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SHORT COMMUNICATION

Proposal of Competencies in Telehealth: A Mixed-Methods Study in the Biobío Region, Chile

Propuesta de Competencias en Telesalud: Un Estudio Mixto en la Región del Biobío, Chile

Marcela Hechenleitner-Carvallo[1,2,3], Jacqueline Ibarra-Peso[1,2], Carlos Zúñiga-San Martín[1,2], Angélica Avendaño-Veloso[4,5], Eileen Sepúlveda-Valenzuela[4,5]

[1]Universidad Católica de la Santísima Concepción, Facultad de Medicina. Concepción, Chile.
[2]Observatorio Regional de Salud Digital, CRT Biobío, Chile.
[3]Oficina de Educación en Ciencias de la Salud, Facultad de Medicina. Concepción, Chile.
[4]Facultad de Medicina, Universidad de Concepción, Concepción, Chile.
[5]Centro Regional de Telemedicina y Telesalud del Biobío (CRT Biobío), Concepción, Chile.

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Corresponding author: Marcela Hechenleitner-Carvallo

ABSTRACT

Introduction: telehealth has become essential in the delivery of healthcare services, especially during the COVID-19 pandemic.
Objective: this study aims to identify the specific competencies needed for the effective implementation of telehealth in Biobío, Chile.
Method: a qualitative and quantitative validation of competencies was conducted. The qualitative phase included a focus group with professionals from various health areas to discuss and refine the competencies. The quantitative phase used the Telehealth Competency and Preparedness Perception Scale (EPPCT), employing a non-probabilistic convenience sampling (n=48) among health professionals in the Biobío region, Chile.
Results: the qualitative validation highlighted the importance of system efficiency and waitlist management, confidence, and education in the use of technologies, and continuous training. The quantitative validation identified two main dimensions: "Professional Excellence" and "Remote Clinical Approach," encompassing communication, ethical, legal, and technological aspects.
Conclusions: the proposed competencies are suitable for telehealth, emphasizing the need for continuous evaluation and training. An additional quantitative study is recommended to confirm and adjust the model, ensuring that healthcare professionals are prepared to face the challenges of remote care.

Keywords: Telehealth; Competencies; Validation; Healthcare Professionals.

RESUMEN

Introducción: la telesalud se ha vuelto esencial en la prestación de servicios de salud, especialmente durante la pandemia de COVID-19.
Objetivo: este estudio tiene como objetivo identificar las competencias específicas necesarias para la implementación efectiva de la telesalud, en Biobío, Chile.
Método: se realizó una validación cualitativa y cuantitativa de las competencias. La fase cualitativa incluyó un focus group con profesionales de diversas áreas de la salud, para discutir y refinar las competencias. La fase cuantitativa utilizó la Escala de Preparatividad y Percepción de Competencias en Telesalud (EPPCT), a

través de un muestreo no probabilístico por conveniencia (n=48) en profesionales de la salud de la región del Biobío, Chile.
Resultados: la validación cualitativa resaltó la importancia de la eficiencia del sistema y la gestión de listas de espera, la confianza y educación en el uso de tecnologías, y la capacitación continua. La validación cuantitativa identificó dos dimensiones principales: "Excelencia Profesional" y "Abordaje Clínico Remoto", que abarcan aspectos comunicacionales, éticos, legales, y tecnológicos.
Conclusiones: las competencias propuestas son adecuadas para la telesalud, destacando la necesidad de evaluación continua y capacitación. Se recomienda un estudio cuantitativo adicional para confirmar y ajustar el modelo, asegurando que los profesionales de la salud estén preparados para enfrentar los desafíos de la atención a distancia.

Palabras clave: Telesalud; Competencias; Validación; Profesionales de la Salud.

INTRODUCTION

Telehealth and telemedicine have become increasingly relevant in the delivery of healthcare services, especially during the COVID-19 pandemic.[1,2] Effective implementation requires specific knowledge, skills, and attitudes from healthcare professionals, some of which have been described in the literature.[3,4]

Among these knowledge, skills, and attitudes is, for example, the "applicability of telehealth," which refers to the ability of professionals to determine when and why to use it, considering the patient's readiness and the clinical context,[1] and adapting to specific needs.[5,6] On the other hand, "remote clinical care" involves obtaining and managing clinical information remotely to ensure quality care.[3] Professionals must effectively conduct anamnesis and physical examinations through digital platforms,[1] incorporating patient-generated data into the treatment plan.[7,8] Van Houwelingen and colleagues[8] explored the skills related to communication in telehealth, where professionals must communicate clearly with patients and their families, overcoming physical and technological barriers, in line with later proposals.[9,10]

