STATUS OF USING AUGMENTATIVE AND ALTERNATIVE COMMUNICATION IN INTERVENTION FOR CHILDREN WITH AUTISM SPECTRUM DISORDER IN VIETNAM

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Augmentative and alternative communication (AAC) for children with autism spectrum disorder (ASD) is primarily about communicating through the exchange of images and symbols. With the advantage of words regarding clarity, consistency, stability, facilitation, and promotion of visual perception ability of children with ASD, AAC is considered an effective communication tool for children with ASD. This research aims to: (i) assess the current implementation of AAC and other digital technologies for people with autism in Vietnam, (ii) recognise some barriers to using AAC on people with autism in Vietnam. From the survey results, the study pointed out that low-tech AAC methods are widely utilised as the primary form of AAC for individuals with ASD. There is a significant need for more high-tech AAC options, therapy apps, and software in Vietnamese. Creating low-tech AAC resources is a time-consuming process, and the limited availability of professional skills and training in AAC and the search for culturally appropriate symbols pose significant challenges in this regard. This research also proposes several feasible and practical solutions to use AAC in current conditions.

Keywords: *Augmentative and alternative communication, Children with autism spectrum disorder, Intervention.*

INTRODUCTION

The utilisation of augmentative and alternative communication (AAC) offers individuals with autism spectrum disorder (ASD) an effective means of communication, particularly for those who struggle with conventional speech (Ganz, 2015). Many children with ASD have limited verbal abilities beyond pre-school (Nunes, 2008)**.** Given the diverse range of impairments present in individuals with ASD, various types of treatment are currently available. AAC is among the protocols utilised. AAC is a field that encompasses both clinical research and educational practice. Its objective is to provide temporary or permanent compensation for difficulties in understanding or expressing oneself caused by the disorder. With a population of approximately 93 million, Vietnam is considered a low-middle-income country. Obtaining precise prevalence data on AAC services for children with ASD is challenging due to the ongoing development of the health reporting system and limited diagnostic capabilities.

LITERATURE REVIEW

ASD is a lifelong neurodevelopmental condition, demonstrating pervasive deficits in communication, social skills, and repetitive and restricted behaviors (Iacono et al., 2016), (Ph.D & Gerdts, 2010). Most definitions of autism include poor communication skills as a distinctive hallmark symptom (Syriopoulou-Delli & Eleni, 2022). Children diagnosed with ASD commonly exhibit verbal and nonverbal communication difficulties, including receptive and expressive language (Achmadi et al., 2012). In the absence of functional communication, children with autism are unable to effectively express their thoughts, needs, or desires (Mort, 2013).

In recent decades, extensive research has emerged, offering empirical evidence to support the utilization of AAC among children diagnosed with autism. The use of AAC with the ASD population is often least understood by the practicing clinician in terms of efficacy and how to establish a foundation for developing an effective language and communication system that sustains over time (Ph.D & Gerdts, 2010). AAC interventions are beneficial as they cater for the visual learning style, which is often considered as a relative strength in individuals with ASD. By incorporating visual elements into communication, AAC helps individuals with ASD better understand and process information and facilitate their ability to communicate effectively (Goldstein, 2002). Individuals with ASD experiencing delays in their communication skills often receive recommendations from speech-language pathologists (SLPs) to utilize augmentative and alternative communication (AAC) methods.

AAC, as defined by the International Society of Augmentative and Alternative Communication (ISAAC), encompasses tools and strategies that offer additional modes of communication. These methods aim to facilitate effective expression of thoughts and ideas, ensuring that the communicated messages are comprehended by others. The utilization of AAC assists in supporting current communication abilities and enhancing functional communication for individuals with ASD. AAC utilizes various aids to enhance an individual's communicative abilities, with the aim of supporting and supplementing verbal language rather than replacing it (Ciarmoli & Stasolla, 2023).

AAC is considered "augmentative" when it complements existing speech and "alternative" when it serves as a substitute for absent or non-functional speech. AAC can be categorised into the following groups (American Speech-Language-Hearing Association, 2020):

Unaided AAC: These are methods of communication that do not require tools or equipment, such as facial expressions, gestures, and sign language.

Aided AAC: These are methods of communication that utilize specific tools or equipment, which can be further divided into:

a) Low-tech AAC: This includes techniques like writing, alphabet boards, and communication boards containing symbols and/or text, and communication books.

b) High-tech AAC: This category encompasses electronic devices that offer symbol-based or alphabet-based (text-based) vocabulary for communication purposes. Examples include AAC

applications available on mainstream devices like smartphones and tablets, as well as dedicated speech-generating devices designed exclusively for AAC.

