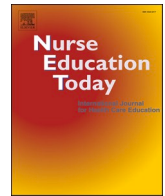




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Research article

Evaluation of the communication of nursing students in the simulated teleconsultation: A cross-sectional study

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ABSTRACT

Introduction: The COVID-19 pandemic presented universities with the challenge of virtualizing the teaching-learning process. Simulated teleconsultation has been used in undergraduate training, which allows nursing students to interact with simulated patients remotely. Studies have identified that distance imposes communication barriers on all elements—sender, receiver and message—and in both forms of transmission: verbal and nonverbal.

Objective: To describe the communication of nursing students in teleconsultation with simulated patients in the context of primary health care.

Methods: This was a descriptive, cross-sectional study of 92 fifth-year nursing students. The communication variable was measured with the Connect Identify Understand Agree Help scale. In the data analysis, the mean and standard deviation of the scores on the 29 items of the scale were determined, as were the mean values for the total scale and for the 3 domains of the scale.

Results: The items that presented an average of less than 1 were primarily those related to the Agree and Help to Act domain. The total mean was 1.15, and the means for the domains Connect, Identify and Understand Problems and Agree and Help to Act were 1.53, 0.90 and 1.28, respectively. A weakness in the exploration of the psychosocial context of the simulated patients was observed.

Conclusions: The results of this study, which evaluated communication in the context of distance care, corroborate the evidence regarding communication in real or simulated face-to-face situations. Studies that compare communication in various teaching-learning contexts, whether real or virtual, face-to-face or at a distance, are recommended.

1. Introduction

The COVID-19 pandemic presented universities with the challenge of virtualizing the teaching-learning process. New models of virtual teaching based on remote environments and assisted by technology have been applied, and their implementation has been viewed as an additional resource for teaching (Schwartzman, 2020). Based on these developments, health teaching practices have incorporated innovative educational strategies that go beyond traditional teaching practices (Marques, 2020).

Various information and communication technologies (ICTs) are

available, including e-portfolios, web-podcasting, wikis, special interest groups, structured objective clinical evaluations, tele-immersion and virtual environments. All of these are technological tools that can be used in nursing training to improve teaching processes, favor students' care management tools and promote the development of cognitive and psychomotor skills (De Almeida-Souza et al., 2015; Salvador et al., 2015).

In undergraduate training in particular, simulated teleconsultation has been used, allowing nursing students to interact remotely with simulated patients for consultation, evaluation, monitoring, treatment or education. Studies have concluded that simulated teleconsultation is

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a training modality for future nursing professionals that will help provide a safer and more adaptable workforce. Consequently, it is necessary to incorporate this methodology into the curriculum (Lister et al., 2018; Glinkowski et al., 2013). An American study used videoconferences with simulated patients in which nursing students provided care to a home-based geriatric patient. After the simulation, the students reported greater confidence in the attention they were able to provide through this modality (Lister et al., 2018). Another study conducted in Poland that aimed to evaluate nursing students' knowledge of and attitude toward teleconsultation found that of a total of 308 students, 75% regarded this modality as adequate and 70% agreed with the incorporation of related classes into the curriculum (Glinkowski et al., 2013).

In the literature, several studies have evaluated face-to-face simulated teaching in terms of satisfaction, quality, academic performance, self-efficacy and communication (Costa et al., 2020; Villegas et al., 2020; Franzone et al., 2020; Barrios-Araya et al., 2017). In particular, communication, defined as the effective delivery of information verbally, nonverbally or in writing (Shlafer et al., 2016), is highly significant in health care, where there is a direct relationship between professionals and users. In nursing, practical activities, the use of active methodologies, the participatory teaching-learning process, interdisciplinary work, and the use of spaces and pedagogical environments for personal reflection and the exchange of opinions are teaching-learning strategies used for the communication development (Oliveira et al., 2018; Rojas-Izquierdo and González-Escalona, 2018). In the nursing communication process, relationships are established with the patient and family members in a way that allows the nursing professional to promote the therapeutic relationship, meet the patient's needs and provide nursing care (Mastrapa and Lamadrid, 2016). Consequently, effective communication is of vital importance in the delivery of care to patients since it guarantees safe care and satisfies the patient's needs (Granheim et al., 2018; Boissy et al., 2016). An American study that evaluated the impact of communication skills training for physicians on patient satisfaction found that the intervention group had higher scores and that the intervention had a statistically significant relationship with patient satisfaction. Studies indicate that aspects of nurse-patient communication, such as dignified treatment, kindness, trust, credibility, interest, empathy, active listening, the use of understanding language and privacy, are related to the user's perception of the quality and safety of care provided (Mejía, 2006; Otero-Martínez, 2008).