"Networking and management" refer to the ability to coordinate and collaborate with other professionals, adequately managing information and data security, and quickly solving problems in a telematic environment.[1,3,4] Another area of competency is "professionalism in telehealth," which involves maintaining high professional standards in remote clinical practice.[3,7] Additionally, the work environment must be adapted, and distractions minimized to ensure quality care.[11] Mastery of information technology is essential in telehealth, where professionals must be skilled in using technological tools for remote care, such as videoconferencing platforms and electronic records.[1] The ability to troubleshoot technological issues and teach others to use these tools is basic.[4,11]

Finally, "patient privacy and security," including respect, confidentiality, and an ethical attitude during remote consultations, are critical components in telehealth. Professionals must know and adhere to the legal and ethical regulations that protect patient information during remote consultations.[3] Maintaining data confidentiality and security is required to preserve trust and integrity in telehealth interactions.[1] This aspect is especially relevant in a digital environment, where security breaches can compromise patient privacy.[4]

Telehealth competencies encompass the knowledge, skills, and attitudes required to deliver quality care in digital environments. These include the appropriate use of technology, the ability to assess when to use it, and ensuring patient privacy.[1,2] The previously described skills, such as "applicability of telehealth" and "remote clinical care," are key components of these competencies, essential for providing effective and ethical care.[3]

The objective of this work is to evaluate the relevance and adequacy of the competencies suggested in the literature through a mixed-methods research approach, adapting the recommendations to the local reality of Biobío, Chile, considering: a) the lack of a globally agreed-upon competency framework, b) the potential relevance of the sociocultural context for the implementation of telemedicine and telehealth, and c) the lack of evidence in the literature on this subject for the Biobío Region, Chile.

METHOD

This study employed a mixed-methods approach, with an exploratory, descriptive, and cross-sectional design. In the qualitative phase, a focus group was conducted with 14 key informants, consisting of professionals and clinicians from various disciplines with experience in telehealth services in the Biobío Region, Chile. Participants were selected based on their experience and knowledge in public health and health service administration. The session was moderated by an expert, and the discussions were recorded and transcribed for content analysis. The thematic categories and subcategories were identified using Atlas.Ti software.

Based on the qualitative evidence obtained, a structured scale called the Telehealth Competency and Preparedness Perception Scale (EPPCT) was developed. This scale was reviewed by seven experts selected

through purposive, non-probabilistic sampling, who assessed the relevance of each item. The Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated to ensure validity, eliminating items that did not meet the minimum CVR threshold of 0,71.

In the quantitative phase, the scale was administered to a sample of 83 health professionals, of which 48 completed the full survey, forming the valid final sample. The collected data were subjected to exploratory factor analysis (EFA), with varimax rotation, to identify underlying patterns in telehealth competencies. Prior to this, the adequacy of the data for factor analysis was verified using Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. Additionally, Cronbach's alpha was calculated to assess the internal consistency of the identified dimensions, with a threshold of 0,7 indicating acceptable reliability.

All statistical analyses were conducted using R software, with a significance level of $p < 0,05$ applied to all tests.

This study was approved by the Ethics Committee of the Universidad Católica de la Santísima Concepción (N° 60/2022). Informed consent was obtained from all participants prior to their inclusion in the study.

RESULTS

In the qualitative analysis, the competencies for telehealth proposed based on the literature were validated. One aspect discussed was system efficiency, as well as the management of waiting lists, prioritizing technological and human resources. The need to evaluate and adjust telehealth strategies according to each patient, especially in mental health, and the importance of continuous training and adherence to regulations were emphasized. It was suggested to rename "professionalism" as "professional excellence," highlighting adaptability and ongoing learning, and the need for specialists in medical and information technology language. It was noted that security and privacy criteria should be the same as in face-to-face care.

The quantitative validation was conducted with 48 healthcare professionals who fully completed the survey. Of the participants, 55,4 % were women, 43,4 % were men, and 1,2 % identified as another gender. The majority were Chilean (96,4 %), followed by Venezuelan (2,4 %) and Colombian (1,2 %), mainly comprising doctors (23,3 %), nurses (16,3 %), dentists (14 %), and nutritionists (11,6 %).

The results of Bartlett's test of sphericity indicate that the correlations between items are significantly different from zero ($x^2 = 2584,994$, $p < 0,001$, $df = 595$), and the overall Measure of Sampling Adequacy (MSA) value was 0,81, with most items having satisfactory MSA values (greater than 0,7), confirming that the data are suitable for factor analysis. Table 1 shows the results of the factor analysis for each item in the two rotated factors (varimax). The h2 column (communality) represents the proportion of the item's variance explained by the factors. The u2 column (uniqueness) is the unexplained variance. The com (complexity) column shows how many factors significantly explain each item.

