CHALLENGES FACED BY PROFESSIONALS AND CAREGIVERS OF INDIAN AAC USERS IN DIFFERENT SETTINGS

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Register No.: P01II21S0040

A Dissertation Submitted in Part Fulfilment

of Degree of Master of Science

(Speech-Language Pathology)

University of Mysore

ALL INDIA INSTITUTE OF SPEECH AND HEARING

MANASAGANGOTRI, MYSORE- 570006

SEPTEMBER 2023

CERTIFICATE

This is to certify that this dissertation, entitled "**Challenges faced by professionals and caregivers of Indian AAC users in different settings**" is a bonafide work submitted in part fulfilment for the degree of Master of Science (Speech Language Pathology) of the student Registration number P01II21S0040. This has been carried out under the guidance of a faculty of this institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

Mysore

September, 2023

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This is to certify that this dissertation entitled "**Challenges faced by professionals and caregivers of Indian AAC users in different settings**" is the result of my own study under the guidance of Dr. Ajish. K. Abraham, Professor of Electronics and Acoustics, Department of Electronics, and co-guidance of Dr. Reuben Thomas Varghese, Scientist-B, Department of Speech- Language Sciences, All India Institute of Speech and Hearing, Mysore and has not been submitted earlier to any other University for award of any other Diploma or Degree.

Mysore **Registration Number:** P01II21S0040

September, 2023

Dedicated to,

My beloved parents,

Dr.Subrahmanian K.A & **Mrs.Thara PS**

My lovely brother **Dr.Subin Das A.S**

My Sweet sister **Dr.Shreya A.S**

"For being my strongest supporters and loudest cheerleaders."

ACKNOWLEDGEMENT

"Thank you, Lord Almighty, for granting me the strength and courage."

I owe **Dr.Ajish Sir** a great debt of gratitude for all of his advice and assistance. Thank you, sir, for your patience and the invaluable advice you have provided me, both in terms of research and general life. I feel incredibly privileged to have had the opportunity to work with you. I am immensely grateful to **Dr.Reuben sir** for his unwavering guidance and support, which assisted me in overcoming even the most minor obstacles. Thank you, sir, for helping me navigate all of my challenges.

I am grateful to **Dr. M. Pushpavathi** for granting me the opportunity to conduct this investigation.

This initiative would not have been possible without the invaluable assistance and guidance of **Mr. Srinivas** and **Dr. Vasanthalakshmi**. My heartfelt thanks to both of them.

Thank you, **Maya**, my adorable little champ, for being the inspiration behind my studies opening new gates of exploration.

I want to express my gratitude to **Nivi** and **Hiba** for being part of my AIISH journey; you both have turned it into a magical source of excitement and joy. Your presence constantly reminds me that my friends are just one call away, no matter the challenge.

Sneha, Thank you for understanding me and being my support system throughout my AIISH journey. I am truly grateful to have a friend like you, and I look forward to continuing this journey of friendship together.

Thank you, **Sai**, for your support and friendship. Cheers to our friendship, and I look forward to many more moments together.

I want to extend my heartfelt thanks to **Shigha,** my buddy, my tea partner, work partner and also **Isabella** who were my lifesavers during the most challenging phase of my dissertation journey.

Thank you, **Yashash**, for being an amazing friend who eased my stressful times with a single word: 'chill'. I am continuously thankful to have a friend like you.

Ashok, Thank you for being my walking companion, my buddy, for always supporting me and believing in me and helping me de-stress.

Thank you, **Sumanth,** for helping me out with my dissertation work and also for being my irreplaceable machaan who is always enthusiastic and supportive.

Thank you, **Swathi akka** for showing me the way when I was stuck, always being available for your invaluable help.

