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Awareness on Augmentative Alternative Communication among Special Educators in Kerala

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Abstract: ***AAC system permits individuals with communication disorder to communicate for various purposes. The rewarding part of AAC is the cooperation of professionals, such as speech-language pathologists, special educators, and other professionals, which results in enhancing the child's capacity for learning and communication. The aim of the current study was to investigate awareness in Special Educators regarding AAC for children with Communication Disabilities using a E-Questionnaire was developed in English/ Malayalam language, in Kottayam district, Kerala. The results of the current study revealed that moderate awareness was noticed among 30 special educators who underwent the study. It can be concluded that special educator's effective knowledge and ongoing training allowed them to work with other professionals including speech language pathologists to improve the language output of children and adults with communication disorders.***
Keywords: Augmentative Alternative Communication, Special Educators in Kerala.

I. INTRODUCTION

The silence of speechlessness is never golden. We all need to communicateand connect with each other— not just in one way, but also in as many ways possible. It is a basic human need, a basic human right. And much more than this, it is a basic human power. (Williams, 2000, p 248).

The International Society of Augmentative and Alternative communication (ISAAC, 2005) describes AAC is a set of tools and strategies an individual uses to solve daily communicative challenges. Communication can take many forms such as speech, a shared glance, text, gestures, facial expressions, touch, sign language, symbols, pictures, speech-generating devices, etc. Everyone uses multiple forms of communication, based on the context and our communication partner. Effective communication occurs when the intent and meaning of one individual is understood by another person. The form is less important than the successful understanding of the message.

AAC allows students who are non-verbal or unintelligible to communicate via gestures, facial expressions, sign language, mores code, communication aids (language boards, information bracelets, charts, etc.), and electronic devices. It takes a team of specialists and educators to put a communication system in place as well as learn how to program and implement a device. Academic preparation in AAC, while varying across academic programs, has in general increased over the past decade (Lloyd et al., 2008, p. 57).

Individuals with a variety of speech and language disorders, including congenital conditions like Cerebral palsy (CP), Intellectual Disability (ID) and Autism with non-verbal communication use AAC. AAC is a multidimensional approach addressed to communication disabilities, i.e., functional limitations in the use of oral language as a result of developmental or congenital pathologies of populations in the age of development or adulthood.

Children who require AAC comprised of those dealing with:

- Autism spectrum disorder (ASD)
- Down syndrome (DS)
- Cerebral palsy (CP)
- Learning disability (LD)
- Intellectual or developmental disabilities (ID)
- Developmental apraxia of speech (AOS)

AAC may provide a socially acceptable mean for individuals with autism to communicate, resulting in a decrease in the need to engage in challenging behaviors along with enhanced communication and interaction (Ganz et al., 2009). Further, aided AAC or high- or low-tech devices such as picture communication board and computerized devices is thought to be well suited to individuals with ASD because it is primarily visual based and provides concrete representation of abstract concept, which do not require advanced motor skills and serves as a tool for individuals to communicate and engage in social activities.

Children with Down syndrome (DS) can use AAC to meet immediate communication needs, increase speech intelligibility, comprehensibility, support language acquisition and participate in daily activities (Beukelman & Mirenda, 2013; Branson & Demchak 2009, Light et al., 2019). Children with suspected childhood AOS not only exhibit compromise intelligibility but also communication frustrations, challenging behaviors, learned passivity, poor social interaction and delayed language development. A number of researchers have reported using a variety of AAC technologies to address short- and long-term communication needs with children who have suspected AOS.

The American-Speech-Language-Hearing Association (ASHA, 2005) describes that SLPs play a central role in the screening, assessment, planning, and treatment of persons requiring AAC intervention, including clinical/educational services (diagnosis, assessment, planning and treatment), advocacy, education, administration, and research. Further specification on the roles and responsibilities of school age children provide insight on the specific activities in which SLPs engage in providing paediatric AAC services whether that be in school contexts or in the context of community based early intervention services or other clinical settings. Together with the PT, SLP and OT can determine how best to position the client for communication. Along with the medical diagnosis, the doctor is able to give the team access to the patient's medical records. Finally, the psychologist can provide the team with the findings of the cognitive assessment so that an appropriate device prescription can be made. Along with the SLP, OT, doctor, psychologist and special educator collaborate in a multidisciplinary model. The special educators play significant role in developing skills, enhancing educational needs, specialized curriculum and furthermore analyzing specific goals for AAC users. Collaboration with special educators, professionals, and support staff is necessary to support students learning toward measurable outcomes and to facilitate student's social and emotional well-being across all school environments and instructional settings.

Thapa and Gupta (2022) investigated the awareness on AAC among special educators in Nepal. According to the study the questionnaire on the topic of AAC received an equal number of replies from Nepali special educators. The results revealed that among 20 special educators, 13 (65%) are aware and 7 (35%) educators are not aware about AAC moderate awareness among them.

Srinivasan et al., (2011) by using mixed-method approach, examined current developments in AAC and communication intervention in southern India by evaluating special educators, SLPs, and behaviour therapists. The questionnaire's responses were quantitatively analyzed. Themes that emerged from open-ended interview questions were qualitatively analyzed and recorded. Insights and descriptive statistics are used to present the findings. The following viewpoints were expressed such as communication intervention should be a structured, child-centric process; using a collaborative team model, parents play an integral role in decision making and intervention; because of India's diversity, cultural and linguistic issues are imperative in decision making and intervention; use of better materials and technology can improve intervention. The present research attempt to assess the awareness about AAC among special educators in Kottayam district, Kerala.

II. REVIEW OF THE LITERATURE

The goal of AAC intervention is to enable efficient and effective engagement in interactions, participation in desired activities and to enhance learning and development. Learning to use AAC is regarded as a form of language development (Tetzchner, 2018).

Typically developing babies might achieve by 12 months of listening to language before they may start to experiment with words which we as adults respond to. This is the same for children learning to use an AAC system. They may need a period of time exposed to the AAC system and seeing others use their AAC system before they initiate using it. When AAC system is applied in a meaningful and functional way it helps children to learn.

AAC is divided into two main forms of communication: augmentative and alternative. (Vollmer,2020)

Augmentative communication uses systems/devices to supplement natural speech. For instance, a small portable amplifier can increase speech volume and help those with limited vocal capacity to communicate effectively.

Alternative communication uses systems/devices to replace natural speech. Keyboard text-to-speech programs, or even something as simple as a communication board, are tools that enable alternative communication. Users of alternative communication devices typically do not have the ability to communicate verbally.

AAC systems are categorized as unaided and aided modes. (Beukelman & Mirenda, 2013). Unaided communication methods include vocalizations and speech attempts as well as gestures and body movements (ASHA, 2016). Many unaided communication

methods are used and understood by most people, such as facial expressions, looking (eye gaze), pointing, and other common gestures. Other methods, such as individualized signals, may be understood only by familiar people. For example, a child may raise an arm to talk about someone who is tall and look toward a kitchen to talk about food, hunger, or the person who cooks.

Sign language is also considered an unaided communication method. There are many different sign languages, specific to different cultures, such as American Sign Language (ASL) and British Sign Language (BSL). Elements of sign language may be used by people who are unable to physically produce all the hand shapes and coordinated two-handed movements typical of sign languages. Individuals with limited speech and multiple impairments may be taught to use individual signs or adapted signs from a sign language.

Aided communication methods include use of electronic and nonelectronic communication aids. Nonelectronic aids include writing tools, as well as boards and books with letters, words, pictures, or other symbols. There are many types of communication symbols. Blissymbols for instance, it is a language composed of thousands of graphic symbols. Boardmaker, a graphics database for making communication aids, contains several thousand picture communication symbols translated into numerous languages. People may communicate by eye-pointing or by directly touching symbols with their fingers or other body parts. If someone cannot point, a communication partner may point to symbols until the person indicates which symbols are required.

The category of electronic communication aids includes hundreds of dedicated communication devices, as well as computer-based communication systems and AAC software. The selection of devices is based on individual needs and capabilities of the people in their environment. Most devices allow people to sequence words or symbols to create messages or recall pre-stored phrases. People who cannot operate devices by touching symbols or letters may use alternate access methods, such as scanning, a joystick, and mouse emulation.

AAC solutions are classified into three categories such as No-tech, Low-tech, and High-tech AAC (Cook & Polgar, 2015).

- High-tech consists of digital technologies such as iPads and computers with text-to-speech software. Amplifiers and devices with pre-recorded messages also fall into this category. High-tech AAC devices are often ‘dynamic’, meaning they can generate different words, phrases, or messages to suit the user’s immediate communication needs.
- Low-tech consists of picture symbols, drawing tools, communication boards, picture books, etc. Low-tech devices include a limited number of ‘static’ displays that cannot generally be changed.
- No tech consists of sign language, gestures, facial expressions, body language, and even non-linguistic vocalizations. This kind of AAC has existed since the dawn of time and is still an essential tool for helping people with limited verbal skills to communicate.

Nontechnology Products consists of communication aids that do not need batteries or an electric power source to meet user’s needs. Most are simple aids such as communication boards or books. Technology-Based Products consist of Visual output, AAC technologies, Speech Generating Devices (SGDs), Mobile AAC technologies, Digitized voice output and synthesized voice output. Visual output which is used primarily to support messages when natural, digitized, or synthesized speech is not understood or available. (Aided symbols and text viewed on a display).AAC technologies are technology-based communication systems that may include speech-generating devices and mobile AAC technologies. SGDs which are essentially durable medical equipment that provides speech output using digitized, synthesized, or combined digitized and synthesized speech (Drager et al., 2010). Mobile AAC technologies consist of mainstream technology such as iOS, Android, Windows with software or applications that provide speech output using digitized, synthesized, or combined digitized and synthesized speech output. Digitized voice output are generated by communication devices that reproduce messages consisting of a recording of natural speech that is converted to digital format. The voice output on the device is recorded by another person, as opposed to the computer (Beukelman & Mirenda, 2013). Synthesized voice output which are generated by communication devices that convert typed text to digital speech (Cook & Polgar, 2015).

The AAC intervention had a clear and rapid effect on the child's spoken word productions, although the child did not produce signs or symbols to criterion for most of the target words before producing them in speech. Sign or picture-symbol production improved the child's speech output for target words without any direct prompts to speak, but that the two AAC strategies did not differ from one another in effectiveness at indirectly eliciting speech in a young child. (Leech & Cress, 2011).

AAC allows children who are non-verbal or unintelligible to communicate via gesture, facial expression, sign language, mores code, communication aids (language boards, information bracelets, charts, etc.), and electronic devices. It takes a team of specialists and educators to put a communication system in place as well as learn how to program and implement a device. Academic preparation in AAC, while varying across academic programs, has in general increased over the past decade (Lloyd, Ratcliff & Koul, 2008, p. 57).

