step in the development process of TSAT, the nursing process has become more explicitly described in the tool and is consistent with the six phases of the nursing process. When this study was initiated, the recommended work method in TAN 1177 did not correspond with the nursing process. However, the progress and findings from this study have continuously been reported to TAN 1177, which may have affected the recommended work method within TAN 1177 to gradually evolve towards a method more in line with the nursing process. To base healthcare on scientific ground is of utmost importance, and the TSAT contributes with scientifically developed guidelines for interaction and communication and for using the nursing process in TAN.

When the consensus discussions regarding the TSAT took place, there was a debate on the telenurses' responsibility for checking the caller's understanding of the plan of action. In a study concerning malpractice claims in TAN, the caller's understanding was only followed-up in six cases out of 41. To ensure the patient safety, researchers suggest that telenurses should check the callers' understanding by asking the caller to repeat the advice given (Ernesäter et al. 2012; Hansen Holm & Hunskaar 2011). Although not all the telenurses in the consensus discussion agreed on this, the research group decided to keep an item as 'The caller summarises the plan of action, either of their own accord or on request'. This action is described as a communication technique called "Teach back" and has recently been tested in a TAN context. The results from that study support our decision to emphasize this in the TSAT (Morony et al. 2018).

In TAN, CDSSs are widely used and in Sweden the system used by TAN 1177 includes assistance in medical triage, medical information, and information on self-care and healthcare instances, electronic documentation of patient records, and telephone technique. A study showed that telenurses in TAN 1177 work with CDSS rather than without it, but Ernesäter, Holmström & Engström (2009) emphasize the risk of a mechanized and undermined communication between the caller and the telenurse when using a CDSS and suggest that the CDSS should be adapted to enhance person-centeredness (Ernesäter et al. 2012). Ekman et al. (2011) conclude that although care providers today acknowledge person-centeredness as important, routines must be established to initiate, integrate, and safeguard that person-centeredness is systematically and consistently applied in daily practice. Thus, to increase the quality in TAN, variables in TSAT could be incorporated in CDSS and act as a support for effective interaction and communication, for example, by encouraging the telenurse to explore the caller's view, use open ended questions, emphasize shared decision making, and follow-up on the caller's understanding. This way of enhancing person-centeredness by adapting electronic support system is tested and supported in a recent study from the UK (Mann et al. 2018). In addition, the patient's record is suggested to include variables relevant for a person-centred approach such as the callers' preferences, beliefs, and involvement in decision-making (Ekman et al. 2011; Mann et al. 2018). Similarly, the patient record in CDSS could be adapted to enhance person-centeredness.

Patient satisfaction

The telenurse communication competence affects the caller's satisfaction with the call, and the patient's view is regarded as a necessity when evaluating communication. However, satisfaction rates tend to be generally high (Lake et al. 2017; Sitzia & Wood 1997) and it seems to be a challenge to capture nuances of patient satisfaction related to the interaction process. Based on a cross-country survey analysis, Bleich, Ozaltin and Murray (2009) states that the relation between patients' experience of healthcare and satisfaction is significant, but that the experience only explains 10% of the variations in satisfaction. They conclude that measuring satisfaction might not be the best approach for improving quality. To make it easier to identify problematic aspects of communication in need of improvement, it is recommended to explore specific aspects of the patient's perceived quality of the communication rather than assessing only patient satisfaction (Street 2017). Burt et al. (2017) showed that even when the focus in a patient survey is on the patient's perceived interaction quality, patient's positive responses have been shown to hide important negative experiences

(Burt et al. 2017). Because it seems that patients who do not use the most positive answering option have negative experiences, only the highest ratings should be regarded as satisfactory (Burt et al. 2017). With this in mind, TISQ evaluates both the caller's perceived interaction with the telenurse and satisfaction with the interaction, which may provide answers to which parts of the interaction require the most improvement as well as which parts of the interaction affect the satisfaction the most. With better knowledge about this, communication improvement and education in TAN can be tailored to enhance patient satisfaction, a view also promoted by Batbaatar et al. (2017).