Thank you **Unni** the "cutest"-my lovely buddy who is always up for sky view with me, **Irfus** the" entertainer"- sweetest stressbuster you are truly an entertainer kutta, **Pathu** the" coolest"- one who is up for any help anytime, my roomie, all moments together with you were blissful, **Reshu** the "caring"- Mr.Rajan, my solution pill and sweetest, you always deserve a special space in my heart dear, **Krisp** the" joyful"- my lovely buddy, my roomie, 1st and best person I met in AIISH, you will be always close to my heart dear, and **Abi** the "amazing"-sweetest and clumsy one all among us, my travel mate. Thank you for all the little things you guys have done. The love, care, support, and the shoulder to lean on that you all provided are irreplaceable. You all had your unique qualities, yet you were just a call away, ready to care and offer support. You all mean a lot to me. The team "**Peace Out**" will always remain close to my heart forever.

Special thanks to my intelligent, delightful, and dear friends, **Dr. Kripa** and **Mrs. Vandana**, my buddies who hold a special place in my heart. Thanks for the 10 years of friendship, and here's to many more to come. Hoping this lasts forever. **Chelu** and **Ezu baby** for being my happy pill.

Shafla, Jumi, Rincy, Nafila, Jannath, Gokul, Diya, Anjali, Selva, Dani, Shilu, Shanky, Sushmitha, Rashmi, Teenu, Siri, Deepu, Preeti, KP, Archana, Nishanth, Rohan, Nasira, Nithya, Nimisha, Theresa, Mohan, Anirban and **Swalih** for being a wonderful person inside out.

Meera, my sweet and cute bumble bee you always hold a special space in my heart.

Heartfelt thanks to my dear juniors, **Rashmi, Shashank, Shreyas, Vidhya, Spurthi, Meghana**, for generously dedicating their time to help me with my dissertation work.

Thank you, **Priyanka maam**, for helping me with my dissertation work and your warm smile that constantly empowers me to keep moving forward.

Special thanks to my sweet juniors **Meenu-** for happy and quality time together, **Vishwa, Abhi-** my aniyankuttanz who always been sweet to me.

Thanks to my dear seniors **Sneha chechi, Athira chechi, Priyanka chechi, Revathi chechi, Shezeentha, Guru anna, Chanduakka, Madhuakka**, **Delvin chettan**, **and Aiswarya chechi** your support means the world to me, and I'm grateful to have you all as my seniors.

My heartfelt hug to Mysore sky perhaps the only entity with the incredible power to heal and mend me throughout my AIISH journey.

I extend my heartfelt gratitude to all my teachers in **SVVB** Eravimangalam, **St.Mary's** Puthanangadi for teaching me valuable life lessons, instilling in me the importance of hard work, perseverance, and integrity beyond academics; professors of **AIISH** who have not only inspired me to become a proficient clinician but has also equipped me with essential life skills. The foundation provided by AIISH has made me the unique individual I am today.

My gratitude to my fellow batchmates, '**Resonators 2021-23**' and '**Amorites 2017-20**,' for making my journey truly unforgettable.

You all will always hold a special place in my heart.

Thank you all!

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CHAPTER I

INTRODUCTION

The term Augmentative and Alternative Communication (AAC) is used to refer to a variety of communication techniques used by people who struggle with verbal expression. AAC is being used by more people in India and is becoming increasingly important for successful communication for persons with communication disorders. However, caring for patients who utilize AAC in India encounters a special set of difficulties for both professionals and parents/ caregivers. These difficulties can change based on the environment in which they are giving care, such as hospitals, classrooms, or homes. In this context, it is crucial to investigate the particular difficulties that professionals and parents/ caregivers deal with in order to create practical solutions that might enhance the quality of life for Indians.

1.1 Overview of Challenges Faced by Professionals and Caregivers of Indian AAC Users in Different Settings

When interacting with AAC users, personnel in healthcare facilities faces a number of obstacles. The lack of adequate training and resources to employ AAC methods in clinical settings is one of the main obstacles. Many clinicians are unfamiliar with AAC systems and may find it challenging to comprehend the patients' requirements and preferences. Language limitations may also make it challenging to communicate with non-native speakers. Misunderstandings and dissatisfaction can result from this for both the professional and the person using AAC. Furthermore, AAC systems may not be available to everyone who need them because of lack funds and resources, which would limit their ability to communicate effectively. When interacting