When young children encounter either temporary or permanent difficulty learning to communicate via speech, they face many challenges because they are unable to convey basic necessities, wants, desires, knowledge, and emotions to their families, peers, teachers, and the community at large. These communication difficulties may be due to a broad range of reasons including ASD; CP; sensory impairments; IDD; genetic syndromes; multiple disabilities (including hearing impairment); TBI as a result of an accident; stroke; or, in rare instances, severe psychological trauma. Regardless of their cause, the children and their families need access to AAC services and supports early in life to support the development of language and communication skills.

In 1983 the ISAAC was established as the world's premier organization working to serve the needs of children and adults with complex communication needs (CCN). Members of ISAAC include users of AAC, their families, teachers, students, therapists, and researchers from around the world.

SLPs, Special educators and OTs are all expected to encounter individuals with complex communication needs, who need for AAC (Costigan & Light, 2010). Robillard et al., (2013) did research on interdisciplinary models of teamwork in AAC had found clients seeking an AAC must be evaluated by a team of professionals, which includes a SLPs and an OT. Members of the team need to work closely together, within what is considered to be a transdisciplinary model. The SLPs and OTs work closely with other professionals in order to help people needing AAC. These other professionals can include: technicians, communicative disorders assistants, physical therapists, physicians, psychologists and special educators. A conceptual model encompassing multidisciplinary, interdisciplinary and transdisciplinary practice has been proposed for the assessment and intervention of people who have complex communication needs.

To be effective as a team, educators need to be open and willing to work with others and systems need to be in place to incentivize teamwork. School leadership can support collaborative teaming by building in structured time for collaboration, assist with schedule and class changes as needed and celebrating team success. Collaborative team meetings can be structured or spontaneous. Structured sit-down meetings are important for co-planning, reviewing data, and documenting decisions made in response to data. Spontaneous on-the-fly meetings and emails are good for checking in, building relationships, and following up on student progress. Once the team is established, they can meet less often.

Being a special educator of children with special needs can be challenging, but also extremely satisfying. While it can be challenging to help children with mental and physical disabilities, it is also rewarding to help them progress and succeed. Similar to teachers of other subjects, special educators plan lessons, instruct children, and assign activities to children. They also grade assignments and tests, track student's progress, and meet with parents to discuss student's abilities and challenges they may be facing. They may teach at the elementary, middle, or secondary school level at a public or private school, and their students may range from having mild to severe learning and/or behavioural disabilities. Some have their own classrooms where they teach one or more groups of students while others work in general classrooms with special needs children learning alongside with other students. In some cases, the special educator may co-teach the class, or they may teach in support or breakout roles.

Special educators should also have the ability to understand and acknowledge the areas of communicative competence their students display. According to Light (1989), communicative competence requires skills in four main areas: (1) linguistic, (2) operational, (3) social, and (4) strategic competencies. Linguistic competence involves an understanding of the linguistic rules required of the person's language including the language code of the AAC system the person is using. A user of AAC needs to understand the meaning of each symbol available to him or her that includes following syntactic and semantic rules required to express meaning using these symbols in his or her communication system. Operational competence refers to the user's ability to technically operate his or her AAC system. Social competence is when a user of AAC demonstrates the ability to determine when, where, and with whom to functionally communicate using his or her system in a socially acceptable manner. Finally, strategic competence is when a user of AAC has awareness of how to avoid and/or repair communication breakdowns while using his or her AAC system (Light, 1989; Light & McNaughton, 2014).

Early Childhood Special Education (ECSE) service is a multidisciplinary approach for children with disabilities from age three to five, whereby educators and related service providers coordinate the overlap of services to develop and work on Individualized Education Plan (IEP) objectives. Strong collaboration is needed to ensure young children with disabilities make progress in the least restrictive environment.

Barriers to collaboration among ECSE teams can include philosophical differences, poor communication and lack of time for planning. Recognizing the barriers and problem solving is essential to building a strong community of support for young children with disabilities and their families.

AAC systems are more likely to be used in the long term when they are individualized to the needs of the student. Individualizing the system means that it will have the features and language system to encourage communication and enable the student to communicate in the most effective means possible. Individualizing a communication system supports long term use by fostering a sense of ownership of own voice, meeting the communication needs of the student and the people that support him/her, increasing motivation to use the system through access to highly motivating vocabulary. Furthermore, AAC supports interactions with family members and friends through use of common vocabulary. Families play an essential role in providing information and advocating for the rights and needs of their child. When special educators and families commit to share responsibility for student success, there is continuity between school and home that is focused on student strengths and presumptions of competence in the student's ability to learn and grow.

There is a consistent theme surrounding the lack of training for special educators regarding supporting students who use AAC in the classroom. Special educators recognize that learning in depth about AAC is essential for student success and inconsistent opportunities to learn about AAC can be detrimental. When special educators feel more equipped and more assured in terms of their abilities to teach how to use AAC, they will be more effective in their practice. It is important for them to have the background knowledge and understanding of how and what to teach, yet special educators have shortfalls in their knowledge and understanding that impact their ability to support students with CCN in school.

The school system, at times, may exhibit challenges that are difficult to overcome. Most commonly, there challenges may be due to the increasing number of students being referred to special education services, the increasing number of students with CCN and limited number of professionals specialized in a given discipline such as AAC or assistive technology. With rise in students who are being referred for special education services there is also a larger influx of students who present CCN or who use AAC. This may be due in part to the increase in prevalence of certain disabilities that have high comorbidity rate with CCN.

There are no general pre-requisites for AAC intervention except the desire to communicate. Children do not need to demonstrate specific skills in order to be a candidate for AAC. In other words, typical children are provided with speech models, children who use AAC systems also need models of AAC to become competent communicators. AAC for children is the responsibility of every communication partner, not just the speech pathologist. AAC requires time to learn similar to any form of communication. Students require ample opportunities to practice using their AAC in different places and with different individuals across the day.

In order to participate in classroom activities, students need a way to ask and answer questions, provide information, interact with peers, and communicate. If a student has difficulty using speech, the student's individualized education program (IEP) team should consider the use of AAC to support communication. Even students who use limited speech might also use AAC systems to clarify their message when their speech is not understood. The effectiveness of AAC systems and the increased risk for poor long-term outcomes associated with inadequate support of communication skills, practitioners including special educators need to incorporate explicit instruction on communication skills and AAC systems appropriately within the curriculum (Beukelman & Mirenda, 2013). In order to encourage students with complex communication needs to maintain and generalize use of AAC across their environments and the continued support of an educational team trained well in the use of explicit instruction.

The success of communicative interaction is dependent on the communication skills of each individual participating in the exchange. Accordingly, in the case of an interaction involving an individual using AAC, the success of the interaction depends not only on the skills of this individual, but also on those of the communication partner.

A. Western Literature

Costigan and Light, (2010) did a review of pre-service training in AAC for SLPs, special educators, and OTs, the results indicated that many pre-service programs offer minimal AAC training, faculty members have minimal expertise in AAC, and the effectiveness of pre-service programs in equipping professionals for entry-level AAC practice is unclear. SLPs, special educators, and OTs may thus be at risk of graduating with minimal to no exposure to AAC, with little knowledge or skill in AAC service provision, and may be unprepared for entry-level practice. Hanson and Lynch, (2013) reported that families are often connected with the person who uses AAC on a long-term basis, as opposed to other communication partners who may come and go. Any colour, ethnicity, culture, sexual orientation, level of money, religion, or level of education may make up a contemporary family. Family members must be ready to take part in decisions about day-care, health care, schooling, residential living and even end of life care because of their extended involvement in AAC intervention.

To provide the continual everyday communication assistance that families frequently provide, AAC facilitated can be found (e.g., maintaining AAC technologies, updating vocabulary and messages, teaching new communication partners).

Tonsing and Dada, (2016) investigated that special educators in south African special school identify an array of factors that influence the implementation of aided AAC, including those related to themselves, the classroom context, the characteristics of aided AAC, students using AAC and other stakeholders. These factors are discussed in the light of international literature as well as the local context and are used as a basis to suggest a research agenda for AAC in the South African Education System.

Comiotto et al., (2016) investigated the AAC knowledge of health care professionals such as doctors, Nurses, Nursing technicians, Physiotherapists, SLPs, Caregivers, Social workers, Nutritionists, Psychologists, Dentist, Paediatrist, OT, Music teacher, Teacher of social activities and one volunteer to help caregivers. The results indicate that the professionals with more AAC knowledge are 29-39 years old, have higher education and are between 1-5 years of work training.

Andzik et al., (2017) conducted study on perspective of special educator's regarding AAC services in schools showed despite receiving some support, the majority of teachers identified challenges including inadequate training, lack of comprehensive assessment, inadequate preparation time and inconsistent AAC implementation across team members.

Meadows, (2018) examined on special educator's perception of AAC to facilitate communication among pre-school students with disabilities found that preschool special educators value the use of AAC and understand the basic human right for all students to participate. However, special educators and special education professionals perceive their roles and responsibilities, as communicative partners and facilitators, differently. The data reveal that limited knowledge and resources are barriers to facilitating communication, through the use of AAC systems. It may be inferred that educators with more knowledge about disability, technology, and AAC systems perceive fewer barriers to AAC utilization. In turn, those special educators typically utilize AAC more in their instructional practice. Additional findings suggest that special educators may be able to increase their utilization of AAC if provided with professional development related to communication, AAC devices, and updated technology. The increased prevalence of children with ASD, speech impairments, or IDDs makes the population of students using AAC increasingly diverse.

Moorcroft et al., (2019) also conducted a qualitative study of 16 SLPs who have experienced parents' acceptance, rejection, or abandonment of AAC systems for their children. The results of the study indicate that the factors affecting the acceptance of AAC for children with CCN included themes such as the parents' views on their children and on AAC intervention, parental support, the nature of AAC systems, and services provided by the SLP. Based on the results of the study, the researchers concluded that a comprehensive consideration of not only the child with CCN but the parents.

McCoy and McNaughton, (2021) evaluated effects of online training on special educator's knowledge and use of system of least prompts to support AAC and results showed training was effective in increasing special educator's knowledge as well as the ability to plan for SLP. Implementation of SLP also increased over time; however, data analysis did not support the conclusion that this result was directly related to the online training. Additional results suggested that the participants viewed online instruction, with teleconference role-play assessments and case study vignettes, as a socially valid activity. Participants reported learning a valuable skill and as a result of the training were more confident working with individuals who use AAC.

B. ASIAN Literature

Patel & Dakwa, (2005) did case study of Palestinian Arab teachers in Israel, an AAC training program for special education educators revealed that training helped them to address barriers to AAC intervention.

Srinivasan et al., (2011) by using mixed-method approach, examined current developments in AAC and communication intervention in southern India by evaluating special educators, SLPs, and behaviour therapists. The questionnaire's responses were quantitatively analyzed. Themes that emerged from open-ended interview questions were qualitatively analyzed and recorded. Insights and descriptive statistics are used to present the findings. The following viewpoints were expressed such as communication intervention should be a structured, child-centric process; using a collaborative team model, parents play an integral role in decision making and intervention; because of India's diversity, cultural and linguistic issues are imperative in decision making and intervention; use of better materials and technology can improve intervention.