In a simulated teleconsultation, the student and the simulated patient do not share a physical space. Studies have identified that distance imposes communicative barriers on all elements—sender, receiver and message—and both forms of transmission: verbal and nonverbal. An American study that explored the differences in nurses' perceptions of the effectiveness of learning in simulated learning environments and traditional clinical experiences showed a tendency toward a preference for traditional clinical experiences for learning skills related to communication (Gore, 2017). Regarding concerns about the use of distance communication to provide care, studies have revealed the need to develop nurses' communication skills for this modality (Barbosa et al., 2016; Barbosa and Silva, 2017).

Given the importance of developing this skill in nursing students, the School of Nursing of a Chilean university, after implementing the use of simulated teleconsultations for nurses in the context of primary health care (PHC), proposed evaluating students' communication with simulated patients to determine whether this teaching modality allows the student to develop effective communication.

In this context, the objective of this research is to describe nursing students' communication during teleconsultation with simulated patients in the PHC context.

2. Methods

2.1. Research design and participants

This research consisted of a descriptive, cross-sectional study with 92 fifth-year students enrolled in the nursing internship course of a Chilean university. The inclusion criteria were being enrolled in the internship course and agreeing to participate in the study.

2.2. Teleconsultation

The simulated teleconsultations lasted 30 min, and the students interacted with the simulated patients through interviews, evaluations and education. Clinical cases were related to the health management of adults, preschoolers and school-aged children. The health checks for adults focused on detecting signs and symptoms of disease decompensation, detecting risk factors for the onset of cardiovascular diseases and interpreting test results. The health checks for preschoolers and school-aged children considered lifestyle factors, disease prevention, risk behaviors and health promotion education. The communication platform was the ZOOM PRO application.

2.3. Measures

The communication variable was measured using the Connect Identify Understand Agree Help (CIUAH) scale, which was designed in Spain by Ruiz-Moral (2001) to evaluate the clinical relationship between a health professional and a patient. Its objective is to evaluate communication skills in the clinical setting. It is a multidimensional questionnaire composed of 29 Likert-type questions in 4 categories (not met: not applicable; 0: very rarely or rarely; 1: acceptable; 2: almost totally or totally). The elements are grouped into tasks and domains: Domain 1: Connect (elements 1–6); Domain 2: Identify and Understand Problems (Items 7–20); Domains 3 and 4: Accept and Help to Act (Items 21–29). The application of the scale begins when the professional and the user begin the consultation and continues until the last word is spoken. It should be noted that the scale's manual indicates the point in the interview at which each item should be evaluated. A total score is calculated, and the satisfactory or unsatisfactory completion of each element is determined. The minimum score for the scale is 0, and the maximum is 58. The cutoff point for each item to be considered satisfactorily completed is a mean of 1 or higher.

The scale was validated in Chile in a sample of 154 nursing students with a Cronbach's α of 0.95 and a factor analysis indicating the presence of 4 components that explained 67.78% of the total variance (Pérez et al., 2018).

2.4. Procedure

Data collection was conducted over a period of 6 weeks. Each week, students were invited via institutional email to participate in the research. The invitation email and informed consent form were created on the Google Forms platform and were accessible to the students. Once a student agreed to participate, the days and times of the teleconsultations that would be used for data collection were planned. During the teleconsultation, a researcher trained in applying the scale according to its user manual (Ruiz-Moral, 2001) entered the virtual room online with the audio and camera turned off and recorded the CIUAH scale data while the student interacted with the simulated patient. After the teleconsultation, the researcher immediately left the room. It should be noted that after the results were analyzed, the findings were disseminated to the involved students and teachers.