with AAC users in schools, educators and parents/ caregivers encounter a unique set of difficulties. Creating a collaborative and inclusive learning environment that meets the particular needs of people who use AAC is one of the major challenges. To guarantee that all students have equitable access to education and communication, this calls for more support and resources. In addition, a lack of understanding and training among educators may make it difficult for them to adopt AAC systems in the classroom. This may result in a lack of trust in using AAC systems, which could harm the student's learning and growth. Parents/ caregivers of people who use AAC deal with a variety of difficulties at home. The necessity to offer continuing support and care for the person, integrating AAC with activities of daily life, communication, and socialization are the major obstacles. For parents/ caregivers who lack proper training or support, this can be a difficult and draining responsibility. Due to the person's communication challenges, parents/ caregivers may also experience stigma and discrimination from family, friends, and the larger community. Both the caregiver and the person using AAC may become isolated as a result of this, which can lead to a lack of emotional support. Overall, the difficulties professionals and parents/ caregivers of Indian AAC users experience in different settings are various and call for focused attention.

1.2 Role of AAC in Improving Quality of Life of Children with Complex Communication Needs

Communication difficulties may arise for children with complex requirements, such as physical or cognitive impairments. These children may benefit greatly from using AAC as a method to express themselves and engage in social relationships. AAC includes a variety of communication techniques that can be applied in place of or in addition to speech. Picture boards, sign language, and technological tools that produce

speech or show symbols can all fall under this category. AAC is a highly individualized method which can be customized to each child's unique requirements and talents. Reviews of the literature show that parents of children with communication disorders tend to be more frustrated, helpless, and emotionally demanding compared toparents with clinically normal children (Bailey et al., 2006). The inability to communicate effectively through language has a detrimental effect on other areas, such as academic, social, and behavioural development (Branson & Demchak, 2009). For instance, a child with cerebral palsy may have difficulty in speaking due to inadequate muscle control, but children with autism may struggle with social communication. AAC can help these children overcome these challenges by providing a distinct type of communication that is understandable and accessible to those around them. The quality of life for children with complex needs can be enhanced by AAC. Children can more readily participate in social activities, pick up new abilities, and express their thoughts and feelings through improving their communication skills. As a result, they may feel less frustrated and more confident. Collaboration between parents/ caregivers, and clinicians may be necessary to implement AAC. Finding the best AAC technique for each child requires collaboration with a Speech-Language Pathologist (SLP) or other communication specialist. AAC may also require continual training and support to be used successfully in various settings. In general, AAC can be a potent tool for children with complex needs, enabling them to speak clearly and take part in social activities to a greater extent. These children can experience better independence, self-confidence, and better quality of life by using AAC as an alternate form of expression.

1.3 Barriers Faced by Children with Complex Communication Needs

Children with complex communication needs, including those who have cognitive or physical challenges, frequently encounter a number of obstacles that can limit their capacity to fully participate in social and educational contexts. Depending on the particular needs of each child, these obstacles might be broken down into numerous categories. Common barriers include:

1. Barriers to communication: Children with complex communication needs may struggle to properly communicate owing to speech issues or other constraints. As a result, there may be feelings of dissatisfaction, loneliness, and difficulties connecting with peers and adults. Barriers may also lead to difficulty in understanding others and taking part in group activities.
2. Physical Barriers: Children with complex communication needs may need help in, accessing buildings and services, and finding transportation. Their capacity to take part in activities and events away from their homes or schools may be constrained as a result. Access to tools and technologies that can help people in their daily lives can also be a physical obstacle.
3. Attitudinal Barriers: Discriminatory beliefs and prejudices can obstruct the inclusion of and acceptance of children with complex communication needs in social and educational contexts. These viewpoints can get internalized, which lowers the child's self-esteem and decreases their propensity to interact with others.
4. Barriers to education: To fully engage in educational environments, children with complex communication needs may need specialized help and accommodations. These could include adapted curricula, special education

programs, and assistive technology. Inaccessible resources or teaching strategies can also be a hindrance to education.