Table 1. Factor Analysis Results

Item	Questions	MR1 (Factor 1)	MR2 (Factor 2)	h2	u2	com
P1	I explain to the patient the reasons and situations in which telehealth care should transition to in-person care.	0,79	0,01	0,62	0,38	1,0
P2	I use appropriate documentation and record systems for the telehealth modality.	0,72	0,29	0,60	0,40	1,3
P3	I adjust the treatment plan and recommendations to the patient's reality (conditions, motivations, etc.).	0,91	0,12	0,84	0,16	1,0
P4	I assess the patient's needs, preferences, and potential cultural, social, or linguistic barriers.	0,90	0,10	0,83	0,17	1,0
P5	I incorporate the observed environment of the patient to enhance the clinical evaluation and treatment plan.	0,85	0,11	0,74	0,26	1,0
P6	I am able to use telehealth as a tool to provide instructions to patients.	0,81	0,21	0,70	0,29	1,1
P7	I instruct the patient on the proper use of technologies for telehealth.	0,88	0,13	0,79	0,21	1,0
P8	During synchronous communication, I am clear and empathetic in my communication with the patient.	0,90	0,11	0,82	0,18	1,0
P9	At the end of the consultation, I ask the patient to indicate what they understood from the instructions.	0,90	0,12	0,82	0,18	1,0
P10	I use language appropriate for each patient, characterized by verbal clarity, minimal jargon, among other aspects.	0,93	0,16	0,89	0,10	1,1
P11	I effectively convey patient information to other professionals.	0,90	0,22	0,87	0,13	1,1
P12	I believe that telehealth can reduce patient flow during pandemics.	0,90	0,14	0,84	0,16	1,0

P13	I think telehealth can improve access to healthcare services.	0,92	0,15	0,87	0,13	1,1
P14	I think telehealth can complement the regular care provided by healthcare professionals.	0,93	0,17	0,89	0,11	1,1
P15	I conduct telehealth consultations in a way that establishes the patient's identity.	0,82	0,30	0,76	0,23	1,3
P16	I explain to patients how their privacy and security are maintained during the telehealth consultation.	0,59	0,54	0,63	0,37	2,0
P17	I determine if the benefits of telehealth outweigh the potential risks.	0,63	0,47	0,62	0,38	1,8
P18	I decide on potential changes in the healthcare delivery modality.	0,74	0,42	0,72	0,27	1,6
P19	I conduct clinical examinations and anamnesis remotely.	0,72	0,51	0,78	0,22	1,8
P20	I identify the type of information that can be obtained through remote clinical examination.	0,59	0,33	0,46	0,54	1,6
P21	I build a rapport with the patient and their family in telehealth.	0,12	0,81	0,67	0,33	1,0
P22	I act according to the patient referral protocols between professionals.	0,22	0,84	0,75	0,24	1,1
P23	I am aware of the internal and external resources of the healthcare system.	0,19	0,87	0,80	0,20	1,1
P24	I manage institutional software for telehealth.	0,16	0,91	0,86	0,13	1,1
P25	I understand when to switch between care modalities.	0,18	0,82	0,70	0,30	1,1
P26	I respond to clinical emergencies during telehealth exchanges.	0,32	0,79	0,73	0,26	1,3
P27	I act in accordance with the Telehealth Guidelines of the Ministry of Health.	0,14	0,87	0,77	0,23	1,0
P28	I conduct telehealth consultations while maintaining patient confidentiality.	0,15	0,84	0,73	0,27	1,1
P29	I follow up with patients who have been seen via telehealth.	0,25	0,91	0,89	0,10	1,1
P30	I assess patient satisfaction with the telehealth consultation.	0,23	0,93	0,91	0,08	1,1
P31	I identify technological limitations and how they affect the consultation.	0,07	0,83	0,69	0,30	1,0

The predominance of high factor loadings on Factor 1 suggests that this factor might represent general competencies or global perceptions of telehealth. Factor 2 appears to capture specific technical aspects, such as the use of technologies and the implementation of telehealth practices. The high communalities in most items indicate a good fit for the factorial model.

The first two factors explain 77 % of the total variance. Factor 1 contains 20 items and includes items P1 to P20. The analysis of its internal consistency indicates a Cronbach's Alpha coefficient of 0,978. This factor includes items related to the adequacy of the treatment plan, clarity in communication, evaluation of cultural and social barriers, and preparation for the consultation. Factor 2 consists of items P21 to P31. The analysis of its internal consistency indicates a Cronbach's Alpha coefficient of 0,975, and includes items related to acting according to telehealth guidelines, responding to clinical emergencies, and managing institutional software.

The results indicate that the scale consists of two dimensions. The first factor, renamed "Professional Excellence," encompasses communicational, ethical, legal, and professionalism aspects in telehealth. The second factor, "Remote Clinical Approach," includes elements of remote clinical care, networking, management, and information technologies (table 2).