Ghani and Mohamed, (2019) did study on level of AAC knowledge and skills among special educators for autistic students in primary school in Malaysia, the result showed that the level of knowledge and skills of special educators in implementing AAC in the classroom is still moderate and requires training. Aldabas (2020) investigated professional training needs for using AAC in inclusive classrooms in Saudi Arabia found that there is a high level of need for a wide variety of training areas in AAC. The findings indicate that participants differed significantly in their levels of need for professional AAC training depending on the participants' previous training and experience, as well as the category of students taught, level of education, and grade level.

Singh et al., (2020) investigated on Malaysian special educator's experience using AAC which revealed approximately half of the participants who completed the questionnaire knew about AAC and had used AAC with their students. Almost all of the participants had positive views of AAC though some misconceptions were reported. Most participants had limited knowledge about AAC that led them to experience difficulties supporting their students.

Teachers were motivated to receive AAC related training to enable them to use AAC more successfully with their students given the small number of SLPs in the country.

Muttiah et al., (2022) did a study on scoping review on AAC interventions in low- and middle-income countries (LMICs) in and around the area of Colombo, Sri Lanka and depicted that many positive outcomes arising from AAC interventions, including increased communication, improved participation, increased knowledge about communication, and increased use of partner communication strategies, thus adding to the evidence base that AAC can be successfully implemented in LMICs. However, these studies did not broadly represent most LMICs and there were only a handful of indirect intervention studies training communication partners.

Thapa and Gupta (2022) investigated the awareness on AAC among special educators in Nepal. According to the study the questionnaire on the topic of AAC received an equal number of replies from Nepali special educators. The results revealed that among 20 special educators, 13 (65%) are aware and 7 (35%) educators are not aware about AAC suggesting moderate awareness among them.

C. Need Of The Study

AAC methods supplement or replace speech to benefit individuals with complex communication needs (Douglas, 2012). It refers to all forms of communication outside of oral speech. It may range from facial expressions and gestures to forms of assistive technology. In the field of special education, AAC comprises all communication methods for teaching students with severe language or speech disabilities. (Watson, 2018).

Due to motor weakness, linguistic, cognitive or perceptual difficulties, people with complex communication needs (CCN) are not able to communicate verbally in an effective manner (Light & Drager, 2007). Their daily needs are therefore not satisfied by verbal communication alone (Beukleman & Mirenda, 2013). Individuals with CCN have restricted access to their environment, can have limited communication interactions and may also have fewer opportunities to communicate (Light & Drager, 2007). Thus, they can benefit either temporarily or permanently from AAC strategies.

Israel (2009) reported that Special education teacher education involves introducing preservice or in-service teachers to the content and pedagogical tools necessary to teach students with disabilities effectively. The inherent complexities of teacher education are magnified when it comes to special education teacher education. The primary AAC roles and responsibilities of special educators involved a variety of areas, including adapting the curriculum, identifying needed vocabulary, preparing and maintaining documentation of student progress, writing goals and objectives for AAC users, and assessing cognitive abilities. (Locke & Mirenda, 2009)

Radichi et al., (2018) investigated about teacher's attitude towards children who use AAC in Italian primary schools. Two groups of teachers, those with and without AAC experience, responded to an online survey. The five scales of the Teacher Attitude Scale (TAS) questionnaire and two open-ended questions were used to compare the attitudes and the perceptions between the groups of teachers.

Results showed that there was a significant difference among the two groups for two of the five scales of the TAS questionnaire. Both groups reported similar barriers and benefits and indicated the use of AAC as being the main barrier. Overall, having experience with children who use AAC in class impacts the teacher's perceptions of their own abilities and the teacher's perceptions of the abilities of the children.

Special educators are often assigned to administer individual achievement tests to students who have or are suspected of having disabilities. They are also responsible for interpreting tests for parents, teachers and others who may have an interest in the results. Additionally, they are highly skilled professional in developing both formative and summative assessments for the children. Special educators are vital in ensuring that children with disabilities receive the support they need to reach their full potential.

Children with disabilities often have many needs throughout their education; a special educator addresses the issues and helps them. They have an important role in helping SLP's in AAC assessment and management, thus helping the disordered population to use appropriate tools. To summarize present Indian literature suggests the necessity of this study was taken from the notion that there are limited studies till date to investigate regarding awareness about AAC in connection with special educators in Kerala.

Hence this study would showcase an additional insight about the importance of AAC among special educator which could impact on communication needs of children with disabilities.

III. METHODOLOGY

A. AIM

The purpose of the study is to investigate awareness in Special Educators regarding AAC for children with Communication Disabilities.

B. Method

The present study is carried out in two phases.

1) Phase 1: Preparation Of Questionnaire

The questionnaire was developed using a range of supporting literature. A set of 25 (YES/NO) questions and 25 Multiple Choice Questions, total 50 questions were selected and validated by 5 SLP who are currently in practice. The correction and suggestions are incorporated in the preparation of questionnaire.

2) Phase 2: Participants

30 Special School Special Educators in and around Kottayam district with working experience of more than 3 years were taken.

C. Inclusion Criteria

- Certified Special Educators
- Experience
- Working in school setup

D. Exclusion Criteria

- Other professionals like occupational therapy, physiotherapist, speech language pathologist and radiologist.
- Special educators working in clinical setup
- Less than a year experience

E. Test Procedure

The questionnaire developed in Malayalam language was distributed to all target population chosen as sample. A brief list of special educators was prepared among different cities of Kottayam. The special educator's consent was taken initially before collecting the data.

F. Tools Used

E-Questionnaire was developed in English/ Malayalam language which was validated by 5 speech language pathologists who were fluent in both English and Malayalam language. The questionnaire consists of 25 multiple choice questions and 25 Yes/ No questions.

G. Scoring

The validated questionnaire consisted of 25 multiple choice questions and 25 Yes/No questions by scoring Yes 1 and No 0 the data was arranged and further given for statistical analysis.

H. Statistical Analysis

The collected data were summarized by using the Descriptive Statistics: frequency and percentage. Binomial test was used for the comparisons. The p value < 0.05 was considered as significant. Data were analyzed by using the SPSS software (SPSS Inc.; Chicago, IL) version 26.0.

IV. RESULT AND DISCUSSION

Table 1 Showing percentage score of Multiple-Choice Questions on awareness of AAC among special educators.

(n = 30)	Aware		Not aware		p value	Significance
	n	%	n	%		
Acronym of AAC	27	90	3	10	< 0.001	S
Age criteria of AAC	22	73.3	8	26.7	0.016	S
Two types of AAC	18	60	12	40	0.362	NS
The primary goal of AAC	21	70	9	30	0.043	S
Examples of aided communication system	20	66.7	10	33.3	0.099	NS
Examples of unaided communication system	21	70	9	30	0.043	S
Which of the following will not come under low technology AAC device?	20	66.7	10	33.3	0.099	NS
Which of the following group will not use AAC?	23	76.7	7	23.3	0.005	S
Which of the following will not come under high technology AAC device?	22	73.3	8	26.7	0.016	S
Disadvantage of high technology electronic device	21	70	9	30	0.043	S
What is visual communication board used for?	20	66.7	10	33.3	0.099	NS
Use of Eye tracking devices	19	63.3	11	36.7	0.200	NS
Application of Eye Gaze technology	22	73.3	8	26.7	0.016	S
Which of the following is used mostly for children with cerebral palsy / Autism?	21	70	9	30	0.043	S
Which category of children will be mostly benefited from AAC?	24	80	6	20	0.001	S
Which group of children prefer AAC	23	76.7	7	23.3	0.005	S
What are the barriers seen for effective use of AAC?	20	66.7	10	33.3	0.099	NS
Will the use of AAC interfere with a child's vocal development?	22	73.3	8	26.7	0.016	S
Are voice output system considered better than low-tech picture selection system	21	70	9	30	0.043	S
Lack of time is an important reason why a teacher would not use AAC techniques in the classroom	25	83.3	5	16.7	< 0.001	S
AAC facilitators need to be trained in which of the following?	20	66.7	10	33.3	0.099	NS
Which materials do you use for AAC implementation	21	70	9	30	0.043	S
AAC is a set of ---------	24	80	6	20	0.001	S
Which of the following is low tech?	21	70	9	30	0.043	S
Through which media you believe that you can gain knowledge on AAC	22	73.3	8	26.7	0.016	S

Figure 1 Showing percentage score of multiple-choice questions on awareness of AAC among special educators.