2.5. Data analysis

For the data analysis, the statistical program Statistical Package for

the Social Sciences (SPSS) version 20 was used, and the mean and standard deviation of the scores for the 29 items of the CIUAH scale and the means of the total scale and each of the 3 domains were determined. To compare the means of the scale items according to the type of patient (adult or child) involved in the teleconsultation, Student's *t*-test was used when the Levene test indicated equality of the variances, and the Mann-Whitney test was used when the Levene test did not indicate equality of variances. A significance level of 5% and a confidence interval of 95% were adopted.

2.6. Ethical aspects

The research complied with all relevant national regulations and institutional policies and with the principles of the Declaration of Helsinki. It was approved by the Scientific Ethics Committee of the Academic Institution under folio number CEC_FP_2021010.

The students were individually invited to participate in the study via an institutional email explaining the purpose and procedures of the study and allowing them to provide their informed consent.

3. Results

The 92 students had an average age of 28.8 (SD = 5.6) years, and 93.5% (86) were women. A total of 57.6% (53) performed an adult health check-up, and 42.4% (39) performed pediatric health monitoring.

Table 1 shows that in the Connect domain, the items related to adequate reception of the patient, empathy, kindness and the appropriate use of nonverbal language had a mean greater than 1, demonstrating satisfactory communication during patient reception. The item related to the use of the computer during communication had a mean of 0.98, that is, communication was unsatisfactory when the student had to communicate with the patient and operate the computer at the same time.

The items with a mean of less than 1 were those related to the Identify and Understand the Problem domain, including adequate visual-facial contact during the interview (Item 9, mean: 0.82) and exploring the patient's idea of his or her health status (Item 12, mean: 0.53), the feelings and emotions that arise from his or her health status (Item 13, mean: 0.47), how the patient's health condition affects his or her daily, family and work life (Item 14, mean: 0.23), the patient's expectations from the consultation (Item 15, mean: 0.30), and the patient's mood (Item 16, mean: 0.43). For these items, communication was unsatisfactory and was characterized by little exploration of the patient's feelings, emotions, expectations, mood, stressors and social/familial and work problems.

Regarding the Accept and Help to Act domain, all of the items had a mean greater than 1. Satisfactory communication was observed in terms of the information and explanations that the student offered the patient regarding his or her health condition and care needs. The exception was the item related to gaining the patient's explicit commitment to following the plan; for this item, the student's communication was unsatisfactory to obtain the patient's commitment to his or her treatment plan.

The analysis of the mean total score and domain scores showed that the Connect domain had a mean of 1.53, demonstrating satisfactory communication; this indicated that the student adequately received the patient at the beginning of the interview; remained friendly, courteous, polite and empathic throughout the interview; and adequately ended the interaction.

However, the Identify and Understand Problems domain had a mean of less than 1 (0.90), demonstrating unsatisfactory communication for the collection and exploration of patient information.

For the Agreeing and Helping to Act domain, the mean was 1.28, which indicated satisfactory communication for the resolution of the patients' problems and orientations (Table 2).

Table 1

Mean of the scores of each item of the CICA Scale.