Street (2017) suggests that evaluations of communication should include questions related to the achievement of the goals with the communication such as not just asking if the provider encourages the patient to engage in the decision-making, but ask if the patient actually did participate in the decision-making. In the TISQ, the questions are mostly formulated in that way: e.g., 'When you called, did you perceive that you and the nurse agreed on how to deal with your health problem?'. This is a goal in TAN: to reach agreement with the caller, which this question addresses. Another example of this type of question addresses advice: 'When you called, did you perceive that you received advice and information adapted to your needs and conditions at the time?'. This is also a goal with the communication – to adapt the information individually for each caller.

According to Allemann Iseli, Kunz & Blozik (2014), assessing patient satisfaction after teleconsultation and triage must cover the caller's perceived competence of the communication, the advice, and the organizational issues. Additional content domains, found in a review of existing patient satisfaction instruments within teleconsultation, were access to service, attitude of provider, attitude of patient, individual and background information, overall satisfaction, and perceived quality of professional competence of the staff. All these dimensions are represented in the TISQ, indicating that all are important and so far recommended areas are included in the questionnaire (Terwee et al. 2018).

Expectations are regarded as one of the most important predictors to satisfaction, and studies have revealed that unmet expectations correlate with patient dissatisfaction. These relations are not fully understood and further studies are needed (Batbaatar et al. 2017; Witiw et al. 2018). In TAN, the discrepancy between callers' expectations on recommended level of healthcare and the actual level of healthcare they received has been shown to affect patient satisfaction (Rahmqvist et al. 2011). Telenurses

have expressed difficulties managing calls where the callers expect a referral to a higher healthcare level than the telenurse assesses as relevant (Wahlberg, Cedersund & Wredling 2003). In these cases, the telenurse's communication competence is especially crucial (Ernesäter et al. 2016). A qualitative study showed a correlation between caller's expressions of concern and telenurse's expressions of disapproval (Ernesäter et al. 2016). The ability to have a person-centred approach and use a shared decision making process to reach an agreement of the plan of action is essential. In TISQ, there are items representing both expectations and the degree of met or unmet expectations. In addition, some items focus on person centeredness and shared decision-making.

The TISQ contains 60 items, and comments on the relatively large size of the questionnaire were given from both callers and the group of experts. When the assessment of CVI was performed, all items but one were rated as relevant. There are good reasons for this number of items. With the intention to evaluate both the caller's perceived interaction with the telenurse, and satisfaction with the interaction, and additionally to strengthen the content validity, all the interactional aspects described in the IMCHB are covered by detailed items followed by satisfaction ratings. This requires more items but might also enable further exploration about how the caller's perception of the interaction relates to satisfaction and thus elicits nuances of high caller satisfaction. Furthermore, descriptive variables are included in the 60 items, which will add valuable information that might have important impacts on satisfaction.

Additional methodological considerations

Content validity is described as the degree to which an instrument covers the construct to be studied (Polit & Beck 2012). A clear definition of the construct is thus fundamental when developing a new instrument but also when using existing instruments. It is, however, common that studies reporting on satisfaction instruments do not provide a theoretical foundation and conceptualization of the domain (Allemann Iseli, Kunz & Blozik 2014; Batbaatar et al. 2015). In these cases, content validity is not possible to assess and even when psychometric tests show good properties, there is no guarantee that all items are relevant or that no important areas are missing. It could be a very reliable measure, although it measures an incomplete or incorrect construct (Chiarotto et al. 2018; Terwee et al. 2018).