5. Social Barriers: Children with complex communication needs could find it challenging to socialise and engage in group activities. Feelings of loneliness and low self-esteem may result from this. Limited chances for leisure time or extracurricular activities can sometimes be a social obstacle.
6. Financial Barriers: The expense of specialised equipment, therapies, and medical care may provide a financial barrier for families of children with complex communication requirements. This may make it more difficult for them to get the resources and assistance they need, which could prevent them from getting the services they need to improve their quality of life.

Thus, there are several obstacles that prevent children with complex communication needs from fully participating in social and educational contexts. It is crucial to provide inclusive environments that support the needs and abilities of all children in order to overcome these obstacles. This can be accomplished by offering specialised assistance, modifications, and resources, as well as by encouraging favourable attitudes towards children with special needs.

1.4 Need for the Study

The prevalence and incidence of Speech and Language disorders have increased over the decades in India. Various intervention methods are emerging in communication disorders. AAC is one such emerging evidence-based practice method. Recent advancements in the field of AAC suggest that communication using AAC has improved communication abilities in children with special needs. The effectiveness of

an interaction with a person who uses augmentative and alternative communication (AAC) depends not just on that person's skills but also on those of the other party to the conversation. Midtlin et.al. (2015) concluded that improving the quality of life of AAC users is a marked significant responsibility for professionals and caregivers. Therefore, while addressing the AAC population, it is crucial to understand the challenges faced by professionals and caregivers of AAC users.

1.5 Aim of the Study

The aim of the study is to investigate the challenges faced by the professionals (SLPs & Special Educators) and parents/ caregivers of Indian AAC users in home/ school and clinical settings.

1.6 Objectives of the Study

- To develop and validate a questionnaire in Kannada and English to investigate the challenges faced by parents/ caregivers and professionals (SLPs & Special Educators) of Indian AAC users in home/ school and clinical settings.
- To identify the challenges faced by the parents/ caregivers of Indian AAC users at home, school and clinical settings.
- To identify the challenges faced by the professionals (SLPs & Special Educators) of Indian AAC users in school and clinical settings.

CHAPTER- II

REVIEW OF LITERATURE

2.1 Introduction to AAC

Poor or inadequate speech development in young children can negatively impact their ability to interact with others and thus affect their overall quality of life. Specifically, children with severe speech and physical impairments (SSPIs) may struggle to engage in social interactions, as their early access to a variety of play and linguistic resources is severely limited. Research has shown that parents of children with communication disorders may experience more frustration, helplessness, and emotional demands compared to parents with clinically normal children (Bailey et al., 2006). Moreover, the inability to communicate effectively through language can negatively impact other areas of a child's development, such as academic, social, and behavioral development (Branson & Demchak, 2009). Therefore, it's crucial to provide SSPI children with early access to various play and linguistic resources, as well as appropriate support and technologies to help them develop their communication skills and improve their overall well-being. Despite these challenges, SSPI children can produce electronic speech using lexical or symbolic representations of language with the help of augmentative and alternative communication (AAC) devices. By leveraging these technologies, SSPI children can communicate more effectively and participate more in social interactions.

Over the past two decades, the area of Augmentative and Alternative Communication (AAC) research has grown, with industry stakeholders, practitioners, and academics working together to create new theoretical and empirical understandings of communication for those with little to no functional speech. AAC devices and

strategies have the potential to improve the quality of life for individuals who rely on them. Midtlin et al. (2015) found that professionals and caregivers have a significant responsibility to improve the quality of life of AAC users. This highlights the importance of providing adequate support and resources for individuals with speech impairments, as well as their families and caregivers. By improving access to AAC devices and strategies and increasing awareness of the benefits they can provide, individuals with speech impairments can communicate more effectively and participate more fully in social interactions, ultimately improving their overall well-being.

2.2 AAC Options for Children with Communication Difficulty

Children with several disabilities can benefit greatly from various methods of AAC including sign language, picture-exchange programs, speech-generating technology, and others. AAC seeks to assist and develop a child's innate communication skills and to improve their ability to express themselves.

