

## Review articles

# Augmentative and alternative communication with adults and elderly in the hospital environment: an integrative literature review

**Diego Nascimento de Carvalho**<sup>1</sup><https://orcid.org/0000-0001-8015-1236>**Ítala da Piedade Queiroz**<sup>1</sup><https://orcid.org/0000-0001-6758-9700>**Brenda Carla Lima Araújo**<sup>1</sup><https://orcid.org/0000-0002-4720-1710>**Sindy Lamônia do Espírito Santo Barbosa**<sup>1</sup><https://orcid.org/0000-0003-3811-3089>**Vanessa Cibelle Barboza de Carvalho**<sup>1</sup><https://orcid.org/0000-0002-1784-0327>**Susana de Carvalho**<sup>1</sup><https://orcid.org/0000-0001-8708-3205>

<sup>1</sup> Universidade Federal de Sergipe, Aracaju, Sergipe, Brasil.

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## ABSTRACT

**Objective:** to carry out an integrative review about the augmentative and alternative communication strategies used with adults and the elderly in the hospital environment and their impact on communication.

**Methods:** this research study used the integrative review methodology with descriptors in English and Portuguese: 'communication', 'hospitals', 'communication aids for the disabled', in the following databases: LILACS, PubMed, Cinahl, Cochrane Library, SciELO, Scopus, Web of Science. Several articles in English and Portuguese, from the last 14 years, which addressed alternative communication strategies used with hospitalized adults and the elderly, were included. Studies on children, as well as duplicates, reviews, and those that addressed other methods of communication were excluded.

**Results:** 13 articles characterized the alternative communication strategies used with adults and the elderly. There was a prevalence of intubated or tracheostomized patients, and health professionals, nurses being the ones with the highest citation, and researches on a qualitative approach. Six studies have used high and low technologies; however, most have shown a greater use of low-tech tools.

**Conclusion:** a variety of high and low-tech strategies were identified, a reduction in communication difficulties being noted, as well as improvements in the quality of life and communication with professionals. The most used tool was the communication board, due to its hospitals' availability and its simple use. The evaluation and the effectiveness of communication tools in distinct clinical settings and profiles should be studied.

**Keywords:** Communications; Hospitals; Communication Barriers

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**Corresponding address:**

Diego Nascimento de Carvalho  
Rua B1, 201, São Conrado, Cond Recanto  
das Garças, Bloco 02, Ap 104  
CEP: 49042-844 - Aracaju, Sergipe, Brasil  
E-mail: difonodialogia@hotmail.com

## INTRODUCTION

Communication is a paramount element of human life. It works through natural speech, from childhood to adulthood. It comprises an exchange of feelings and needs between people. When a message is transmitted, people use language that, whether spoken, written, or signed, encompasses a system that conveys meaning<sup>1</sup>.

During hospitalization, several situations can cause difficulties in communication. These difficulties can occur due to the physical and social environment, by the context and its factors, performance standards, and skills, which can influence the patient-medical team and patient-family relationships. Besides, changes in the communicative process can also make it difficult to understand the patient's needs, during hospital care and may have an impact on frustrated and depressed patients<sup>2</sup>.

Augmentative and/or alternative communication (AAC) is one of the areas of assistive technology that meets the demands of individuals with communication disorders, characterized by impairments in production and/or understanding, through spoken and written communication. For its implementation, it uses a series of techniques, tools, computerized communication systems, speech-generating devices including image communication boards, pictographic symbols, real objects, signs, gestures, and writing to help the individual to express thoughts, desires, needs, feelings, and ideas<sup>3</sup>. It is augmentative when used to complement existing speech and when the person already has communicative skills, and as an alternative when used instead of speech that is absent or not functional. It can be temporary, when used by patients in the postoperative period in intensive care, or permanent when used by an individual who will require the use of a strategy throughout one's life<sup>4,5</sup>.

In the implementation of the AAC, three types of communication tool can be used: those that are not assistive, that is, that do not use any type of material resource, being used only the body itself as a communication tool; low tech (LT) systems, handcrafted resources, such as communication boards; and high tech (HT) systems, such as computerized systems<sup>6</sup>.

