AUGMENTATIVE AND ALTERNATIVE COMMUNICATION (AAC) IN NEURODEVELOPMENTAL DISORDERS: A MINIREVIEW

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ABSTRACT

Children with neurodevelopmental disorders such as Autism Spectrum Disorders (ASD), cerebral palsy or severe motor speech disorders may beneficiate of augmentative and alternative communication (AAC) systems that may improve the developing language and the communication abilities. The term AAC tend to include each form of communication supplementing or replacing the natural speech production.

Keywords*: augmentative and alternative communication, devices with voice output, Functional Communication training.*

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Historical background

About 60 years ago, the inability to express themselves with oral language has been considered as a natural symptom of a disease and indicated its presence, worsening and severity. There was no attempt to reduce the symptom and the goal of improving the quality of life was absolutely not taken into consideration. When some people, some years later, felt this need, the rehabilitative efforts went in the direction of the restoration of oral language with often frustrating results[1-5].

The first seeds for the future of augmentative and alternative communication (AAC). were thrown in the 50s of the twenty century. Pioneers in this field were people with severe communication deficits and those who assisted them.

They were the first to use communication tables with letters, symbols, images. Later, to be understood also by people outside the family environment, he traced gestures in the air as if to write words. Until a colleague tired of seeing him gesticulate in the air, he brought him an alphabetic table, a table that gave him a new life[1-5].

Between the '50s and '70s the progress of medical and rehabilitative care led to an increase in cases of children surviving premature births and of adults who survived strokes, traumas and illnesses. For many of them they were posthumous, situations of severe motor disability and impossibility to communicate through oral language. Few rehabilitators, going against the current, began to suggest augmentative ways to promote communication and began to spread the results of these experiences.

The first documented cases referred to aphasic subjects or affected by Cerebral Palsy. However, it must be considered that, despite these exceptions, the rehabilitators continued to favor an oral approach and continued to not recommend sign language to the deaf, who even used it in their communities[1-5].

Between 1960 and 1970 it began to no longer hide disability. John Kennedy and other famous people began to make known that they had relatives with communicative deficits, which led to a first initial acceptance of disability and, therefore, of communication modes other than oral language. The deaf communities anticipated this process of legitimizing an alternative language, demanding the right to be educated using sign language. According to some, the studies on the learning of graphic symbols by chimpanzees would have paved the way to the idea of proposing graphic symbols to people with serious communication and motor deficits. The major prognostic abilities compared to a functional use of oral language have certainly contributed to stop true therapeutic hurdles by speech therapists and to justify different approaches[6-19].

At the University Hospital of Jowa City from 1964 to 1974 a first program of AAC. aimed at children with Infant Cerebral Palsy. In the meantime, the idea was also developed that technology could bypass communicative disability and that adapted typewriters were used for communication.

The first technological aid specifically dedicated to communication was the POSSUM (Patient Operated Selection Mechanism) funded by the Polio Research Foundation, which was then used until the late 1970s. Many other aids were developed, especially in Northern Europe, but were only accessible to those who had acquired the alphabetical code. Many weighed up to 7 kg. and certainly they were not easy to use in everyday life. For many years blissymbolism was the main graphic system used in the world. Taking a cue from its characteristics and its use, other symbolic systems have been created for specific needs and categories of disability in communication. A functional approach to facilitate the communication of non-speakers through non-oral methods was considered legitimate only in the late 1970s.

An American law of 1975 that recognized the right to education for all children with disabilities, and therefore their right to live in the community, gave even more strength to this current of rehabilitative thinking even though many professionals continued to argue that the use of different ways would have been to the detriment of a possible emergence of oral language. This prejudice is still present, as already mentioned, not only in many parents but also in many rehabilitation workers. Since the beginning of the 1980s, cases of people began to be published which, through communication programs, succeeded in improving the quality of their lives.

However, these programs were always implemented after the failure of traditional forms of treatment of ling. In 1980 and 1982, the first international conferences on “Non-oral communication” were held in Toronto. During the 1982 conference the decision was made to create an organization exclusively dedicated to this clinical field. In 1983 professionals from 25 countries in the world founded the International Society for Augmentative and Alternative Communication (ISAAC) in New Lansing (Michigan - USA) and decided to call the area of interest AAC. Here it was recommended to use the term derived from the verb “to Augment”, ie increase, in all languages where this was possible. The term “Augmentative” had to clarify how the goal of the intervention should be to increase existing communication skills. At that time, the Personal Computer became a reality for people with communicative disabilities, and so did the aids with output in synthetic voice or in print, because they became increasingly smaller and more manageable. These technological advances have been fostered by the cooperation of people from different countries and from different disciplines. In those years, advances in the technology area were those that seemed most to connote the field of AA[20-34].