STATEMENT OF PROBLEM

AAC has gained significant popularity worldwide and has demonstrated considerable effectiveness in enhancing the quality of life for individuals with ASD by facilitating communication (Logan et al., 2017). However, the utilization of AAC for children with ASD in Vietnam faces challenges due to a lack of research and resources (Ha et al., 2017). There is a dearth of comprehensive studies focused on developing AAC tool systems which are specifically tailored for users in Vietnam. There is also a lack of guidelines on implementing AAC for children with ASD in essential environments such as classrooms, families, and communities (Iacono et al., 2016). Scarce resources, both in terms of financial investment and trained personnel, contribute to the inadequate implementation of AAC strategies. The limited availability of specialized professionals, such as speech-language pathologists and AAC experts, further impedes the integration of these tools into mainstream interventions. Furthermore, the prevailing communication practices and limited awareness within the community regarding the role of AAC in supporting children with ASD impede the widespread adoption of AAC (Dauterman, n.d.).

Moreover, the limited research conducted on AAC and autism in Vietnam has predominantly been published in Vietnamese conference proceedings, making it less accessible to the global ASD services community (Nguyen Nu Tam et al., 2022). As a result, its potential to contribute to the advancement of ASD services within the global health movement is constrained. The study also highlights the lack of available AAC services for children with ASD and the limited awareness among practitioners.

OBJECTIVES OF THE STUDY

1. To assess the current implementation of AAC as well as other digital technologies for people with autism in Vietnam.
2. To recognize some barriers to the use of AAC on people with autism in Vietnam.

METHODOLOGY

Research Design

This is a cross-sectional study conducted from January 2022 to January 2023. The surveys used a self-administered questionnaire through online platforms using Google Form to investigate the utilization of aided AAC by professionals working with clients diagnosed with ASD.

Participants of the Study

We recruited providers of services for children with ASD including special education teachers, speech and language therapists, occupational therapists, and physical therapists who met the AAC use response criteria.

We identified and extended invitations to key contacts who were providers of services for children with ASD and met the AAC use response criteria to participate in the project's interviews. The participants consisted of Speech and Language Therapists, Special Educators, occupational therapists, and physical therapists from various regions in Vietnam, including the North, Central, and South.

Instruments of the Study

The survey questions were formulated by the author after conducting a comprehensive analysis of the communication research literature, specifically focusing on the best practices for clients with ASD. The questionnaire consisted of 30 items. The primary research inquiries revolved around the following aspects: the demographics of participants, the number of AAC types employed by professionals in their interactions with clients possessing AAC systems, the methods employed for utilizing AAC systems, barriers toward using AAC systems and the type of training received in AAC. Additional questions were included in the survey to gather information about aided AAC, such as the specific type of aided input, modeling techniques, promotion of literacy, and referral procedures for evaluations.

Individuals from various regions in Vietnam were invited to participate in the surveys through emails, interest groups, and social media posts. In total, 297 professional surveys were successfully completed. Towards the end of the survey, participants were given the option to volunteer for further interviews regarding aided AAC. Although some participants provided their contact information, no subsequent interviews were conducted.

Data Analysis

Data collected during the interviews and from the surveys were analyzed to identify current practices and needs. Data were rechecked and entered into Microsoft Excel sheet. Statistical analysis was conducted using R Statistical Language (R Foundation for Statistical Computing, Vienna, Austria).

FINDINGS

Demographics

The online professional survey received a total of 297 respondents. The respondents were primarily from metropolitan areas spanning across different regions of Vietnam (Northern, Central, and Southern). Among the professionals, approximately 38.4% of participants (%) identified themselves as Special educator. Within this group 52.2% had been practicing on children with ASD for up to two years. The remaining professionals consisted of 31.6 % teachers, 10.8% psychologists, 6.7% speech and language therapist, and 0.7% physiotherapists. 11.5% of respondents indicated another professional background. It should be noted that professionals in Vietnam often possess multiple qualifications and expertise, allowing them to select more than one profession if applicable to them. Regarding service delivery models, the professionals worked in various settings, including private clinics (92.3%) and public sector (7.7%).