Table 2. Proposal of dimensions and competences for telehealth

Dimension	Competences
Professional Excellence: A professional attitude characterized by the judicious use of knowledge, technical skills, clinical reasoning, technologies, and values in daily telehealth practice, always with the aim of benefiting the individual and the community.	1. Understand when and why to offer telehealth services, taking into consideration the preparedness of the patient, the professional, and the context to assess the provision of clinical care under this modality. 2. Establish close, sincere, and transparent communication with patients, their families/caregivers, and the healthcare team to strengthen the clinical relationship and the success of the health plan remotely. 3. Demonstrate a professional attitude characterized by knowledge, skills, techniques, clinical reasoning, and values in daily telehealth practice, always with the aim of benefiting the individual and the community. 4. Act in accordance with legal and ethical standards to safeguard the patient's security and privacy in telematic care.

Remote Clinical Approach: The acquisition of relevant clinical, personal, and contextual information to diagnose the patient, plan a health program, and conduct follow-up through information and communication technologies, ensuring quality and appropriate care through collaborative work among involved professionals and adherence to existing health and legal regulations.	5. Conduct a clinical intervention based on the biopsychosocial model for rehabilitation, healing, health promotion, and prevention remotely. 6. Plan, organize, and coordinate the work and resources of the telehealth team effectively based on policies, regulations, and protocols for the deployment of telehealth technologies. 7. Know and operate the necessary information and communication technologies to offer reliable and secure telematic clinical care.

DISCUSSION

The results of the focus group confirm the importance of evaluating system efficiency and management for the applicability of telehealth, affirming that it should be a complementary tool to in-person care, requiring a careful analysis of resources and patient needs.[3] This consensus opinion pertains to general considerations of telehealth and telemedicine and does not constitute a competency. In this research, seven competencies were validated, grouped into two dimensions (table 2). Some details regarding the dimensions and competencies are outlined below.

The "remote clinical approach" dimension requires professionals to perform diagnoses and treatments through digital platforms, posing challenges regarding the quality of care and the need for new protocols.[7] The integration of patient data into treatment plans needs further research.

The competency related to "effective communication" is perceived as fundamental to overcoming technological barriers and maintaining the doctor-patient relationship in a virtual environment.[11] Training in these skills can improve the patient experience and the effectiveness of treatment, especially in mental health.[10] The redefinition of "professionalism" as "professional excellence" underscores the need for high ethical standards and adaptability in a changing environment and how institutions can support this continuous update.[7]

"Patient privacy and security" is a central concern in telehealth. Professionals must be well-informed about legal and ethical regulations, and institutions should unify and standardize technological platforms to protect patient information and strengthen their trust in telehealth services.[4]

The findings of this study align with previous literature, particularly regarding the importance of technological and communication competencies in telehealth.[3,5] Similar to the study by Van Houwelingen et al.[8], our analysis highlights that "clear and empathetic communication" is key for overcoming technological barriers and maintaining an effective relationship between professionals and patients. However, our local focus in the Biobío region revealed particular aspects not previously reported, such as the need for enhanced training in waitlist management and system efficiency, which are not typically emphasized in studies from other contexts.[6] These results suggest that, while general telehealth competencies may be globally applicable, it is necessary to adapt training strategies to local sociocultural realities to ensure effective implementation.

CONCLUSIONS

The dimensions of competencies identified and selected from the literature are appropriate, and their effective implementation requires comprehensive and continuous training. The two identified dimensions were: 1) "Professional Excellence," containing four competency areas related to a professional attitude that applies knowledge, skills, clinical reasoning, technologies, and values in telehealth to benefit individuals, and 2) "Remote Clinical Approach," related to competency areas for obtaining relevant information to diagnose, plan, and follow a health program using information technologies, ensuring quality and collaborative care, while adhering to health and legal regulations.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Marcela Hechenleitner-Carvallo, Jacqueline Ibarra-Peso.
Data Curation: Marcela Hechenleitner-Carvallo.
Formal analysis: Marcela Hechenleitner-Carvallo.
Acquisition of funds: Carlos Zúñiga-San Martín, Angélica Avendaño-Veloso.
Research: Marcela Hechenleitner-Carvallo, Jacqueline Ibarra-Peso.
Methodology: Marcela Hechenleitner-Carvallo.
Project Administration: Carlos Zúñiga-San Martín, Angélica Avendaño-Veloso.
Resources: Marcela Hechenleitner-Carvallo, Jaqueline Ibarra-Peso.
Software: Eileen Sepúlveda-Valenzuela.
Supervision: Marcela Hechenleitner-Carvallo, Jacqueline Ibarra-Peso.
Validation: Marcela Hechenleitner-Carvallo.
Visualization: Marcela Hechenleitner-Carvallo, Jacqueline Ibarra-Peso.
Editing - original draft: Marcela Hechenleitner-Carvallo, Jacqueline Ibarra-Peso.
Writing - proofreading and editing: Eileen Sepúlveda-Valenzuela, Angélica Avendaño-Velos.