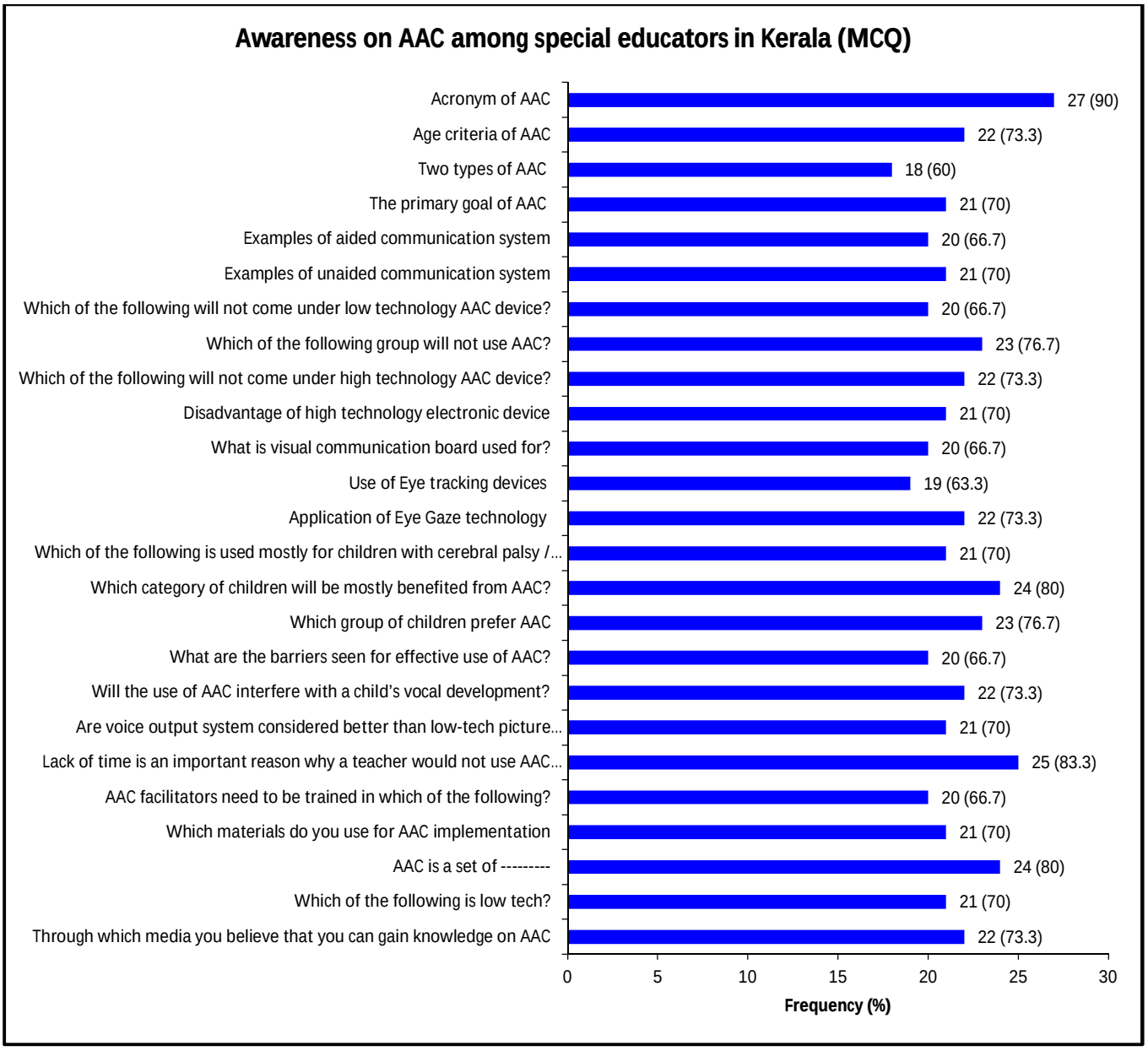

Table 1 and Figure 1 reveals that 90% are aware of Acronym of AAC, 76.7% are aware which of the following group will not use AAC and which group of children prefer AAC. 80% are aware of which of the following will not come under high technology AAC device, set of AAC, and which category of children will be mostly benefited from AAC. 83.3% are aware of the lack of time is an important reason why a teacher would not use AAC techniques in the classroom 73.3% are aware of age criteria of AAC, application of eye gaze technology, through which media special educators can gain knowledge on AAC and would the use of AAC interfere with a child's vocal development. 70% are familiar about the primary goal of AAC, examples of unaided communication system, disadvantage of high technology electronic device, which of the following is used mostly for children with cerebral palsy / Autism, which materials used for AAC implementation and which of the following is low tech. 66.7% are aware of examples of aided communication system, which of the following will not come under low technology AAC device, what is visual communication board used for, what are the barriers seen for effective use of AAC and AAC facilitators need to be trained in which of the following. 63.3% are aware of the use of eye tracking devices and 60% are aware regarding two types of AAC.

Table 2 Showing percentage score of Awareness on AAC among special educators in Kerala (Yes/No questions)

(n = 30)	Aware		Not aware		p value	Significance
	n	%	N	%		
Have you heard of AAC technologies before?	28	93.3	2	6.7	<0.001	S
Have you applied AAC technologies for your patients?	25	83.3	5	16.7	<0.001	S
Have you ever had any training or supervision on AAC?	23	76.7	7	23.3	0.005	S
Do you think AAC will provide better communication skills for children with multiple disability?	26	86.7	4	13.3	<0.001	S
Do you think children of all ages can use AAC if they have trouble with communication?	24	80	6	20	0.001	S
Can children with communication disorders use AAC to read and write?	25	83.3	5	16.7	<0.001	S
Can be used AAC with a client who is able to speak but may not be clear?	21	70	9	30	0.043	S
AAC device should be introduced only when the child is able to understand pictures?	22	73.3	8	26.7	0.016	S
Can AAC use for academic learning?	22	73.3	8	26.7	0.016	S
Can AAC used to encourage social interaction?	20	66.7	10	33.3	0.099	NS
Are you aware of types of AAC?	21	70	9	30	0.043	S
Does low aided technology will work only with batteries / electrical input?	22	73.3	8	26.7	0.016	S
Should we consider the child's vocabulary before customizing low technology picture exchange communication skills?	23	76.7	7	23.3	0.005	S
Do your school provide AAC setup for children with multiple disability?	20	66.7	10	33.3	0.099	NS
Is high technology aided AAC systems, an electronic device which store message and allow to use as speech output?	19	63.3	11	36.7	0.200	NS
Can AAC assist non-verbal children to develop language skills and helps in daily activities?	25	83.3	5	16.7	<0.001	S
Does the use of AAC negatively affect the ability of producing speech?	24	80	6	20	0.001	S
Is unaided AAC technology communication board effective for autistic children?	25	83.3	5	16.7	<0.001	S
Is it important to assess the motor capabilities to determine potential access to AAC?	21	70	9	30	0.043	S
Is it important for Family members/ Peer group have an important role in AAC service delivery?	22	73.3	8	26.7	0.016	S
Do you think AAC training should be provided to all special school teachers in Kerala?	27	90	3	10	<0.001	S
AAC instructions given by occupational therapist to children with communication disorders?	20	66.7	10	33.3	0.099	NS
Do you think AAC is cost effective?	26	86.7	4	13.3	<0.001	S
Are the government schemes / funds available for AAC users in Kerala?	18	60	12	40	0.362	NS
Do you think AAC is difficult to demonstrate?	28	93.3	2	6.7	<0.001	S

Figure 2 Showing percentage score of awareness on AAC among special educators in YES/NO Questions.

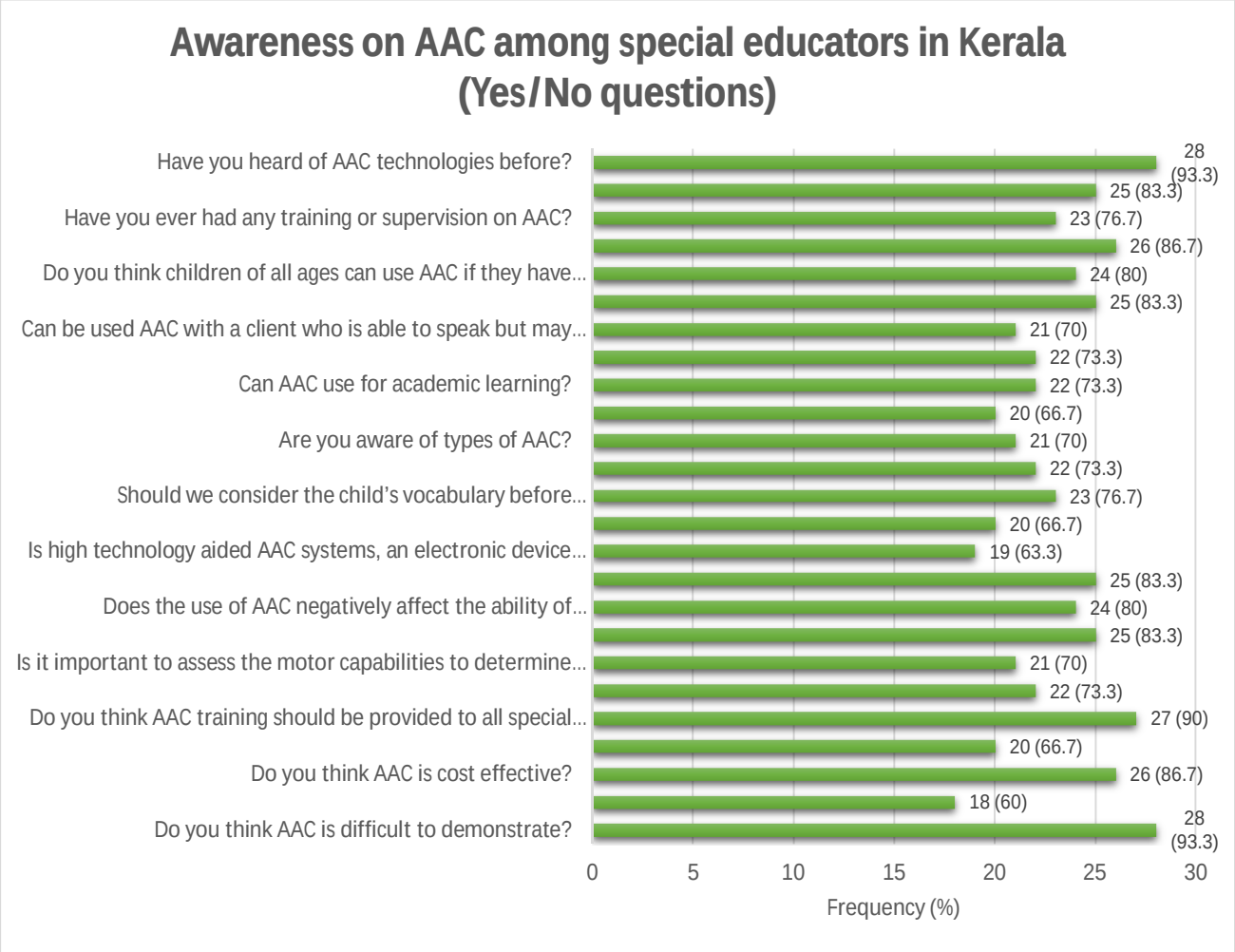

Table 2 & Figure 2 reveals that 93.3% of the special educators have awareness about AAC technologies and are aware of whether or not AAC is difficult to demonstrate. 86.7% of them have the awareness that AAC will provide better communication skills for children with multiple disabilities and believe that AAC is cost effective. 83.3% of them have applied AAC technologies for their patients, aware of whether or not AAC can assist non-verbal children to develop language skills and helps in daily activities, unaided AAC technology communication board effective for autistic children and aware of whether or not the children who have communication disorders can use AAC to read and write. 76.7% had training or supervision on AAC and aware of considering the child's vocabulary before customizing low technology picture exchange communication skills 80% are aware of whether or not the use of AAC negatively affect the ability of producing speech and aware about children of all ages can use AAC if they have trouble with communication.73.3% are aware of AAC device should be introduced only when the child is able to understand pictures and aware whether or not AAC can be used for academic learning, consider that low aided technology will work only with batteries / electrical input and believe that it is important for Family members/ Peer group have an important role in AAC service delivery. 70% are aware of the client can use AAC who is able to speak but may not be clear, types of AAC and consider that it is important to assess the motor capabilities to determine potential access to AAC. 90% consider that AAC training should be provided to all special school teachers in Kerala., 66.7% are aware whether or not occupational therapist should provide AAC instructions to children with communication disorders, AAC can be used to encourage social interaction and aware of whether or not school provide AAC setup for children with multiple disability. 63.3% aware of whether or not high technology aided AAC systems is an electronic device which store message and allow to use as speech output and 60% are aware about government schemes/funds availability in Kerala.

Table 3 Showing percentage score of awareness on AAC among special educators in Multiple-Choice Questions and Yes/No Questions.