Table 1
Demographic Characteristics

Variable	N (297)	%
Years of experience		
0–2	155	52.2
3-5	80	26.9
6–9	38	12.8
10 up	24	8.1
Highest degree		
Vocational school and college	103	34.7
Bachelor	159	53.5
Master and Ph.D.	35	11.8
Professional		
Speech and Language Therapist	20	6.7
Special educator	114	38.4
Teacher in pre-school, pre-school, elementary and middle school	94	31.6
Occupational therapist	1	0.3
Physical Therapist	2	0.7
Psychologist	32	10.8
Others	34	11.5
Region		
Northern	157	52.9
Central, highland	97	32.6
Southern	43	14.5
Workplace sector		
Private	274	92.3
Public	23	7.7

Types of AAC used by Professionals

The professionals participating in the survey primarily reported using low-tech aided AAC methods with their clients. Visual Schedule emerged as the most commonly used type of AAC, with 71% of respondents employing them. Only 2.2% of professionals indicated that they did not utilize any form of AAC in their practice.

Among the mentioned low-tech picture-based resources, professionals shared various examples, including object, object symbol, choice boards, first-then boards, visual schedules, communication board for daily activities, the Picture Exchange Communication System (PECS), and social stories. They elaborated on how they utilised these methods, including

using photographs of their child's favorite items, places, and animals, family, and daily activities and facilitating storytelling and recounting of daily experiences.

Regarding AAC apps, there were two respondents adapting these English-based AAC apps for Vietnamese (which are called Talk Tablet VN and Avaz) with their clients. Professionals customized the vocabulary boards for each client within the app and printed them on paper for therapy sessions. Another professional mentioned using the iPad to facilitate client requests in writing or using pictures to express their needs.

Table 2
Types of AAC Used by Professionals

Category	Type	Description	Respondents
Unaided AAC			
	Key Word Sign	Simultaneous signing, which involves signing key words while also verbally saying the words, is an effective communication technique.	108
Low tech - Aided			
	Objects	Using object-based communication, such as presenting two objects and asking, "Do you want the cup or the hat?" while holding both objects up, can facilitate understanding and decision-making.	
	Object Symbols	Using a symbolic object to represent larger objects, events, or activities can enhance communication and understanding.	178
	Conversation **starter** card	Providing visual prompts helps increase an individual's communication and social skills.	111
	Choice Board (Object/symbol/photo)	A visual representation of items/activities that is available for an individual to choose from.	204
	First-Then Board	A visual tool that is based on the principle that a person's motivation to complete a less preferred activity is increased when it is followed by a more preferred activity	205

	Behaviour Cards	Behaviour Report Cards record behavioural problems and goals and aim to enhance communication between parents / carers and teachers, facilitate parental / carer involvement and provide comprehensive support for the student.	177
	PECS	Picture Exchange Communication System	144
	Board maker	Software that provides symbols for creating AAC resources	21
	Communication board	A sheet of symbols, pictures or photos that a child learns to point to and communicate with those around them	173
	Visual Schedule	A tool that presents the sequence of upcoming activities or events through the use of objects, photographs, icons, words, or a combination of tangible supports.	211
	Social story	An activity that is to make a point and share information or maybe a set of Stories.	32
High tech - Aided	Talk Tablet VN app	Symbol based AAC app	5
	Avaz – Vietnamese AAC app	Word Grow app – vocabulary app	1
None of the above			6

Source Used for AAC

When creating AAC materials, professionals primarily sourced their pictures from Google Images (72.1%) and photographs (73.4%), Board maker online or software (20.9%), and other sources (12.5%). Some parents reported using Twinkl.com and Pinterest to find pictures.

According to the professionals, their clients primarily used AAC during therapy sessions in center (87.5%). Less than half of the professionals stated that their clients used AAC outside of therapy, including at home with family (51.9%), at school (3.1%), and in community (19.6%).

Training

A recent survey was conducted with 297 professionals across Vietnam, which revealed that 31% of respondents received AAC training from their workplace, 27% attended AAC professional development training courses, 13.4 % received training at university, and 28.6% had no training in AAC.

Barriers toward Using AAC Systems

The primary barriers to implementation identified by the participants were time consuming to Create resources (81.7%), limited professional skills and training in AAC (76.3%), and limited resources in Vietnamese (75.1%). Some participants also mentioned additional barriers, including parents refusing to use, finding culturally appropriate symbols, difficulty training families and teachers in how to use AAC.

Limitations of Survey

As the data for this study were collected through self-administered questionnaires, it is important to consider that the respondents' knowledge of AAC systems and frequency of AAC use may have been overestimated. In addition, social effects like under-reporting, over-reporting, or gaps in AAC knowledge could have imposed limitations on the data.