The purpose of AAC is to investigate and enhance the preserved functions to establish the best possible exchange of communication in the patient's life. It is not a technique, but an approach that can be used in

several situations in life<sup>7</sup>. It can also benefit from new social opportunities, convey needs, opinions, and provide communicative strategies, to facilitate the establishment of bonds, facilitate decision making or express feelings, with consequent empowerment of the subject<sup>8</sup>.

The main pathologies observed in the literature, in the hospital environment, that are indications of the use of alternative communication tools, permanent or not, are chronic encephalopathy, intellectual disability, apraxia, oral dyspraxia, aphasia, dysarthria, traumatic brain injuries, degenerative motor neuron diseases, tracheostomized, intubated, head and neck cancer, and others<sup>9</sup>. In these situations, the option of using the augmentative and/or alternative communication system makes the difference, as it makes the user more independent, besides guaranteeing one's autonomy and participation in decisions about the treatment.

The interest in the construction of this review arose from the lack of standardization of augmentative and/or alternative communication in a hospital environment, with the identification of errors and difficulties of the professionals during the application of alternative resources in patients with communication limitations. Thus, the present study aims to analyze the augmentative and/or alternative communication strategies, used with adults and the elderly in the hospital environment, and the byproducts on communication, evidenced in the literature.

## METHODS

This research used the integrative review methodology that aims to understand the analyzed topic, in addition to unifying and synthesizing the results of evaluated studies, contributing to the improvement of clinical practice and patient care. The six methodological steps taken for the construction of the review were: definition of the research question, establishment of inclusion and exclusion criteria by searching the literature, definition of the information to be extracted from the studies, evaluation of the included studies, interpretation of the results, and presentation of the review<sup>10</sup>.

To guide the survey and discussion of the researches, the following guiding question was formulated: What are the augmentative and/or alternative communication strategies used with adults and the elderly in the hospital environment?

## Research Strategy

For the survey of papers, a search was conducted in 2019, in the following databases: Latin American and Caribbean Literature in Health Sciences (LILACS), Public Medicine Library (PubMed), CINAHL with Full Text, Cochrane Library, Scientific Electronic Library Online (SciELO), Scopus (Elsevier), and Web of Science. A search was performed for the descriptors in English and Portuguese: 'communication' and 'hospitals' and 'communication barriers' extracted from Medical Subject Headings (MeSH) and *Descritores em Ciências da Saúde* – Health Sciences Descriptors – (DeCS). The terms used were combined with the Boolean operator AND/e in each database.

## Inclusion Criteria

Scientific articles with full access that were available in the databases, published in English and Portuguese, studies from the last 14 years (2004 to 2018) that addressed the topic of augmentative and/or alternative communication, and in hospitalized patients (adults and elderly), were selected.

## Exclusion Criteria

Studies that were duplicated, conducted with children, reviews, that addressed other communication methods (speech valve, tracheoesophageal prosthesis, esophageal voice, and electronic larynx), and not available in full in the databases were excluded.

## Data collection and analysis

Initially, papers were searched and identified, titles and abstracts were evaluated, followed by full reading and final selection of studies for this review, by two reviewers, independently, considering the inclusion and exclusion criteria; upon disagreement, a third reviewer would evaluate the inclusion or exclusion of the study.

Subsequently, a validated and adapted instrument from Ursi<sup>11</sup> (Figure 1) was used for data collection and analysis of the papers, which covers the items: identification of the paper, methodological characteristics of the study, evaluation of methodological rigor and measured interventions, and results found.

Additionally, the studies were classified, according to the levels of evidence employed and adapted from Ursi<sup>11</sup>: Level I - Evidence of systematic review or meta-analysis of all relevant randomized controlled clinical trials; Level II - Evidence derived from at least one well-designed randomized controlled clinical trial; Level III - Evidence obtained from well-designed clinical trials without randomization; Level IV - Evidence from well-designed cohort and case-control studies; Level V - Evidence originating from a systematic review of descriptive and qualitative studies; Level VI - Evidence derived from a single descriptive or qualitative study; Level VII - Evidence from the opinion of authorities, transversal of mixed methods, unspecified literature review studies, retrospective clinical studies and case studies. The data were described using absolute (n) and relative (%) frequencies.