There are different AAC systems, such as unaided and aided AAC systems. Unaided AAC systems refer to a system that does not require any external equipment to communicate (Light, 1988). Examples of unaided communication include hand gestures, signs, body movements, and facial expressions. On the other hand, aided AAC systems require some extra equipment to communicate. AAC aids come in a range of technologies, from low-tech (such as single picture cards or drawings) to high-tech (such as devices with many buttons or touch screen options to select the images or produce speech) (McNaughton et al., 2008b).

Ganz et al. (2012) found that communication skills increased more than social interaction skills and problematic behaviours. Recent studies have shown that AAC is

useful in management of Children with complex Communication Needs (O'Neill et al., 2018), Developmental Disorders (Dada et al., 2021), Cerebral Palsy (Avagyan et al., 2021), Intellectual Disability (Wilkinson et al., 2021) and Autism Spectrum Disorders (Syriopoulou-Delli & Eleni, 2021). In addition, research has shown that AAC devices and strategies can have a positive impact on various aspects of a child's development, including communication skills, social interaction skills, and problematic behaviours. Studies have also compared different types of AAC systems based on their effectiveness for children with communication needs. The results showed that Picture Exchange Communication Systems (PECS) and Speech Generating Devices (SGDs) produced more impressive results compared to alternative communication systems that rely on pictures and symbols. This highlights the importance of selecting appropriate AAC devices and strategies that are tailored to the individual's communication needs, abilities, and preferences. By doing so, we can help individuals with speech impairments to communicate more effectively and participate more fully in social interactions, ultimately improving their overall well-being. It is observed that the exchange of information with an AAC user is found to be a complex process and to achieve successful communication, the professionals and caregivers should have an active involvement in communication (Kent-Walsh et.al, 2005).

2.3 Low-Tech AAC Devices for Children with Complex Communication Needs

Children with complex communication requirements can effectively communicate using low-tech AAC. Simple communication aids including communication boards, graphic charts, and communication books are included in this sort of AAC. Several variables affect how well low tech AAC works. First of all, low tech AAC is affordable and convenient, making it perfect for children who might not

have access to more expensive communication devices or who might need to communicate in different settings. Secondly, it is also simple to use and can be customized to suit the child's particular needs which is especially beneficial for children with complex communication requirements who might have trouble in verbally communicating. Low-tech AAC's visual clues support and enhance the child's verbal communication, resulting in more successful communication overall. Thirdly, low tech AAC can be applied in many different contexts, such as at home, at school, and in the community. This enhances the communication abilities and social interactions of children by enabling them to interact with a larger spectrum of individuals and in a variety of settings. In summary, children with complex communication requirements can effectively communicate using low-tech AAC. For children who might struggle with verbal communication, it is an excellent way of communication because it is simple to use, reasonably priced, and offers visual help. Low-tech AAC is a flexible and efficient communication technique since it may be applied in a variety of contexts and customized to meet each child's unique needs (Swathi, 2022).

2.4 High-Tech AAC Devices for Children with Complex Communication Needs

High tech AAC refers to electronic devices, such as speech-generating devices (SGDs), that use digital voice output to help individuals express themselves. Schlosser and Lee (2000) emphasize that there is significant individual variation in the outcomes following intervention. They also point out the limited evidence regarding the generalization and maintenance of AAC device usage. This highlights the need for more research in this area to better understand the effectiveness of AAC interventions and their long-term impact. One of the major advantages of high tech AAC is that it offers a wide range of communication options. High tech AAC devices can be customized to

meet the specific needs of each child, including the ability to personalize communication style and language. Additionally, high tech AAC devices can be programmed to store frequently used phrases, which can speed up communication and improve efficiency. The use of high tech AAC also helps to improve the overall quality of life for children with complex communication needs. These devices can help these children to express their emotions, share their thoughts, and participate in everyday activities. In doing so, high tech AAC promotes self-esteem and fosters independence. In conclusion, high tech AAC is an effective means of communication for children with complex communication needs. The advantages of such devices are their customization, speed, and efficiency in communication. It also helps to promote language development and improve social interactions, leading to an overall improvement in the quality of life for children with complex communication needs (Swathi, 2022).