DISCUSSION

Limited research has been conducted on AAC and ASD in Vietnam, and as a result, there is a scarcity of studies addressing the specific AAC systems use in this context (Tran & Weiss, 2018). This study highlights a significant issue: information of availability of AAC systems use in Vietnamese. The findings emphasize the resources to address this gap and support the professional development of autism services in Vietnam.

It is important to acknowledge both the strengths and limitations of this study. One of the strengths is that the participants accurately reflect the typical demographics in Vietnam, with a majority being young professional having less than 5 years of experience. A small percentage of the participants held postgraduate qualifications. Additionally, the high response rate of 92.3% worked in the private sector. This dominance raises questions about the accessibility and affordability of services, particularly for families residing in less affluent regions or rural areas.

The most commonly used form of unaided alternative communication includes the use of Key Word Sign (KWS) in our study. KWS is specifically designed to assist individuals, including both children and adults, with complex communication needs. Its purpose is to facilitate the expression of needs or desires, exchange information, foster social connections, and develop social skills and etiquette. Similar to other AAC interventions, the implementation of KWS aims to ensure effective communication for individuals with ASD across various social situations and with different communication partners (Tan et al., 2014). However, it is important to note that children with ASD often encounter challenges when it comes to applying newly acquired skills in unfamiliar environments. The variations observed in sign acquisition after sign language training, specifically KWS and sign-alone training could be influenced by

several factors. These factors may include Intelligence Quotient, age, language ability at the beginning of the intervention as well as verbal imitation and fine motor skills. It is likely that these factors play a role in the individual's ability to acquire and effectively utilize sign language during the training process (Mirenda, 2003).

Low tech - Aided, including visual schedules the PECS system, was predominantly utilised and only two apps on Ipad were found in our study. PECS and iPads used as Speech Generating Devices (SGDs) have proven to be valuable AAC interventions for promoting functional communication in individuals with ASD. A number of studies have demonstrated that both methods are effective in enabling individuals to make specific requests with comparable success (Agius & Vance, 2016), (Syriopoulou-Delli & Eleni, 2022). The use of various low-tech picture-based resources, such as object symbols, choice boards, and social stories, underscores the adaptability and creativity of professionals in tailoring interventions to individual needs. While the majority reported using low-tech methods, a notable finding is the limited adoption of high-tech AAC solutions, such as Talk Tablet VN and Avaz. This preference for low-tech options may reflect practical considerations, including cost, language adaptation challenges, or limited access to technology.

The barriers identified by experts in this study encompassed a range of factors include time consuming to create resources, limited professional skills and training in AAC, and limited resources in Vietnamese, which are similar to many other studies around the world on this topic. These barriers align with global challenges in AAC implementation and highlight areas for intervention, such as streamlining resource creation processes and expanding training opportunities. One recurring barrier theme identified in the research was the lack of training among service providers to effectively use specific AAC systems requested by families for their children (Anderson et al., 2014), (Ashburner et al., 2016). Some service providers showed little interest in attending AAC training sessions. The demanding workload associated with AAC service provision, which included the need to measure, monitor, and document children's progress in using AAC, was also identified as a significant barrier (Barker et al., 2013). This underscores the need for targeted professional development initiatives to enhance the competencies of practitioners in using AAC tools effectively.

This survey provides a comprehensive snapshot of the current landscape of AAC practices for children with ASD in Vietnam. The findings offer a foundation for targeted interventions, policy development, and future research endeavors aimed at enhancing the efficacy and inclusivity of communication interventions for this population.

CONCLUSION

Low-tech AAC is the predominant form of AAC used for individuals with ASD in Vietnam. There is a severe lack of high-tech AAC options, therapy apps, and software available in Vietnamese. The Avaz app and Talk Tablet VN are currently symbol-based AAC app available in Vietnamese. They both have gained approximately 100 subscribers, mainly consisting of children with high-functioning autism but they can be used by individuals of different conditions. The time-consuming process of creating low-tech AAC resources, limited professional skills and training in AAC and finding culturally appropriate symbols are challenging factors. Professionals and parents lack a consistent source creating low-tech AAC; therefore, many of them relied on Google images and photographs.

The use of AAC is not consistent across different environments. Professionals reported that AAC is infrequently used outside of therapy, while slightly over half of professionals incorporated AAC into speech and language therapy sessions. Professionals consistently expressed that training families on the purpose, benefits, and usage of AAC is time-consuming and challenging.

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