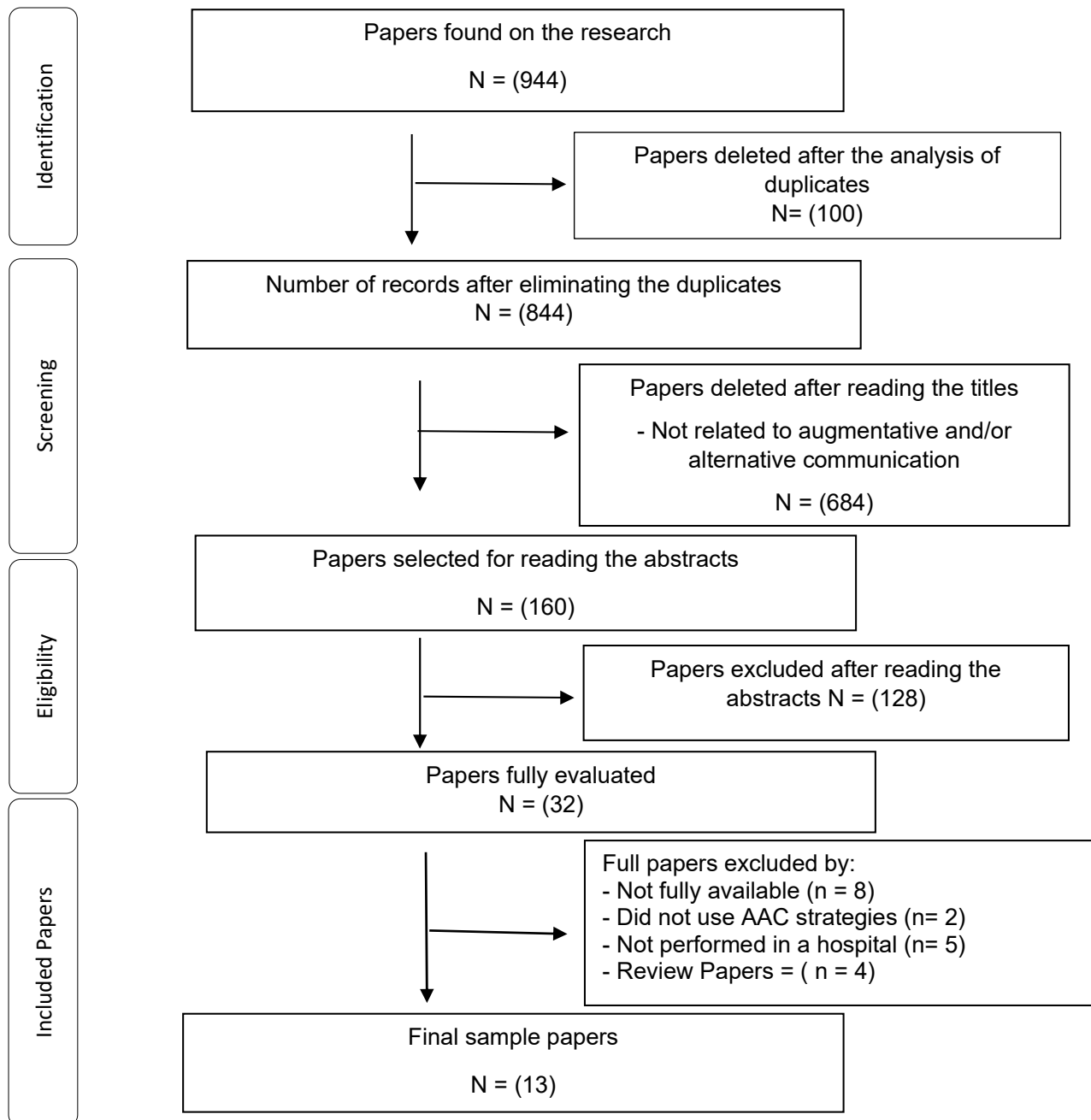
<b>A. Identification</b>	
Title of the Paper	
Journal's Name	
Authors	
Country	Name _____ Workplace _____ Undergraduate Course _____
Language	
Year of Publication	
<b>B. Study's Institution</b>	
Hospital	
University	
Research Center	
Only one Institution	
Multicentric Research	
Other Institutions	
Location not specified	
<b>C. Type of Publication</b>	
Nursery Publishing	
Medicine Publishing	
Other Health Field. Which?	
<b>D. Methodological Characteristics of the Study</b>	
1. Type of Publication	1.1 Research <input type="checkbox"/> Quantitative Approach <input type="checkbox"/> Experimental Design <input type="checkbox"/> Quasi-Experimental Design <input type="checkbox"/> Non-Experimental Design <input type="checkbox"/> Qualitative Approach 1.2 Not Research <input type="checkbox"/> Literature Review <input type="checkbox"/> Experience Report <input type="checkbox"/> Other _____
2. Objective or Research Question	