(n = 30)	Aware		Not aware		p value	Significance
	n	%	n	%		
Acronym of AAC	27	90	3	10	<0.001	S
Age criteria of AAC	22	73.3	8	26.7	0.016	S
Two types of AAC are	18	60	12	40	0.362	NS
The primary goal of AAC is	21	70	9	30	0.043	S
Examples of aided communication system	20	66.7	10	33.3	0.099	NS
Examples of unaided communication system	21	70	9	30	0.043	S
Which of the following will not come under low technology AAC device?	20	66.7	10	33.3	0.099	NS
Which of the following group will not use AAC?	23	76.7	7	23.3	0.005	S
Which of the following will not come under high technology AAC device?	22	73.3	8	26.7	0.016	S
Disadvantage of high technology electronic device	21	70	9	30	0.043	S
What is visual communication board used for?	20	66.7	10	33.3	0.099	NS
Eye tracking devices can	19	63.3	11	36.7	0.200	NS
Application of Eye Gaze technology can be seen mostly for	22	73.3	8	26.7	0.016	S
Which of the following is used mostly for children with cerebral palsy / Autism?	21	70	9	30	0.043	S
Which category of children will be mostly benefited from AAC?	24	80	6	20	0.001	S
AAC is preferred to children with	23	76.7	7	23.3	0.005	S
What are the barriers seen for effective use of AAC?	20	66.7	10	33.3	0.099	NS
Will the use of AAC interfere with a child's vocal development?	22	73.3	8	26.7	0.016	S
Are voice output system considered better than low-tech picture selection system	21	70	9	30	0.043	S
Lack of time is an important reason why a teacher would not use AAC techniques in the classroom	25	83.3	5	16.7	<0.001	S
AAC facilitators need to be trained in which of the following?	20	66.7	10	33.3	0.099	NS
Which materials do you use for AAC implementation	21	70	9	30	0.043	S
AAC is set of ----------	24	80	6	20	0.001	S
Which of the following is low tech?	21	70	9	30	0.043	S
Through which media you believe that you can gain knowledge on AAC?	22	73.3	8	26.7	0.016	S
Have you heard of AAC technologies before?	28	93.3	2	6.7	<0.001	S
Have you applied AAC technologies for your patients?	25	83.3	5	16.7	<0.001	S
Have you ever had any training or supervision on AAC?	23	76.7	7	23.3	0.005	S

Do you think AAC will provide better communication skills for children with multiple disability?	26	86.7	4	13.3	<0.001	S
Do you think children of all ages can use AAC if they have trouble with communication?	24	80	6	20	0.001	S
Can children with communication disorders use AAC to read and write?	25	83.3	5	16.7	<0.001	S
Can be used AAC with a client who is able to speak but may not be clear?	21	70	9	30	0.043	S
AAC device should be introduced only when the child is able to understand pictures?	22	73.3	8	26.7	0.016	S
Can AAC use for academic learning?	22	73.3	8	26.7	0.016	S
Can AAC used to encourage social interaction?	20	66.7	10	33.3	0.099	NS
Are you aware of types of AAC?	21	70	9	30	0.043	S
Does low aided technology will work only with batteries / electrical input?	22	73.3	8	26.7	0.016	S
Should we consider the child's vocabulary before customizing low technology picture exchange communication skills?	23	76.7	7	23.3	0.005	S
Do your school provide AAC setup for children with multiple disability?	20	66.7	10	33.3	0.099	NS
Is high technology aided AAC systems, an electronic device which store message and allow to use as speech output?	19	63.3	11	36.7	0.200	NS
Can AAC assist non-verbal children to develop language skills and helps in daily activities?	25	83.3	5	16.7	<0.001	S
Does the use of AAC negatively affect the ability of producing speech?	24	80	6	20	0.001	S
Is unaided AAC technology communication board effective for autistic children?	25	83.3	5	16.7	<0.001	S
Is it important to assess the motor capabilities to determine potential access to AAC?	21	70	9	30	0.043	S
Is it important for Family members/ Peer group have an important role in AAC service delivery?	22	73.3	8	26.7	0.016	S
Do you think AAC training should be provided to all special school teachers in Kerala?	27	90	3	10	<0.001	S
Are AAC instructions given by occupational therapist to children with communication disorders?	20	66.7	10	33.3	0.099	NS
Do you think AAC is cost effective?	26	86.7	4	13.3	<0.001	S
Are the government schemes / funds available for AAC users in Kerala?	18	60	12	40	0.362	NS
Do you think AAC is difficult to demonstrate?	28	93.3	2	6.7	<0.001	S

Figure 3 Showing percentage score of awareness on AAC among special educators in Multiple-Choice Questions and Yes/No Questions.

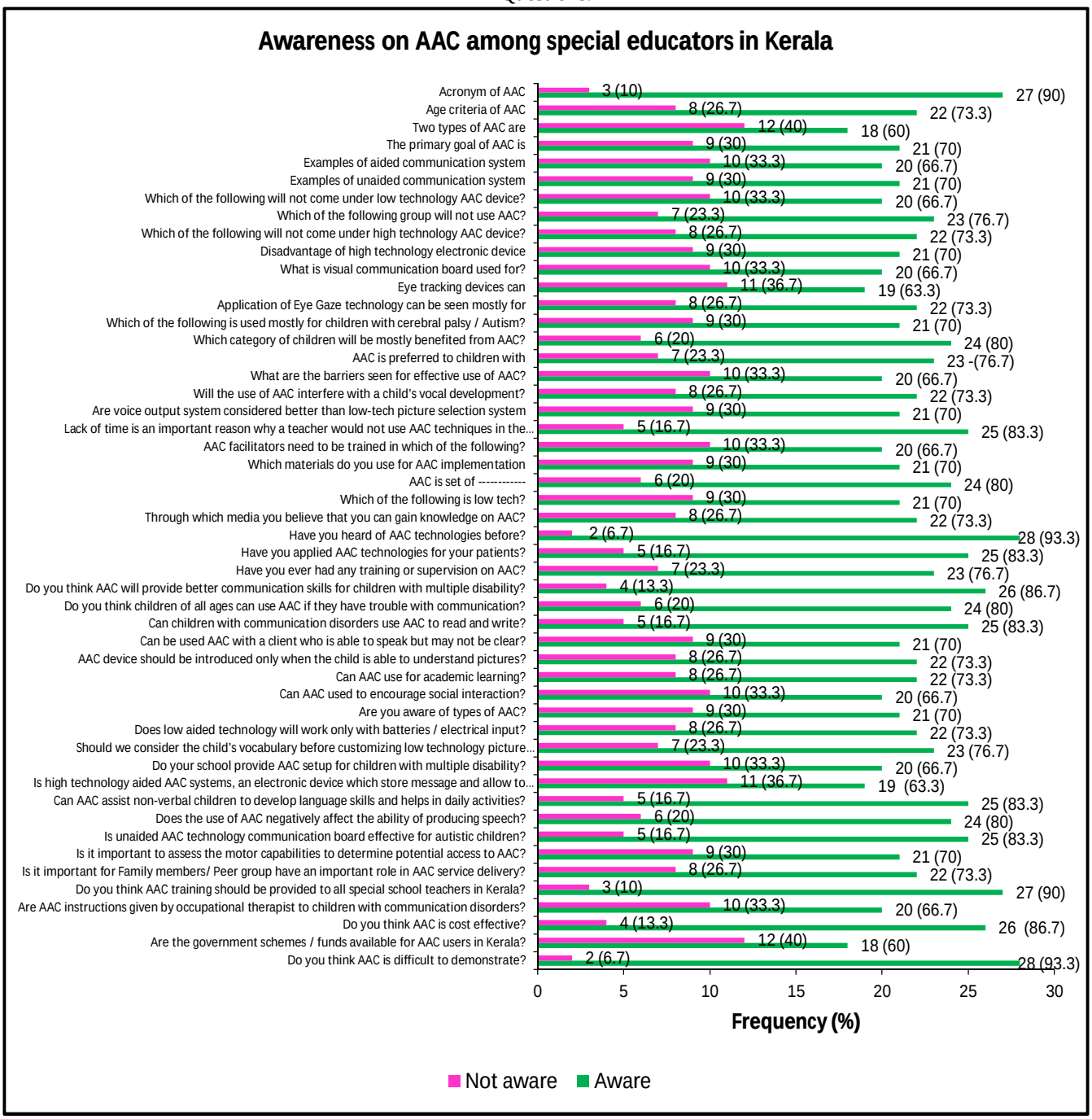

Table 3 and Figure 3 shows a score of 93.3 % for question 26 and 50 with significant difference also shows score of 90% for question 1 & 46, 86.7 % score for question 29 & 48, 83.3% score for question 20, 27, 31, 41 & 43. 80 % score for question 15, 23, 30 & 42, 76.7% score for question 8, 16, 28 and 38, 73.3 % score for question 2, 9, 13, 18, 25, 33, 34, 37 and 45 and 70 % are aware for question 4,6,10,14,19,22,24,32,36,44 with significant difference. Shows score of 33.3% special educators are not aware for question 5,7,11,17,21,35,39 & 47, also 36.7% special educators are not aware for question 12 & 40 and 40% are not aware of question 3 & 49 with no significant difference.

Table 4 Showing overall percentage of Yes/No Questions and Multiple-Choice Questions among special educators.

Overall	Frequency	%
Awareness (Yes/No)	23	78
Awareness (MCQs)	22	73
Yes/No & MCQs	22	73

Figure 4 Showing overall percentage score of Yes/No Questions and Multiple-Choice Questions on AAC among special educators.

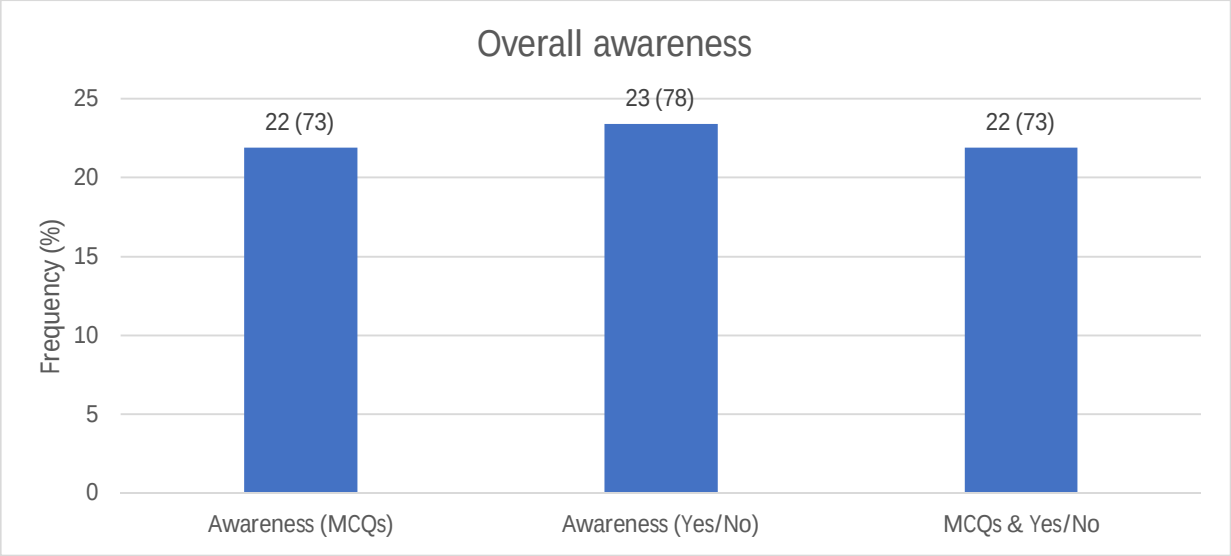

Table 4 and Figure 4 shows score of 78% on Yes/No Questions and 73% on Multiple-Choice Questions. Hence moderate awareness on Yes/No Questions and Multiple-Choice Questions and average of 73% of special educators are aware of AAC.