In Italy the diffusion and the development of the AAC recorded and continues to lag behind North America and Northern Europe. Significant milestones in the diffusion of the AAC. The first international meetings of the BCI can be considered in Catania and Milan, respectively in 1983 and 1988. Later in 1989 the formation of the Italian Group for the Study of Augmentative and Alternative Communication (GISCAA) and in 1996 the creation of the first and , still, the only annual training school in CAA in Milan at the Benedetta D’Intino Center onlus. The training school is divided into several seminars and Italian and foreign professors collaborate there. Second level initiatives are also planned to explore topics and topics of particular importance in clinical practice in AAC.

The most significant stage for our country was the foundation in 2002 of the Chapter ISAAC Italy. ISAAC Italy gathers interested people in Italy and involved in the AAC, that is the people who use the Augmentative and Alternative Communication, their family and friends, professionals, technicians and companies that distribute in Italy aids and materials for the AAC. The aims of ISAAC Italy, in addition to developing the objectives of ISAAC International, are to disseminate and promote the interdisciplinary field of AAC, facilitate access to specific knowledge and disseminate a proper CAA culture also through the ISAAC conferences in Italy and the translation of some articles and texts of relevance for the CAA[35-67].

Tools and devices for AAC

AAC is part of the field of assistive technology. Assistive technology or AT (assistive technology) representing a wide category that includes any object and equipment, product or system, even modified or customized, which is used to increase, maintain or improve the functional abilities of disabled people. The wheelchairs, the handrails, the electric scooters, the ramps, the glasses, the toys adapted with switches and the dishes adapted for eating are all examples of AT. The whole AAC is part of the TA, but not all AT is a type of AAC. The AAC consists of any instrument, device, image, word, symbol or gesture that compensates for the difficulties of expressive communication (what "goes out") and receptive (what "enters"). AAC tools, aids and strategies serve to "increase, maintain or improve" a person's ability to communicate, expanding skills he already possesses and providing an alternative medium where necessary. Thus, the AAC covers all types of technological aid that helps a disabled person to communicate. AAC is never used to replace existing functional language, but to improve it. However, we must remember that communication does not always take place in the form of language: communication is an exchange of information, which can be done virtually by any means.

Unassisted AAC includes manual signs, gestures and vocalizations. The use of AAC does not assisted requires only the body and no other system or device external to it. Assisted AAC consists of objects, three-dimensional concrete symbols, drawings, photographs, words or simple linear symbols. The AAC can understand sign language, images, words, letters or objects used alone or in combination with communication tables, devices with voice output (VOCA) or keyboards. There are assisted and unassisted AAC systems. The term system refers to particular instruments used in specific ways. Non-assisted systems include manual signs, gestures and vocalizations. They only require the body and no other system or device external to it. The tangible, visual symbols of assisted AAC can be used alone or in combination with a voice-activated communication device or with computer aids. The assisted systems of AAC allow to transmit messages through AAC instruments << without technology >>, to << low technology >> or to << high technology >>. AAC systems without technology are simple tools that do not need batteries or electrical circuits, such as a tag with a word or a communication symbol on top, a small notebook containing different communication tables or a specific communication table for an activity.

An example of a "low-tech" AAC tool are simple devices for voice-based communication (VOCA). The high-tech AAC tools are more sophisticated VOCA's, which allow you to play hundreds of messages and can include portable keyboards with which you can generate language and even predict words. The AAC includes many systems, a set of rules or protocols that are used in the natural environment, such as NAL (a system that considers the visual code as a real interactive language and the verbal language is combined with key visual symbols, with this system is taught both receptive and expressive language). Many children react very well as the first type of AAC intervention[35-68].

The Picture Exchange Communication System (PECS) is a six-step strategy. First, the person with autism spectrum disorders is taught to initiate a communication by giving the partner a visual symbol to have a very desired object. In exchange, image, photo, simple design, the object is then offered to her. As a second step, the use of images is expanded to include more people, places and rewards than the person with Autism Spectrum Disorders could wish for. In the third phase, we are taught to make specific choices among the images; in the fourth, to construct simple sentences with images, such as << I want the truck >>. The answer to the question "what do you want?" is dealt with in the fifth phase, while in the sixth it is taught to develop the ability to perform, commenting on various objects and activities for social purposes and not just for a tangible reward.

There are other AAC strategies used by people with autism and all of them using a naturalistic approach to language development (Figure 1)[69].

Figure 1: shows a typical PECS table for children with developmental disorders.

The System for Augmenting Language (SAL) is a similar strategy to NAL in the sense that verbal partners provide their partner non-verbal both an input and a communication output, in the context of natural contexts. In the SAL system, however, communication is conveyed by the use of devices with voice output. Research has shown that participants in teaching programs with SAL create messages using different symbols at a time, increase their symbolic vocabulary and improve comprehensibility of the speech. Functional Communication training with AAC (TCF with AAC) is a specific protocol designed to reduce problem behaviors[70-76].

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