3. Sample	3.1 Selection <input type="checkbox"/> Random <input type="checkbox"/> Convenience <input type="checkbox"/> Other _____ 3.2 Size (n) <input type="checkbox"/> Initial _____ <input type="checkbox"/> Final _____ 3.3 Features Age _____ Gender: <input type="checkbox"/> M <input type="checkbox"/> F Race _____ Diagnosis _____ Type of Surgery _____ 3.4 Inclusion/Exclusion Criteria _____ _____
4. Data Processing	
5. Interventions Performed	5.1 Independent Variable _____ 5.2 Dependent Variable _____ 5.3 Control Group: yes <input type="checkbox"/> no <input type="checkbox"/> 5.4 Measurement Instruments: yes <input type="checkbox"/> no <input type="checkbox"/> 5.5 Study Duration _____ 5.6. Methods used for measuring the intervention _____ _____
6. Results	
7. Analysis	7.1 Statistical Treatment _____ 7.2 Significance Level _____
8. Implications	8.1 The conclusions are justified based on the data _____  8.2 Which are the author's recommendations? _____ _____
9. Level of Evidence	
<b>E. Evaluation of the Methodological Rigor</b>	
Clarity in identifying the methodological trajectory of the text (method used, participating subjects, inclusion/exclusion criteria, intervention, results)	
Identification of Biases or Limitations	