Table 5 Showing overall percentage score of awareness of AAC among special educators in Kerala.

Overall awareness	Frequency	Percentage
Aware	22	73
Not aware	8	27

Figure 5 Showing overall awareness score of participants.

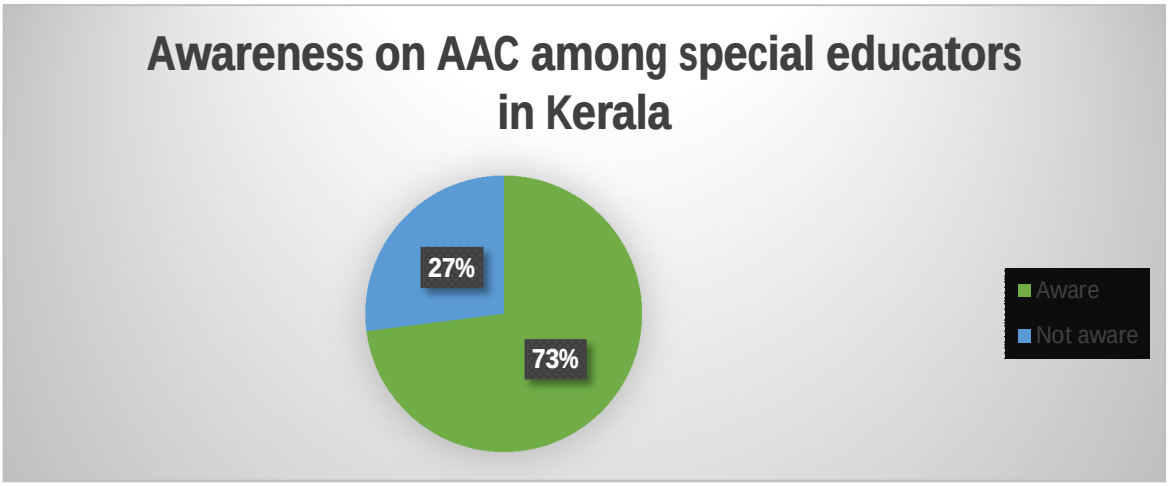

Table 5 and Fig 5 shows among 30 special educators, 22 are aware scoring 73% and 8 special educators are not aware scorning 27%.

V. DISCUSSION

The present study focused on awareness of AAC among special educators in Kottayam. The participants included 30 special educators who take part in the study. The questionnaire was distributed to these participants. As per the results, moderate awareness (73%) was observed in special educators of Kottayam which was accordance with the results by Tappa and Gupta (2022) who reported that moderate awareness was seen in special educators in Nepal. Ghani and Mohamed (2019) did study on level of AAC knowledge and skills among special educators for autistic students in primary school in Malaysia. The results showed that the level of knowledge and skills of special educators in implementing AAC in the classroom is still moderate and requires training. The results of the present study also support the findings by Subihi (2013) on special educators of Saudi Arabia about the knowledge of AAC. Similar to previous studies (Andzik et al.,2017; Tappa & Gupta) the present study too emphasizes the necessity of conducting more seminars/workshops for special educators about the implementation of materials and technology that are required for AAC intervention as these aspects enhance the knowledge of special educators in order to uplift the child's learning and communication.

VI. SUMMARY AND CONCLUSION

Everyone communicates for a range of different purposes. Sometimes it is to share an opinion, protest, connect with other individuals. This is the same for individuals with CCN and there for they need to have access to an AAC system that allows them to communicate for a range of purposes. The main objective of AAC is to provide vast opportunity to meet the daily life activity through the freedom of communication. Through the decade, technology of AAC had developed as a result the method of teaching by special educators assisted students with ease and comfortability. The gratifying aspect of AAC is that coordination among professionals including special educators, speech language pathologist and other professionals which results in delivering and enhancing the child's ability to learn and communicate. The involvement of family is significant for supporting their child using AAC. According to the present study, the questionnaire was filled by special educators in order to assess the awareness of AAC among them. The results revealed that among 30 special educators, 22 (73%) are aware and 8 (27%) are not aware suggesting moderate awareness. Hence more awareness programs, workshops and seminars should be conducted in district/state level to improve the proficiency on dealing with AAC. Thus, it can be concluded that the continuous training and effective knowledge among special educators had intern collaborated with other professionals leading to derive better output from children or adults with communication disorders.

A. Limitations of the Present Study

1) Sample size is less
2) Participants were from one district in Kerala.

B. Future Implications

1) Sample size can be increased
2) Study could be carried out in several districts of Kerala
3) A comparative study on AAC could be done with other professionals that interact with children with communication disorders who use AAC.

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APPENDIX-1

MULTIPLE CHOICE QUESTION

1) Acronym of AAC?
- a) Assistive Aided Communication
- b) Augmentative Alternative communication
- c) Advanced Audio Coding
- d) None of the above

2) Age criteria of AAC
- a) Below 3 years
- b) Above 3 years
- c) All ages
- d) More than 5 years

3) Two types of AAC are
- a) Aided / Unaided
- b) Wired / Wireless
- c) Induction loops system / FM System
- d) All of the above

4) The primary goal of AAC is
- a) To learn their mother language
- b) To speak fluently
- c) To communicate their daily need
- d) To become bilingual

5) Examples of aided communication system
- a) Vocalizations
- b) Sign language
- c) Facial expressions
- d) An object to convey meaning

6) Examples of unaided communication system
- a) Books of picture symbols
- b) Pictures exchange communication skills
- c) Eye gaze
- d) Modeling device

7) Which of the following will not come under low technology AAC device?
- a) Picture exchange communication skills
- b) Speech generating device
- c) Communication boards & symbols
- d) Pre-made visual supports / eye gaze flip frame

8) Which of the following group will not use AAC?
- a) Visual impaired
- b) Hearing impaired
- c) Learning disability
- d) Functional hearing loss

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9) Which of the following will not come under high technology AAC device?
- a) Computers
- b) Gesture / Communication books
- c) Speech generating devices
- d) Telecommunications / aerospace and military equipment's

10) Disadvantage of high technology electronic device
- a) Expensive for users
- b) Cannot be used in natural setup
- c) Cannot be used in classroom setup
- d) All of the above

11) What is visual communication board used for?
- a) Answering daily questions
- b) Asking WH questions
- c) Expanding utterances
- d) All of the above

12) Eye tracking devices can
- a) Able to track eye ball movement
- b) Can able to follow body movements
- c) Able to track individual's location
- d) Able to read individual's mind

13) Application of Eye Gaze technology can be seen mostly for
- a) Autism spectrum disorder
- b) Down syndrome
- c) Cerebral palsy
- d) Intellectual disability

14) Which of the following is used mostly for children with cerebral palsy / Autism?
- a) Communication boards
- b) Picture exchange communication scales
- c) Computer
- d) Speech generating devices

15) Which category of children will be mostly benefited from AAC?
- a) Autism
- b) Childhood apraxia
- c) Cerebral palsy
- d) All of the above

16) AAC is preferred to children with
- a) Verbal mode of communication
- b) Nonverbal mode of communication
- c) Both
- d) None of the above

17) What are the barriers seen for effective use of AAC?
a) Lack of availability & accessibility of AAC?
b) Lack of knowledge of AAC systems
c) Lack of opportunity and access
d) All of the above

18) Will the use of AAC interfere with a child's vocal development?
a) Agree
b) Disagree
c) Partially agree
d) None of the above

19) Are voice output system considered better than low-tech picture selection system
a) Agree
b) Disagree
c) Partially agree
d) None of the above

20) Lack of time is an important reason why a teacher would not use AAC techniques in the classroom?
a) Agree
b) Disagree
c) Partially agree
d) None of the above

21) AAC facilitators need to be trained in which of the following?
a) Keeping the vocabulary in the AAC devices up to date
b) Modifying the device for future needs
c) Ensuring day today availability and operation of the device
d) All of the above

22) Which materials do you use for AAC implementation
a) Toys / Games
b) Board marker
c) Pictures / Objects
d) None of the above

23) AAC is a set of ---------
a) Tools
b) Strategies
c) Device
d) All of the above

24) Which of the following is low tech?
a) Sign language
b) Facial expressions
c) Picture symbol book
d) iPad

25) Through which media you believe that you can gain knowledge on AAC

a) Internet
b) Books
c) Short term courses on AAC
d) All of the above

YES/NO QUESTIONS

26) Have you heard of AAC technologies before?

YES / NO

27) Have you applied AAC technologies for your patients?

YES / NO

28) Have you ever had any training or supervision on AAC?

YES / NO

29) Do you think AAC will provide better communication skills for children with multiple disability?

YES / NO

30) Do you think children of all ages can use AAC if they have trouble with communication?

YES/ /NO

31) Can children with communication disorders use AAC to read and write?

YES / NO

32) Can be used AAC with a client who is able to speak but may not be clear?

YES / NO

33) AAC device should be introduced only when the child is able to understand pictures?

YES / NO

34) Can AAC use for academic learning?

YES / NO

35) Can AAC used to encourage social interaction?

YES / NO

36) Are you aware of types of AAC?

YES / NO

37) Does low aided technology will work only with batteries / electrical input?

YES NO

38) Should we consider the child's vocabulary before customizing low technology picture exchange communication skills?

YES/NO

39) Do your school provide AAC setup for children with multiple disability?

YES / NO

40) Is high technology aided AAC systems, an electronic device which store message and allow to use as speech output?

YES / NO

41) Can AAC assist non-verbal children to develop language skills and helps in daily activities?

YES / NO

42) Does the use of AAC negatively affect the ability of producing speech?

YES / NO

43) Is unaided AAC technology communication board effective for autistic children?

YES / NO

44) Is it important to assess the motor capabilities to determine potential access to AAC?

YES / NO

45) Is it important for Family members/ Peer group have an important role in AAC service delivery?

YES / NO

46) Do you think AAC training should be provided to all special school teachers in Kerala?

YES / NO

47) Are AAC instructions given by occupational therapist to children with communication disorders?

YES / NO

48) Do you think AAC is cost effective?

YES / NO

49) Are the government schemes / funds available for AAC users in Kerala?

YES / NO

50) Do you think AAC is difficult to demonstrate?