Item	N	M	SD
Connect			
1. To what extent does the professional receive the patient adequately.	92	1.84	0.400
2. To what extent does the professional use the computer or other records in a way that does not alter communication.	92	0.98	0.491
3. To what extent does the professional is courteous and friendly during the interview.	92	1.84	0.371
4. To what extent is the professional's non-verbal language appropriate?	92	1.24	0.500
5. To what extent does the professional show empathy in the opportune moments.	92	1.58	0.539
6. To what extent does the professional adequately close the interview with the patient.	92	1.74	0.442
Identify and understand problems			
7. To what extent has the professional shown adequate reactivity.	91	1.26	0.534
8. To what extent does the professional facilitate the patient's speech.	92	1.40	0.575
9. To what extent does the professional establish and maintain adequate eye-facial contact throughout the interview.	92	0.82	0.610
10. To what extent the professional captures and responds to the clues offered by the patient.	92	1.35	0.686
11. To what extent does the professional use open questions.	92	1.40	0.575
12. To what extent does the professional explore the idea that the patient himself had about the origin and/or cause of his symptom or process.	92	0.53	0.762
13. To what extent has the professional explored the emotions and feelings that the symptom or process has provoked in the patient.	92	0.47	0.831
14. To what extent has the professional explored how his symptom or process affects the patient in his daily life, socio-family or work environment.	92	0.23	0.471
15. To what extent has the professional explored the expectations that the patient has for this consultation.	92	0.30	0.508
16. To what extent has the professional explored the patient's state of mind.	92	0.43	0.746
17. To what extent has the professional explored possible stressful life events for the patient.	92	0.78	0.677
18. To what extent has the professional explored the socio-family environment	92	1.21	0.734
19. To what extent has the professional explored risk factors or carried out preventive activities not related to demand.	92	1.09	0.690
20. To what extent has the professional summarized the information obtained from the patient.	91	1.29	0.602
Agree and help act			
21. To what extent does the professional try to explain the process or the main symptom presented by the patient.	92	1.38	0.552
22. To what extent does the professional try to explain the evolution that the process can follow.	92	1.14	0.639
23. To what extent does the professional offer information adapted to the problems and needs of the patient.	92	1.33	0.648
24. To what extent does the professional offer the information clearly.	92	1.47	0.637
25. To what extent does the professional give the patient the opportunity to participate in the decision-making of the consultation by encouraging them.	92	1.07	0.809
26. To what extent does the professional allow the patient to express their doubts.	92	1.68	0.553
27. If there is any discrepancy or disagreement between the professional and the patient, to what extent does the professional seek agreement (entering into discussion) and considering the opinions of the patient.	92	1.07	0.723
28. To what extent does the professional verify that the patient has understood the information provided.	92	1.52	0.687
29. To what extent does the professional obtain explicit commitments from the patient regarding the plan to follow.	91	0.91	0.740

M = mean; SD = standard deviation.

Table 2

Total mean and of each domain of the CICA Scale.

	M	SD
Total mean	1.15	0.44
Mean according to domains		
Domain 1: connect	1.53	0.35
Domain 2: identify and understand problems	0.90	0.44
Domain 3: agree and help act	1.28	0.25

M = mean; SD = standard deviation.

Regarding the comparison of the mean CIUAH items scores according to the type of teleconsultation (adult or child), [Table 3](#) shows that the items related to the exploration of stressful events in the lives of the patient (Item 17), the exploration of risk factors (Item 19), the summary of the information that the student obtained from the patient (Item 20) and the verification of that the patient understood all of the information (Item 28) had a statistically significantly higher mean for the adult patients than for the child patients.

4. Discussion

The study evaluated communication between nursing students and patients in a simulated teleconsultation, that is, distance care. It should be noted that the literature is scarce regarding the use of simulated teleconsultation in the training of nursing students; the literature has primarily evaluated communication skills in the context of face-to-face interviews with simulated patients. Studies have shown that nursing training based on interactions with simulated patients enables students to develop communication skills. In a study that explored nursing students' experiences related to psychiatric simulations using simulated patients, the students reported being satisfied with the simulation because they could learn how to communicate effectively and confidently ([Choi, 2012](#)). An experimental study of medical students examined whether the feedback of simulated patients improves the communication skills of students using the Liverpool Communication Skills Assessment Scale and found that the students showed a significant improvement in communication skills after receiving comments from simulated patients; without feedback, the item with the lowest mean was related to clarifying and summarizing the patient's health condition, and the item with the highest was related to audibility and general enunciation ([Qureshi and Zehra, 2020](#)).

Regarding the present study's evaluation of communication with the CIUAH scale, in the Connect domain, the students generally presented adequate reception of the patients, were courteous and kind to the patients and presented adequate nonverbal language and empathy. A study that evaluated the communicative capacity of medical students in face-to-face clinical interviews with the CIUAH Scale found that the items that had the greatest correlation with the total scale score were those related to courtesy and kindness during the interview, responsiveness and adequate visual contact ([Salazar-Blanco et al., 2014](#)).