**Figure 1.** The instrument for data collection (Validity by Ursi, 2006)

## LITERATURE REVIEW

In this study, a review of the researches that used augmentative and/or alternative communication strategies for the care of hospitalized patients and their

impact on communication is presented. According to the established criteria, 13 articles were included in the analysis. The selection process of the papers is described in Figure 2 and follows the adapted PRISMA model<sup>12</sup>.



Caption: AAC = augmentative and/or alternative communication

**Figure 2.** Flowchart adapted from PRISMA of the reviewed and analyzed papers

From the search in the selected databases, 944 papers were found. Of these, 100 were excluded due to duplication. After reading the titles, 684 were discarded for not addressing the topic “augmentative and/or alternative communication” and 128 after reading the abstracts, for the same reason. Eight papers were eliminated due to the unavailability of the full text. After reading the articles in full, 11 were excluded, two

because they did not use the strategies of interest, five were not performed in a hospital environment and four were review papers.

The summary of the 13 papers examined, presented in Figure 3, covers the following data: author, year and country of publication, title, participants, strategies used, type of technology, location, level of evidence, and results.

Author, Year and Origin	Title	Participants	Strategies used and type of technology	Location and Level of Evidence	Results
Happ et al. (2014) <sup>13</sup> United States	Effect of a multi-level intervention on nurse-patient communication in the intensive care unit: results of the SPEACS trial.	Intubated or tracheostomized patients, awake, answering to commands and nurses trained by a speech therapist in the use of AAC	<b>LT:</b> pen, paper, AAC board, and spiral notebooks <b>HT:</b> speech generator device	ICU Level IV	The frequency of communication acts increased, reflecting on the improvement of care and understanding of symptoms and degree of pain by the nurses. The patients reported a reduction in communication difficulties.
Rodriguez et al. (2016) <sup>14</sup> United States	Enhancing the communication of suddenly speechless critical care patients	Hospitalized patients with the ability to see and use an upper limb	<b>LT:</b> pen, paper, and gestures <b>HT:</b> tablet with software containing pictograms and phrases	ICU Level IV	Compared with the participants in the control group (use of LT), the intervention group (use of HT) showed greater ease in using the communication strategy during hospitalization and reduced frustration levels.
Rodriguez and Rowe (2010) <sup>15</sup> United States	Use of a speech-generating device for hospitalized postoperative patients with head and neck cancer experiencing speechlessness.	Hospitalized patients that could use their upper limbs	<b>HT:</b> speech generator device	ICU Level VI	Participants demonstrated a significant improvement in the use of the HT device throughout the research. The technology was considered important during the postoperative period, however, the authors referred to a delay in understanding by professionals and the need to use other strategies.
Ho et al. (2005) <sup>16</sup> United States	The effect of remnant and pictographic books on the communicative interaction of individuals with global aphasia	Hospitalized patients with functional hearing and vision that were able to use an upper limb, and speech therapist	<b>LT:</b> notebook with pictographic symbols (phrases and images)	Ward Level VI	Patients presented fewer communication failures when using the LT strategy, besides reporting a reduction in the level of frustration and stress after its use.
Miglietta et al. (2004) <sup>17</sup> United States	Computer-assisted Communication for critically ill patients: A pilot study	Intubated or tracheotomized patients without sedation with functional hearing, doctors, nurses, physiotherapist, and occupational therapist	<b>HT:</b> computer with AAC software (LifeVoice)	ICU Level VI	Patients reported that the system helped them to meet their needs and wants. The hospital team concluded that the device improved patient treatment, care, and comfort.
Happ et al. (2011) <sup>18</sup> United States	Nurse-patient communication interactions in the intensive care unit	Intubated or tracheostomized patients without sedation with functional hearing and nurses with no experience in AAC	<b>LT:</b> gestures, facial expression, writing, and drawing	ICU Level IV	The study shows that 70% of communication exchanges were successful. Patients rated 40% of communication with nurses as difficult to extremely difficult. AAC's strategies were unusual, with little or no use.
Nilsen et al. (2014) <sup>19</sup> United States	Nurse and patient interaction behaviors' effects on nursing care quality for mechanically ventilated older adults in the ICU	Intubated or tracheostomized awake patients, responding to commands and nurses with no experience in AAC	<b>LT:</b> alphabetical board, images, writing, and gestures <b>HT:</b> speech generator device	ICU Level VI	The study provides evidence that the difficulty in understanding the use of strategies affects communication and quality of care. Low-tech strategies were the most used by professionals and patients.
Happ et al (2004) <sup>20</sup> United States	Communication ability, method, and content among nonspeaking non-surviving patients treated with mechanical ventilation in the intensive care unit	Intubated or tracheostomized patients	<b>LT:</b> gestures, writing, and nods	ICU Level VI	Most communication episodes occurred in the absence of physical and motor limitations of the patients. The content of the communication was mainly related to pain, clinical symptoms, feelings, and physical needs.