In both of the studies presented in this thesis, content validity was highly prioritized and were assessed in several steps. Compared to other

instrument development studies, the content validation was comprehensive and was carefully described. During the development processes of both of the tools, it has become clear that identifying the areas of domain in this setting was far more complicated and comprehensive than expected. Regarding TSAT, the identification of the domain ‘communication and interpersonal competence in telenursing with an impact on caller satisfaction and patient safety’ resulted in a summary as a base for the item generation. It could have been an advantage if this part of the development process was carried out as a separate literature review study, describing the dimensions in communication and interpersonal competence in relation to TAN interaction. During the development process of TISQ, it appeared that the concept of patient satisfaction was heterogeneously described and it was often mixed up with the concept of patient experience. Conflicting opinions regarding what to assess became apparent. Considering how common these assessments are, this is quite remarkably. Even this study could have been initiated with a formal literature review study clarifying the relevant concepts in a TAN context.

The CVI is well documented and commonly used, especially in nursing science, and it was chosen in both of these studies. The experts provided systematic assessments on every item and their comments and suggestions led to valuable improvements of the tools. To strengthen the content validity, the experts also assessed if the items covered the constructs. According to the method, all items with a CVI lower than accepted should be removed or refined. In some cases, this may be doubtful since the experts are chosen to reflect a range of opinions and experiences and not all of the experts might have the same deep understanding of all aspects of the trait. In both of the studies, exceptions were made to keep items with lower CVI than accepted because of convincing theoretical support.

In both studies, consensus group discussions or cognitive interviewing complemented CVI. These assessments were accomplished by the target population and added insight in addressing concerns experienced by the future users of the tools. This perspective is valuable for validity reasons but is also of importance for the telenurses’ motivation to use TSAT and for the callers’ motivation to complete the TISQ.

If the order of the content validation steps had been performed in the opposite order, the final versions of the tools might have become slightly different. In both of the studies, all improvements at all stages were made with respect to results from previous stages in the process and to theoretical findings.

Clinical implications

As a formative tool, the TSAT is meant to provide self-direction, feedback, and coaching and create learning opportunities (Duffy et al. 2004). In addition, TSAT guides the telenurse to follow the nursing process and to be person centred. The TSAT can contribute to the development of communication and interpersonal competence in TAN and is already in use within the TAN 1177 in Sweden.

The TISQ will enable explorations of the callers' perceptions and satisfaction with their interaction with TAN as well as the overall satisfaction with TAN. With better knowledge about this, improvement and education in telenursing communication can be tailored to enhance caller satisfaction.

Future studies

The TSAT is developed for use by telenurses themselves with the goal to improve their communication and interpersonal competences. These studies have highlighted the need for objective assessments of recorded TAN calls. This would enable the organization to easily follow-up on education and training, to perform quality assessments, and to analyse malpractice claims. If a neutral observer is to evaluate the communication and interpersonal behaviour in recorded TAN calls, a tool with that aim is needed. Thus, the TSAT has, outside this thesis, been initially tested as a tool for this purpose, and a study to develop an objective assessment tool based on TSAT is considered adequate and valuable.

The TISQ will be further evaluated in terms of psychometric properties. To better understand relations between different aspects of interaction and caller satisfaction, analyses from pilot testing of TISQ is recommended. Both of these tools were developed in Swedish and in a TAN context that only used audio conversations. The growth of nursing advice via multi-channel technology like social media, video, and Web chats will lead to other demands for evaluation and communication improvement tools. The TSAT and the TISQ may be suitable for further development or testing in other contexts or languages.

CONCLUSIONS

In summary, these studies describe the thorough process of developing and of assessing content validity of two theoretically anchored tools to enable improvements and evaluations in communication and interpersonal competence in telenursing from the perspective of both the telenurse and the caller.

The overall aim with these two studies was to develop tools to enable improvement and evaluation of communication and interpersonal competence in telenursing from the perspective of both the telenurse and the caller.

The TSAT is to be used by telenurses when analysing their own communication and interpersonal skills in order to become aware of their competence. The tool is meant to guide the telenurse to follow the nursing process and to be person centred, to provide self-direction, feedback, and coaching, and to create learning opportunities. The TISQ's aim is to explore callers' perceptions of the interaction with the telenurse and caller satisfaction and to enable further understanding about the relationships between caller and telenurse.

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