Another study that analyzed the relationship between socioemotional competencies and performance in simulated clinical practices in a sample of 4th-year nursing students using the Health Professionals Communication Skills Scale (HP-CSS) found that women had the highest scores on the dimensions of empathy and respect. They concluded that students with higher levels of empathy, informative communication, respect and assertiveness performed well in the clinical simulation ([Sánchez-Expósito et al., 2018](#)).

The skills involved in the communication process, such as empathy, respect and kindness, positively influence nursing professionals' patient care processes and increase the quality of care provided ([Oviedo et al., 2020](#)).

For the Identify and Understand Problems domain of the CIUAH scale, a global mean of less than 1 was observed for items related to the

Table 3

Comparison of the means of the items of the CICA Scale according to the type of control (adult and child) of the teleconsultations.

Item	Query type	N	M	SD	Typ. mean	p
1	Adult control	53	1.87	0.342	0.047	0.390
	Child control	39	1.79	0.469	0.075	
2	Adult control	53	1.00	0.519	0.071	0.623
	Child control	39	0.95	0.456	0.073	
3	Adult control	53	1.83	0.379	0.052	0.840
	Child control	39	1.85	0.366	0.059	
4	Adult control	53	1.21	0.532	0.073	0.843
	Child control	39	1.28	0.456	0.073	
5	Adult control	53	1.49	0.541	0.074	0.76
	Child control	39	1.69	0.521	0.083	
6	Adult control	53	1.75	0.434	0.060	0.695
	Child control	39	1.72	0.456	0.073	
7	Adult control	52	1.29	0.536	0.074	0.613
	Child control	39	1.23	0.536	0.086	
8	Adult control	53	1.38	0.596	0.082	0.632
	Child control	39	1.44	0.552	0.088	
9	Adult control	53	0.87	0.621	0.085	0.337
	Child control	39	0.74	0.595	0.095	
10	Adult control	53	1.36	0.710	0.097	0.863
	Child control	39	1.33	0.662	0.106	
11	Adult control	53	1.36	0.558	0.077	0.399
	Child control	39	1.46	0.600	0.096	
12	Adult control	53	0.51	0.697	0.096	0.736
	Child control	39	0.56	0.852	0.136	
13	Adult control	53	0.36	0.682	0.094	0.308
	Child control	39	0.62	0.990	0.158	
14	Adult control	53	0.25	0.515	0.071	0.689
	Child control	39	0.21	0.409	0.066	
15	Adult control	53	0.23	0.466	0.064	0.068
	Child control	39	0.41	0.549	0.088	
16	Adult control	53	0.32	0.613	0.084	0.157
	Child control	39	0.59	0.880	0.141	
17	Adult control	53	0.94	0.663	0.091	0.007^a
	Child control	39	0.56	0.641	0.103	
18	Adult control	53	1.32	0.754	0.104	0.061
	Child control	39	1.05	0.686	0.110	
19	Adult control	53	1.25	0.648	0.089	0.010^a
	Child control	39	0.87	0.695	0.111	
20	Adult control	52	1.44	0.608	0.084	0.003^b
	Child control	39	1.08	0.532	0.085	
21	Adult control	53	1.45	0.574	0.079	0.500
	Child control	39	1.28	0.510	0.082	
22	Adult control	53	1.09	0.714	0.098	0.414
	Child control	39	1.21	0.522	0.084	
23	Adult control	53	1.30	0.696	0.096	0.679
	Child control	39	1.36	0.584	0.094	
24	Adult control	53	1.55	0.637	0.088	0.162
	Child control	39	1.36	0.628	0.101	
25	Adult control	53	1.02	0.866	0.119	0.525
	Child control	39	1.13	0.732	0.117	
26	Adult control	53	1.72	0.533	0.073	0.518
	Child control	39	1.64	0.584	0.094	
27	Adult control	53	1.09	0.741	0.102	0.655
	Child control	39	1.03	0.707	0.113	
28	Adult control	53	1.64	0.623	0.086	0.044^b
	Child control	39	1.36	0.743	0.119	
29	Adult control	52	0.92	0.737	0.102	0.871
	Child control	39	0.90	0.754	0.121	

M = mean; SD = standard deviation.