Author, Year and Origin	Title	Participants	Strategies used and type of technology	Location and Level of Evidence	Results
Happ et al. (2005) <sup>21</sup> United States	Patient communication following head and neck cancer surgery: a pilot study using electronic speech-generating devices	Intubated or tracheostomized patients without sedation, responding to commands, doctors, and nurses	<b>LT:</b> pen, paper, and gestures <b>HT:</b> speech generator device	Surgical ward Level VI	The study shows the greater use of LT strategies, however, those of HT were used more frequently for more complex communication. The study highlights the need for the presence of the speech therapist for assessment, adaptations, and training of the team.
Pelossi and Nascimento (2018) <sup>22</sup> Brazil	Use of alternative communication resources for hospital intervention: perception of patients and occupational therapists	Hospitalized patients with preserved understanding and responding to simple commands and occupational therapists with specialization in AAC	<b>LT:</b> communication boards <b>HT:</b> a tablet with apps (Que-fala and Go-talk now), laptop with software (Boordmaker and Speaking Dynamically)	ICU Level VI	The results showed that the tablet with boards was the resource chosen by patients and occupational therapists as the most indicated to facilitate communication in the hospital environment and the main factors that motivated the choice were the ease of touch and the possibility of sound production.
Holm and Dreyer (2018) <sup>23</sup> Denmark	Nurse-patient communication within the context of non sedated mechanical ventilation: A hermeneutic-phenomenological study	Intubated or tracheostomized patients without sedation and nurses with no experience in AAC	<b>LT:</b> pen, paper, alphabetical board, and pictograms	ICU Level VI	The nurses' lack of experience in using the AAC and the patient's frustration due to the lack of understanding of the strategies. Cognitive deficits, motor changes, and fatigue compromised the use of the tools, requiring adjustments according to the patient's difficulties.
Mobasheri et al. (2016) <sup>24</sup> United Kingdom	Communication aid requirements of intensive care unit patients with transient speech loss	Intubated or tracheostomized patients without sedation, companions, nurse, doctor, and speech therapist	<b>LT:</b> gestures, AAC board, writing, and chart board <b>HT:</b> speech generator device	ICU Level VI	Participants identified important requirements in the use of HT, such as items with words, letters, and a lightweight device. Patients highlighted access to LT strategies during hospitalization. There was a need for training the professionals and patient evaluation as a criterion for using the strategies.
El-Soussi et al. (2015) <sup>25</sup> Egypt	Augmented alternative communication methods in intubated COPD patients: does it make difference	Intubated or tracheostomized patients with functional hearing and vision	<b>LT:</b> AAC boards (pain, aspiration), gestures, and writing	ICU Level IV	When compared to the controls (use of routine nursing strategies), study group participants (use of AAC strategies) were very satisfied after using the tools, in addition to reporting decreased anguish and stress.

Captions: AAC = augmentative and/or alternative communication, LT = low tech, HT = high tech, ICU = intensive care unit

**Figure 3.** Characterization of the studies selected for this review (n = 13)

Regarding the country of publication, most studies (nine; 69.2%) were developed in the United States<sup>13-21</sup> and only one study was identified for each of the following countries: Brazil<sup>22</sup>, Denmark<sup>23</sup>, United Kingdom<sup>24</sup>, and Egypt<sup>25</sup>. Regarding the hospital environment, eleven<sup>13-15,17-20,22-25</sup> (84.6%) were performed in Intensive Care Units (ICU) and two<sup>16,21</sup> (15.4%) in Wards.

As for the research participants, nine<sup>13,17-21,23-25</sup> (69.2%) studies were performed with intubated or tracheostomized patients, without using sedation, four<sup>14-16,22</sup> (30.8%) with hospitalized patients in various conditions, nine<sup>13,16-19,21-24</sup> (69.2%) included health professionals, such as nurses, doctors, speech therapists, physiotherapists, and occupational therapists

and one study<sup>24</sup> (0.76%) included a companion/family member. Most studies covered nurses.

Five studies<sup>16,18,20,23,25</sup> used low-tech strategies (38.4%) and referred to communication boards, pen, paper, gestures, and pictograms. Two studies<sup>15,17</sup> (15.4%) used high-tech strategies, with speech-generating devices: tablet and computer with software. Of the 13 papers, six<sup>13-14,19,21-22,24</sup> (46.2%) used both kinds of technology.

As for the type of design of the papers evaluated, nine<sup>15-17,19-24</sup> (69.2%) used a qualitative approach with the level of evidence VI and four<sup>13-14,18,25</sup> (30.8%) cohort studies with a level of evidence IV. The synthesis of the papers covers the following data: author, year, country of publication, title, participants, strategies used, type

of technology, location, level of evidence, and results shown in Figure 3.

From the studies analyzed, it was possible to identify that the impossibility of verbal communication compromises the patient-medical team and patient-family relationship and communication, resulting in frustrated, anxious, and nervous patients<sup>14,16,18,20,23,25</sup>. It was also noted that the use of alternative communication strategies is an excellent choice during hospitalization and has an important influence on maintaining communication, improving quality of life, reducing depressive symptoms, in addition to a positive correlation between anxiety symptoms and ache. Thus, it is believed in an improvement in emotional well-being<sup>7</sup>.