YES / NO

മൾട്ടിപ്പിൾ ചോയ്സ് ചോദ്യം

1) AAC എന്നതിന്റെ ചുരുക്കെഴുത്ത്?
   a) അസിസ്റ്റീവ് എയ്ഡ് കമ്മ്യൂണിക്കേഷൻ
   b) ഓഗ്മെന്റേറ്റീവ് ബദൽ ആശയവിനിമയം
   c) വിപുലമായ ഓഡിയോ കോഡിംഗ്
   d) മുകളിൽ കൊടുത്തിരിക്കുന്നതിൽ ഒന്നുമല്ല

2) AAC-യുടെ പ്രായ മാനദണ്ഡം
   a) 3 വർഷത്തിൽ താഴെ
   b) 3 വർഷത്തിന് മുകളിൽ
   c) എല്ലാ പ്രായക്കാരും
   d) 5 വർഷത്തിൽ കൂടുതൽ

3) രണ്ട് തരം AAC ആണ്
   a) എയ്ഡ് / അൺ എയ്ഡ്
   b) വയർഡ് / വയർലെസ്ഇൻഡക്ഷൻ
   c) ലൂപ്പ് സിസ്റ്റം / എഫ്എം സിസ്റ്റം
   d) മുകളിൽ പറഞ്ഞ എല്ലാം

4) AAC യുടെ പ്രാഥമിക ലക്ഷ്യം
   a) അവരുടെ മാതൃഭാഷ പഠിക്കാൻ
   b) ഒഴുക്കോടെ സംസാരിക്കാൻ
   c) അവരുടെ ദൈനംദിന ആവശ്യങ്ങൾ അറിയിക്കാൻ
   d) ദ്വിഭാഷിയാകാൻ

5) എയ്ഡ് ആശയവിനിമയ സംവിധാനത്തിന്റെ ഉദാഹരണങ്ങൾ
   a) ശബ്ദങ്ങൾ
   b) ആംഗ്യഭാഷ
   c) ഭാവഭേദങ്ങൾ
   d) അർത്ഥം അറിയിക്കാനുള്ള ഒരു വസ്തു

6) അൺ എയ്ഡഡ് കമ്മ്യൂണിക്കേഷൻ സിസ്റ്റത്തിന്റെ ഉദാഹരണങ്ങൾ

a) ചിത്ര ചിഹ്നങ്ങളുടെ പുസ്തകങ്ങൾ
b) ചിത്രങ്ങൾ ആശയവിനിമയ കഴിവുകൾ കൈമാറുന്നു
c) കണ്ണിന്റെ നോട്ടം
d) മോഡലിംഗ് ഉപകരണം

7) ഇനിപ്പറയുന്നവയിൽ ഏതാണ് കുറഞ്ഞ സാങ്കേതിക വിദ്യയായ AAC ഉപകരണത്തിന് കീഴിൽ വരാത്തത്?

a) ചിത്രം കൈമാറ്റം ആശയവിനിമയ കഴിവുകൾ
b) സംഭാഷണം സൃഷ്ടിക്കുന്ന ഉപകരണം
c) ആശയവിനിമയ ബോർഡുകളും ചിഹ്നങ്ങളും
d) മുൻകൂട്ടി തയ്യാറാക്കിയ വിഷ്വൽ സപ്പോർട്ടുകൾ / ഐ ഗേസ് ഫ്ലിപ്പ് ഫ്രെയിം

8) ഇനിപ്പറയുന്ന ഗ്രൂപ്പുകളിൽ ഏതാണ് AAC ഉപയോഗിക്കാത്തത്?

a) കാഴ്ച വൈകല്യം
b) കേൾവിക്കുറവ്
c) പഠന വൈകല്യം
d) പ്രവർത്തനപരമായ കേൾവി നഷ്ടം

9) ഇനിപ്പറയുന്നവയിൽ ഏതാണ് ഉയർന്ന സാങ്കേതികവിദ്യയായ AAC ഉപകരണത്തിന് കീഴിൽ വരാത്തത്?

a) കമ്പ്യൂട്ടറുകൾ
b) ആംഗ്യ / ആശയവിനിമയ പുസ്തകങ്ങൾ
c) സംഭാഷണം സൃഷ്ടിക്കുന്ന ഉപകരണങ്ങൾ
d) ടെലികമ്മ്യൂണിക്കേഷൻസ് / എയ്റോസ്പേസ്, സൈനിക ഉപകരണങ്ങൾ

10) ഉയർന്ന സാങ്കേതിക ഇലക്ട്രോണിക് ഉപകരണത്തിന്റെ പോരായ്മ

a) ഉപയോക്താക്കൾക്ക് ചെലവേറിയത്
b) സ്വാഭാവിക സജ്ജീകരണത്തിൽ ഉപയോഗിക്കാൻ കഴിയില്ല
c) ക്ലാസ്റൂം സജ്ജീകരണത്തിൽ ഉപയോഗിക്കാൻ കഴിയില്ല
d) മുകളിൽ പറഞ്ഞ എല്ലാം

11) വിഷ്വൽ കമ്മ്യൂണിക്കേഷൻ ബോർഡ് എന്തിനുവേണ്ടിയാണ് ഉപയോഗിക്കുന്നത്?

a) ദൈനംദിന ചോദ്യങ്ങൾക്ക് ഉത്തരം നൽകുന്നു
b) WH ചോദ്യങ്ങൾ ചോദിക്കുന്നു
c) ഉച്ചാരണം വിപുലീകരിക്കുന്നു
d) മുകളിൽ പറഞ്ഞ എല്ലാം

12) ഐ ട്രാക്കിംഗ് ഉപകരണങ്ങൾക്ക് കഴിയും

a) കൃഷ്ണമണിയുടെ ചലനം ട്രാക്ക് ചെയ്യാൻ കഴിയും
b) ശരീര ചലനങ്ങൾ പിന്തുടരാൻ കഴിയും
c) വ്യക്തിയുടെ സ്ഥാനം ട്രാക്ക് ചെയ്യാൻ കഴിയും
d) വ്യക്തിയുടെ മനസ്സ് വായിക്കാൻ കഴിയും

13) ഐ ഗേസ് സാങ്കേതികവിദ്യയുടെ ഉപയോഗം കൂടുതലായി കാണാൻ കഴിയുന്നത്

a) ഓട്ടിസം സ്പെക്ട്രം ഡിസോർഡർ
b) ഡൗൺ സിൻഡ്രോം
c) സെറിബ്രൽ പാൾസി
d) ബുദ്ധിപരമായ വൈകല്യം

14) സെറിബ്രൽ പാൾസി / ഓട്ടിസം ഉള്ള കുട്ടികൾക്കായി ഇനിപ്പറയുന്നവയിൽ ഏതാണ് കൂടുതലായി ഉപയോഗിക്കുന്നത്?

a) ആശയവിനിമയ ബോർഡുകൾ
b) ചിത്ര വിനിമയ ആശയവിനിമയ സ്കെയിലുകൾ
c) കമ്പ്യൂട്ടർ
d) സംഭാഷണം സൃഷ്ടിക്കുന്ന ഉപകരണങ്ങൾ

15) ഏത് വിഭാഗത്തിലുള്ള കുട്ടികൾക്കാണ് എഎസിയിൽ നിന്ന് ഏറെ പ്രയോജനം ലഭിക്കുക?

a) ഓട്ടിസം
b) കുട്ടിക്കാലത്തെ അപ്രാക്സിയ
c) സെറിബ്രൽ പാൾസി
d) മുകളിൽ പറഞ്ഞ എല്ലാം

16) ---------- ഉള്ള കുട്ടികൾക്ക് AAC മുൻഗണന നൽകുന്നു

a) വാക്കാലുള്ള ആശയവിനിമയ രീതി
b) വാക്കേതര ആശയവിനിമയ രീതി
c) രണ്ടും
d) മുകളിൽ കൊടുത്തിരിക്കുന്നതിൽ ഒന്നുമല്ല

17) AAC ഫലപ്രദമായി ഉപയോഗിക്കുന്നതിന് എന്തൊക്കെ തടസ്സങ്ങളാണ് കാണുന്നത്?

a) AAC-യുടെ ലഭ്യതയുടെയും പ്രവേശനക്ഷമതയുടെയും അഭാവം.
b) AAC സിസ്റ്റങ്ങളെക്കുറിച്ചുള്ള അറിവില്ലായ്മ
c) അവസരത്തിന്റെയും പ്രവേശനത്തിന്റെയും അഭാവം
d) മുകളിൽ പറഞ്ഞ എല്ലാം

18) AAC യുടെ ഉപയോഗം കുട്ടിയുടെ ശബ്ദ വികാസത്തെ തടസപ്പെടുത്തുമോ?

a) സമ്മതിക്കുന്നു
b) വിയോചിക്കുന്നു
c) ഭാഗികമായി സമ്മതിക്കുന്നു
d) മുകളിൽ പറഞ്ഞവ ഒന്നുമല്ല

19) വോയ്സ് ഔട്ട്പുട്ട് സിസ്റ്റം ലോ-ടെക് പിക്ചർ സെലക്ഷൻ സിസ്റ്റത്തേക്കാൾ മികച്ചതായി കണക്കാക്കുന്നു

a) സമ്മതിക്കുന്നു
b) വിയോജിക്കുന്നു
c) ഭാഗികമായി സമ്മതിക്കുന്നു
d) മുകളിൽ പറഞ്ഞവ ഒന്നുമല്ല

20) ഒരു അധ്യാപകൻ ക്ലാസ് മുറിയിൽ AAC ടെക്നിക്കുകൾ ഉപയോഗിക്കാത്തതിന്റെ ഒരു പ്രധാന കാരണം സമയക്കുറവാണോ?

a) സമ്മതിക്കുന്നു
b) വിയോജിക്കുന്നു
c) ഭാഗികമായി സമ്മതിക്കുന്നു
d) മുകളിൽ പറഞ്ഞവ ഒന്നുമല്ല

21) AAC ഉപയോഗിക്കുന്നവർക്ക് താഴെ കാണുന്നവയിൽ ഏതിൽ ആണ് പരിശീലനം ആവശ്യം?

a) AAC ഉപകരണങ്ങളിലെ പദാവലി കാലികമായി സൂക്ഷിക്കുക
b) ഭാവി ആവശ്യങ്ങൾക്കായി ഉപകരണം പരിഷ്ക്കരിക്കുന്നു
c) ഉപകരണത്തിന്റെ ഇന്നത്തെ ദിവസം ലഭ്യതയും പ്രവർത്തനവും ഉറപ്പാക്കുന്നു
d) മുകളിൽ പറഞ്ഞവയെല്ലാം

22) AAC നടപ്പിലാക്കുന്നതിനായി നിങ്ങൾ ഏതൊക്കെ വസ്തുക്കളാണ് ഉപയോഗിക്കുന്നത്

a) കളിപ്പാട്ടങ്ങൾ / ഗെയിമുകൾ
b) ബോർഡ് മാർക്കർ
c) ചിത്രങ്ങൾ / വസ്തുക്കൾ
d) മുകളിൽ പറഞ്ഞവ ഒന്നുമല്ല

23) AAC എന്നത് --------ന്റെ ഒരു കൂട്ടമാണ്

a) ഉപകരണങ്ങൾ
b) തന്ത്രങ്ങൾ
c) ഉപകരണം
d) മുകളിൽ പറഞ്ഞവയെല്ലാം

24) താഴെപ്പറയുന്നവയിൽ കുറഞ്ഞ സാങ്കേതികവിദ്യ ഏതാണ്?

a) ആംഗ്യഭാഷ
b) മുഖഭാവങ്ങൾ
c) ചിത്ര ചിഹ്ന പുസ്തകം
d) ഐപാഡ്

25) ഏത് മാധ്യമത്തിലൂടെയാണ് നിങ്ങൾക്ക് AAC-യെ കുറിച്ച് അറിവ് നേടാനാകുന്നതെന്ന് നിങ്ങൾ വിശ്വസിക്കുന്നു

a) ഇന്റർനെറ്റ്
b) പുസ്തകങ്ങൾ
c) AAC ഹ്രസ്വകാല കോഴ്സുകൾ
d) മുകളിൽ പറഞ്ഞവയെല്ലാം

<u>അതെ/ഇല്ല ചോദ്യങ്ങൾ</u>

26) AAC സാങ്കേതികവിദ്യകളെക്കുറിച്ച് നിങ്ങൾ മുമ്പ് കേട്ടിട്ടുണ്ടോ?