^a Student *t*-test.^b Mann-Whitney.

exploration of the patient's feelings and emotions, stressful situations and mood in relation to their health condition, which could indicate that the students had difficulties with communication within the psychosocial sphere. Studies that evaluated students' communication in simulated or real scenarios using the CIUAH Scale corroborate the results of the present study. Those studies found the worst scores for items related to interpreting and understanding patients' problems and observed that communication was more focused on the biological aspects of the disease than on the emotional relationship emphasized by the

biopsychosocial model (Salazar-Blanco et al., 2014; Sánchez-Expósito et al., 2018).

Another item that presented low scores was related to the exploration of the patients' expectations of the teleconsultation; in addition, low participation of the simulated patients was observed. Regarding the low exploration of patient expectations by the students and the low participation of the patients, the literature reports that such discussions depend on professional's ability to stimulate the patient and on the patient's own motivation and knowledge (Casasbuenas-Duarte, 2012). In a study on patients' perceptions of decision-making in the context of PHC, patients indicated that their opinion was not always considered due to their lack of knowledge (Paniello, 2021).

Regarding the patient type (adult vs. child), a statistically significant difference was observed mainly for the items related to the exploration of stressors and risk factors, which had higher mean scores when the patient was an adult. It should be noted that the teleconsultations for children were carried out with a simulated caregiver, without the presence of a child. The literature reports that talking about children's psychological and social problems with families can be a challenge for health professionals (Tallon et al., 2017), who are hesitant to talk about children's psychosocial problems with their parents for fear of bringing a variety of complex problems to light (Bell, 2013).

4.1. Limitations

This study did not analyze the simulated patients' or teachers' perceptions of the students' communication, which is a basic variable that should be included for a more comprehensive assessment of the communicative process. In addition, each student was observed in only 1 consultation, which did not allow a definitive evaluation of his or her communicative ability. On the other hand, simulated patient training using a script may have limited the simulated patients' participation in the consultations. Other circumstances may also have affected the students' performance, such as having to fill out a form during the consultation and being evaluated by their teachers. The scarcity of studies using the CIUAH scale and studies that examine communication in distance care limited comparisons of the present study's findings.

5. Conclusions

The scores for items related to the exploration of the psychosocial issues with the patients were low. It can be concluded that increasing and integrating knowledge, skills and training in the psychosocial sciences will provide students and future professionals with valid tools for addressing the psychosocial problems of patients and possibly their families and community.

The results of this study, which evaluated communication in the context of distance care, corroborate the evidence regarding communication in real or simulated face-to-face situations. Studies that compare communication in various teaching-learning contexts, whether real or virtual, face-to-face or at a distance, are recommended. In addition, the question remains of whether these various contexts effectively influence students' communication with patients or represent gaps in the development of communication throughout students' training. For this question, experimental or quasi-experimental studies with two or more groups are suggested, where the effect of teleconsultation on communication can be effectively evaluated when compared to traditional teaching-learning activities or other simulated contexts.

The development of communication skills as part of the training of nursing students is a cornerstone of nursing care, since nursing professionals consider the biological, psychological and social aspects that are always present in human behavior and consider the patient's relationship with his or her environment. In other words, nurses study patients' responses on the basis of a comprehensive understanding of the individual and consider biopsychosocial factors.

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Ethical approval was sought and received from the independent ethical commission of the University.

CRediT authorship contribution statement

Michel Albert Garat Escudero: the conception and design of the study, ideas; formulation of overarching research goals and aims.

Natalia Fernanda Rodriguez Nuñez: the conception and design of the study, ideas; formulation of overarching research goals and aims.

Mónica Del Pilar Valenzuela Vidal: contributed to design and the drafting of the manuscript, contributed to the design of the study.

Andrea Eliana Alvarado Quinteros: contributed to design and the drafting of the manuscript, contributed to the design of the study.

Paulina Marlén Salgado Torres: contributed to interpretation of data.

Claudia Andrea González Montoya: contributed to interpretation of data.

Maria Cecilia Toffoletto: acted as overall supervisor, co-designed and supervised the design of the project, performed of the acquisition of data, analysis, and interpretation of data, drafting of the manuscript.

All authors contributed to the critical revision of the manuscript, approved the final manuscript for publication and have agreed to be accountable for the final work.

Declaration of competing interest

None applicable.

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