Six studies point to the positive effect on the quality of life after implementing low and high technology strategies. There were increases in the exchanges of communication with family members and professionals and care, understanding of symptoms and pain improvements by the professionals, and reduced levels of stress and distress<sup>13-17,25</sup>.

Three studies with nurses with no experience in alternative communication showed relevant data. Patients labeled the communication with nurses from difficult to extremely difficult and they reported not understanding the tools<sup>18,19,23</sup>. In this context, the need for continuing education in health, training and capacity building in the area is evident, since the correct understanding in the use of resources will promote the reduction of communicative difficulties and better understanding in the use of strategies.

The literature shows that the initial assessment and individualized prescription of alternative communication resources according to the user's physical, motor, psychic, cognitive, and linguistic characteristics has been an important factor for the successful implementation and use of strategies<sup>9</sup>. Also, health professionals need training for better intervention and therapeutic success<sup>26</sup>.

It is worth noting that the experience in augmentative and/or alternative communication and the presence of a professional specialist in communication, such as the speech therapist, can impact on the success and quality of the implementation. Speech therapy support can also provide stimulation of the patient's language, in addition to training and qualifying other professionals involved in care<sup>27</sup>. A study in which the team consulted the speech therapist for training and implementation shows that patients reported a reduction in communication difficulties and a better understanding of their

needs by professionals<sup>13</sup>. This result may have been influenced by the presence of the speech therapist in training the team and in the necessary modifications to the strategies.

Regarding technology eligibility, it was found that five studies used low-tech strategies<sup>16,18,20,23,25</sup>. The quality of patient-nurse communication and the use of low-tech strategies were the objectives of two studies in this review. The participants used tools such as communication boards, pen, paper, gestures, and drawings<sup>18,23</sup>. One of them concluded that patients did not have access to communication boards or other strategies, limiting themselves to the use of gestures, writing, and drawings. He evidenced that the exchange of communication with nurses was bad but, on the other hand, the number of communicative acts increased<sup>18</sup>.

There are still many obstacles that prevent people from accessing both low-tech resources such as communication boards, and access to more sophisticated resources such as, for example, the computer adapted with high technology. Unavailability can be associated with the cost of services and resources as well as the lack of knowledge of users, families, and professionals.

Accessibility is a right guaranteed by law, as on the Decree No. 5296/94 and Law No. 10,048, of November 8, 2000, which prioritizes serving people who need specific access. The statute of disabled people, also known as LBI (*Lei Brasileira de Inclusão - Brazilian Inclusion Law*) - Law 13.146 / 2015, deals with the fundamental rights of disabled people regarding, for example, education, transportation, and health, guaranteeing access to information. In its IV clause, it emphasizes communication barriers, such as the attitude or behavior that makes it difficult or impossible to express or receive messages and information through communication systems and information technology<sup>28</sup>.

In this context, it is emphasized the importance of hospital institutions providing tools and training courses, to allow patients to have access to resources and quality care, in addition to having the right to express their needs and participate in decision-making during treatment, to ensure the inclusion of everyone in any environment, activity, or resource use.

Regarding the low-tech strategies, the communication board is an example of a low-cost tool, with ease of handling and modifying according to needs, the permanent display of symbols and which can be used in hospital practices. It varies from simple pencil, paper, alphabet, word, picture frames, including



basic needs (pain, thirst, hunger, personal hygiene), names of people (family, wife, doctor, friend), and body parts<sup>29</sup>. This type of tool was used by five studies examined in this review with positive results in communication<sup>13,19,22,24,25</sup>.

Most of the studies in this review that used low technology were produced in the United States. These data show that, despite the great economic and technological potential of the country, low-cost tools were recommended, often due to easy access, being relevant instruments and of great applicability in clinical practice.

The high number of studies carried out in the United States can be seen as a fact related to the new requirements of the American Speech Language Hearing Association (ASHA), in addition to the strong influence of research in the area, since the international consolidation in 1950.