2.5 Challenges Faced by Caregivers in AAC Intervention

Family members' preferences in AAC systems are essential for avoiding conflict that could result in the system being abandoned (Calculator & Black, 2009). The importance of family involvement in AAC intervention for children with complex communication needs is crucial for mainly two reasons. Firstly, other than during the allotted therapy time, children with complex communication needs spend most of their time with their families, giving them extra opportunities to practice communication skills. Secondly, the literature demonstrates that parents' level of comprehension of the child's severity of communication issues strongly affects their level of parental stress because many of the AAC devices have highly advanced technology (Smith et al., 2011). As a result, engaging them in child intervention may have an indirect impact on

their understanding of the child's communication strengths and shortcomings, resulting in a decrease in their parental stress. According to studies, parents who are familiar with their child's rehabilitation process are more likely to integrate the recommended strategies at home and produce noteworthy results than parents who are less familiar with the child's intervention process (Goldbart & Marshall, 2009).

McNaughton et al. (2008) analysed the parent's perspective on technology learning in AAC users. The author has created the questionnaire with six major themes and few additional questions to understand their concerns. The study results suggest that the major concern regarding the device selection was with respect to the funding. Second theme that was discussed by the author was with respect to knowledge and skill related aspects. They have discussed these aspects under operational competence, linguistic competence, social competence and strategic competence. The results are suggestive of inabilities of addressing technical blocks that they face while dealing with the device usage. The parents often faced difficulty in opting the correct vocabulary for communication, difficulty in generalizing the device usage, few of the participants of study expressed there was a lack in the device related training that they received. As a result they even found challenging to organize the vocabulary for communication. Under strategic competence the caregivers/ parents reported of increased frustration while using the device with a third person. Parents have observed refusal to use the AAC device by the users as they faced communication breakdowns and impatience as there was more repetition of the information in different situations. The study has also discussed with regards to the barriers that are faced by parents which had inhibited the process of learning. The findings showed that there was a shortage of skilled professionals, which even led to a delayed or ineffective intervention for the use of AAC. They also added that the professionals frequently denied having knowledge

gaps, and showed poor acceptance of the fact. Parents struggled to support their children's continued use of the device in varied setting. In certain circumstances, they reported barriers linked to the surroundings, the scenario, and the clients. Romano and Chun (2018) have analysed the barriers faced by parents under 3 major aspects. This included material barriers, individual barriers, social and environmental barriers. Among the aspects considered, social and environmental related barriers were found to be most affected. The social and environmental aspects included other forms of communication, family member as interpreter, lack of knowledge, myths of speech inhibition, understanding role of family member, and time limitation. Results suggest that the knowledge related aspect found to be affected the most among those which are considered under social and environmental barrier. In individual related barrier aspect, the question included was with respect to linguistic cognitive aspects and acceptance related factors. Among these linguistic cognitive aspects was the most affected for caregivers.

The insufficient depth of AAC knowledge was found to be a significant impediment for parents, particularly in utilizing AAC to support spoken language and communication breakdowns (Johnston et al., 2022). However, the majority of parents indicated a lack of knowledge and abilities in this area. Empirically supported techniques and coaching communication partners were highlighted as essential themes in teaching the use of AAC. One parent stressed the significance of having someone accompany them throughout the day and educate them on how to use the AAC gadget as opposed to just giving them instructions. This study also suggests that instructional coaching intervention will help to overcome the barrier of knowledge-related issues.