അതെ /ഇല്ല

27) നിങ്ങളുടെ രോഗികൾക്കായി നിങ്ങൾ AAC സാങ്കേതികവിദ്യകൾ പ്രയോഗിച്ചിട്ടുണ്ടോ?

അതെ /ഇല്ല

28) എഎസിയിൽ നിങ്ങൾക്ക് എപ്പോഴെങ്കിലും പരിശീലനമോ മേൽനോട്ടമോ ഉണ്ടായിട്ടുണ്ടോ?

അതെ /ഇല്ല

29) ഒന്നിലധികം വൈകല്യമുള്ള കുട്ടികൾക്ക് AAC മികച്ച ആശയവിനിമയ കഴിവുകൾ നൽകുമെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?

അതെ /ഇല്ല

30) ആശയവിനിമയത്തിൽ പ്രശ്നമുണ്ടെങ്കിൽ എല്ലാ പ്രായത്തിലുമുള്ള കുട്ടികൾക്കും AAC ഉപയോഗിക്കാൻ കഴിയുമെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?

അതെ /ഇല്ല

31) ആശയവിനിമയ വൈകല്യമുള്ള കുട്ടികൾക്ക് വായിക്കാനും എഴുതാനും AAC ഉപയോഗിക്കാമോ?

അതെ /ഇല്ല

32) വ്യക്തമായി സംസാരിക്കാൻ കഴിയാത്ത ഒരു വ്യക്തിക്ക് AAC ഉപയോഗിക്കാമോ?

അതെ /ഇല്ല

33) കുട്ടിക്ക് ചിത്രങ്ങൾ മനസ്സിലാക്കാൻ കഴിയുമ്പോൾ മാത്രമാണോ AAC ഉപകരണം അവതരിപ്പിക്കേണ്ടത്?

അതെ /ഇല്ല

34) കുട്ടികളുടെ വിദ്യാഭ്യാസകാര്യങ്ങൾക്ക് AAC ഉപയോഗിക്കാമോ?

അതെ /ഇല്ല

35) കുട്ടികളിൽ സാമൂഹിക ഇടപെടൽ പ്രോത്സാഹിപ്പിക്കുന്നതിന് AAC ഉപയോഗിക്കാമോ?

അതെ /ഇല്ല

36) വിവിധതരം AAC യെ കുറിച്ച് നിങ്ങൾക്ക് അറിയാമോ?

അതെ /ഇല്ല

37) ലോ എയ്ഡഡ് സാങ്കേതികവിദ്യ ബാറ്ററികൾ / ഇലക്ട്രിക്കൽ ഇൻപുട്ട് എന്നിവയിൽ മാത്രമേ പ്രവർത്തിക്കൂ?

അതെ /ഇല്ല

38) ലോ ടെക്നോളോജി വിഭാഗത്തിലുള്ള ചിത്രങ്ങൾ കാണിച്ചു കുട്ടിയുടെ പദാവലി പരിഗണിക്കുന്നതിന് മുൻപ് ആശയവിനിമയ കഴിവുകൾ ഇഷ്ടാനുസൃതം ആക്കണോ ?

അതെ /ഇല്ല

39) ഒന്നിലധികം വൈകല്യമുള്ള കുട്ടികൾക്കായി നിങ്ങളുടെ സ്കൂൾ AAC സജ്ജീകരണം നൽകുന്നുണ്ടോ?

അതെ /ഇല്ല

40) മെസ്സേജ് സംഭരിക്കുകയും സ്പീച്ച് ഔട്ട്പുട്ടായി ഉപയോഗിക്കാൻ അനുവദിക്കുകയും ചെയ്യുന്ന ഒരു ഇലക്ട്രോണിക് ഉപകരണമായ ഹൈ ടെക്നോളജി എയ്ഡഡ് AAC സിസ്റ്റത്തിൽ ഉൾപെട്ടതാണോ?

അതെ /ഇല്ല

41) സംസാരം തീരെയില്ലാത്ത കുട്ടികളുടെ ഭാഷാ വൈദഗ്ധ്യം വികസിപ്പിക്കുന്നതിനും ദൈനംദിന പ്രവർത്തനങ്ങളിൽ സഹായിക്കുന്നതിനും AAC ക്ക് കഴിയുമോ?

അതെ /ഇല്ല

42) AACയുടെ ഉപയോഗം സംസാരശേഷിയെ പ്രതികൂലമായി ബാധിക്കുമോ?

അതെ /ഇല്ല

43) ഓട്ടിസം ബാധിച്ച കുട്ടികൾക്ക് അൺ എയ്ഡഡ് AAC ടെക്നോളജി കമ്മ്യൂണിക്കേഷൻ ബോർഡ് ഫലപ്രദമാണോ?

അതെ /ഇല്ല

44) കുട്ടികൾക്ക് AAC പരിഗണിക്കുന്നതിനു മുമ്പ് ശാരീരിക ചലന കഴിവുകൾ വിലയിരുത്തേണ്ടത് പ്രധാനമാണോ?

അതെ /ഇല്ല

45) AAC സേവന വിതരണത്തിൽ കുടുംബാംഗങ്ങൾക്കും / സമപ്രായക്കാർക്കും ഒരു പ്രധാന പങ്കുണ്ടോ?

അതെ /ഇല്ല

46) എല്ലാ സ്പെഷ്യൽ സ്കൂൾ അധ്യാപകർക്കും AAC പരിശീലനം നൽകണമെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?

അതെ /ഇല്ല

47) ആശയവിനിമയ ബുദ്ധിമുട്ടുള്ള കുട്ടികൾക്ക് ഒക്യുപേഷണൽ തെറാപ്പിസ്റ്റുകൾ AAC നിർദ്ദേശങ്ങൾ കൊടുക്കാറുണ്ടോ?

അതെ /ഇല്ല

48) ഒരു AAC സിസ്റ്റം / സംരംഭം ആരംഭിക്കാനുള്ള ചിലവ് കുറഞ്ഞതാണെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?

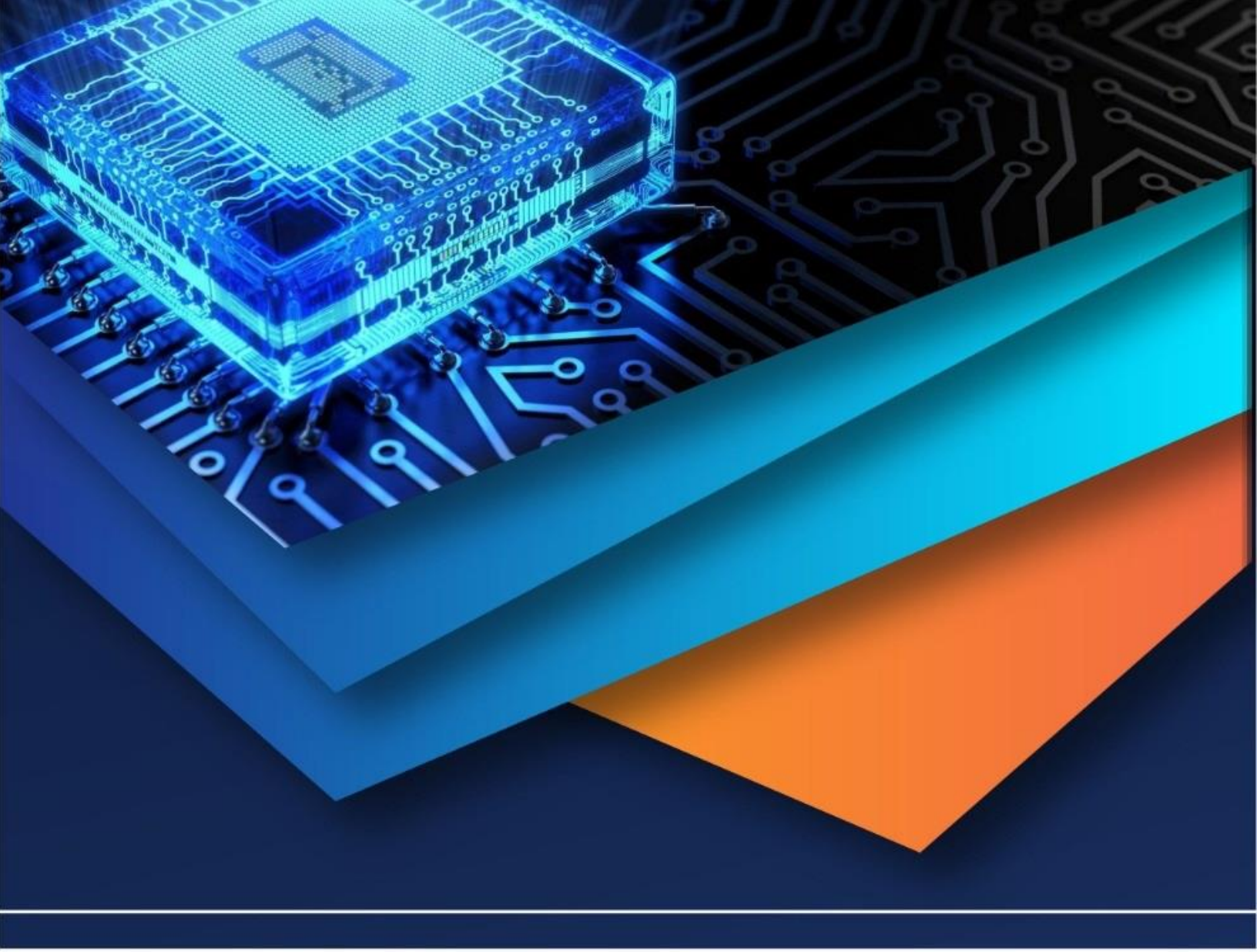
അതെ /ഇല്ല

49) കേരളത്തിലെ AAC ഉപയോക്താക്കൾക്കായി സർക്കാർ പദ്ധതികൾ/ ഫണ്ടുകൾ ലഭ്യമാണോ?

അതെ /ഇല്ല

50) AAC പ്രകടിപ്പിക്കാൻ ബുദ്ധിമുട്ടാണെന്ന് നിങ്ങൾ കരുതുന്നുണ്ടോ?

അതെ /ഇല്ല



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