The literature presents as main causes that make it impossible for hospitalized patients to use alternative communication resources: the fluctuation of the patient's condition, cognitive aspects, visual difficulties, fatigue, muscle weakness, lack of muscle coordination, delirium, sedation, and concentration difficulties<sup>30</sup>.

A study in this review evaluated patient-nurse communication through interviews with patients, nurses, field observations, and questionnaire application at a University Hospital. It was possible to verify that elements such as fatigue, muscle weakness, cognitive alteration, and sedation can be complicating elements in the use of resources and the exchange of communication. Some nurses realized that when sedative drugs were not used, the patient would have greater possibilities of communication, which could be part of the care<sup>23</sup>.

The use of high-tech tools employs symbolic means in association with resources, such as speech generating devices (boards with voice production) or the computer, specific software, tablets, and some resources that have automatic scanning, eliminating the aid of a facilitator.

A study with adult patients with head and neck cancer tested the feasibility of a speech-generating device in the postoperative period, programmed with specific themes (pain, breathing problems, aspiration), phrases to help on the communication with professionals; an intervention that was assessed through a questionnaire with themes of functionality and difficulties and independence in use. The authors found that the participants demonstrated a significant

improvement in the use of the device throughout the research, however, they reported a delay in understanding by the professionals and the need to use other strategies, such as writing<sup>13</sup>. The study had no control group and tested a population with a specific profile, highlighting the needs for future investigations in groups with different conditions.

The study by Miglietta et al.<sup>17</sup> tested the clinical utility of a computer system with speech-generating software on 35 critically ill trauma victims and 42 employees and assessed functionality, comfort, topics such as pain, feelings, and sentences regarding care needs. For patients with limited mobility, they had the option of adapting with infrared glasses and controlling the screen by blinking their eyes. Patients reported that the system helped to obtain their needs and express their wishes and feelings. The hospital team noticed that the device improved the patient's treatment, care, and comfort.

High-tech devices can be important and viable in enabling communication, however, the computer is not accessible to all patients, especially those who have motor limitations. Whenever possible, accessibility should be adapted considering the specific needs of each user.

An observational study analyzed the choice of strategies and type of technology, the number of symbols on a communication board, and the motivational factors in 34 patients and four occupational therapists. High and low technology tools were offered. The result showed that the tablet was considered the most indicated by patients and occupational therapists with a moderate level of agreement. The ideal number of symbols was 12 pieces and the motivational factors would be sound production and ease of activation, with a level of agreement of moderate to low among participants<sup>24</sup>.

The study by Happ et al.<sup>21</sup> evaluated strategies of both technologies in groups of patients and professionals. He found greater use of low technology, but when patients needed more complex communication, they opted for high technology strategies. Professionals opted for low-tech strategies, emphasizing better accessibility and ease of use.

Regarding the profile of the participants and the clinical sector, most of the studies in this review were carried out in intensive care units and with tracheostomized patients<sup>24</sup>. Patients in intensive care units have great difficulties in oral communication, as in the case of mechanical ventilation. Orotracheal

intubation, tracheostomy, and sedation are factors that compromise communication. The literature shows that about 33% of patients intubated in the ICU present difficulties in communicating<sup>31</sup>.

The design of the works was considered as average to low scientific evidence, showing the need for more scientific production in the area, given the use of assistive resources in practice and empirical research. Thus, a greater number of scientific productions is necessary to show the effectiveness of the strategies in the patient's life and the correlation with the communication between the patient and the medical team.

## CONCLUSION

The studies in this review point to a variety of low- and high-tech strategies that can be used in hospitalized patients. Evidence suggests that these tools increase communicative acts, improve quality of life, and psycho-emotional issues, in addition to allowing exchanges of communication between the patient and the care team. A trend in the choice of low-tech tools, with the communication board being the most used, due to the availability of health services and ease in handling, was observed.

Based on the results, the importance of multi-professional performance is evidenced, with consequent influence on the effectiveness of the implementation of augmentative and or alternative communication. Finally, studies on the evaluation and effectiveness of communication tools, in different sectors and clinical profiles, are suggested.

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