McNaughton et al. (2008) reported that parents had a vital role in making the child inclusive by using the AAC device. The study further explored the perspectives of parents and a user, and they found that a lack of confidence in using technology had a significant impact on attitudes toward it. Respondents highlighted that one of the major challenges they faced was learning how to program an AAC device. Parents of AAC users mentioned the benefits of learning from other parents who had experience with similar devices. Additionally, they found the presence of Help functions in these devices to be valuable in facilitating their understanding and use of the technology. Marshall and Goldbart (2008) reported that parents had concerns about high-technology assistive devices, expressing that they found these aids to be demanding or effortful. They also had first-hand experiences with difficulties associated with using such systems. Romano and Chun (2018) suggested that the least affected barrier was material barrier. This aspect included the cost of low technology device and high technology device and difficulties with respect to transporting the device. In material related barrier, cost of high technology devices was found to have more influence among the other three sub-aspects considered. Parental use of personal funds was a response to hurdles in legislation, practice, and knowledge/skills, not just one sort of barrier. Examples include parents hiring private speech-language pathologists with knowledge of AAC and buying AAC equipment with their own money (Johnston et al., 2022).

In a survey conducted by Angelo (2000), 11% of parents agreed that the AAC system required repair too frequently, while the majority, 60%, disagreed with this statement. In a survey conducted by Hetzroni (2002), the responses from parents of children who use AAC devices revealed that breakdowns were described as follows: 47% reported experiencing breakdowns "all the time," 17% "usually," 13% "sometimes," 10% "hardly," and 13% "never." This data underscores the significant

challenges related to the reliability and functionality of AAC technology. McCord and Soto (2004) investigated the perceptions of Mexican-American families and found that the language of the AAC device posed the primary barrier to its use at home. Results are suggestive of speech synthesizer being challenging to understand for some family members who did not speak English as their first language. Similarly, Hodge (2007) found that technical problems were a common source of frustration, particularly with the more advanced and sophisticated AAC devices, highlighting the need for improved reliability and maintenance of these systems. Cooper et al. (2009) reported several issues related to AAC devices, including problems with the battery running out, devices breaking or malfunctioning, and improper device setup. These technical challenges were noted as barriers to effective AAC use.

The limited availability of technical support emerged as a significant barrier, as highlighted by several studies including Bailey et al. (2006), Clarke et al. (2001a), Dattilo et al. (2008), Hodge (2007), Parette et al. (2000), Rackensperger et al. (2005), Smith and Connolly (2008), and Soto et al. (2001). Family members often expressed their own limitations when it came to handling the technical aspects of equipment, emphasizing the need for readily available support (Bailey et al., 2006, Parette et al., 2000). Smith and Connolly (2008) also reported that few had assistance for programming or device maintenance when they were provided with their AAC devices, indicating a gap in support services for users. Furthermore, the study found that children who used speech-generating devices (SGDs) received more therapy (with a median of 85.8 hours) than those using low-technology aids (with a median of 38.2 hours). The authors suggested that this difference might be attributed to practice and provision in a specific special school. However, clinical observations supported the idea that high-technology aids might require more therapy due to their complexity.

Clarke et al. (2001a) reported that some young individuals perceived it as embarrassing when a device did not use their own voice, indicating a preference for personalization and familiarity. According to McCord and Soto's (2004), family members of AAC users reported that they frequently opted for alternative communication methods because of the inherently slow response of AAC devices. In another study by Goldbart and Marshall (2004), parents perceived that there was a need for them to acquire a high level of specialized or technical information to effectively support their children's use of AAC devices. Bailey et al. (2006) reported that limited vocabularies within AAC devices were an obstacle to effective usage. Additionally, frustration arose when spelled words were mispronounced by speech-generating devices. Dattilo et al. (2008) described the challenge of using AAC devices outdoors when they couldn't be heard above background noise. Therefore, it is crucial to find these challenges in Indian context and provide the children with complex communication needs with multi-focused intervention.

2.6 Challenges Faced by Professionals in AAC Intervention

The collaboration with family members and other professionals (Special Educators, Speech and Language Pathologists) favouring multidisciplinary and cross-disciplinary work in the social environment and with the interlocutors is a key factor for success. For a person to communicate, including AAC users who participate in the world of communication through interlocutors who, in turn, give meaning to the communication forms of users, such as gestures, symbols, and alphabetic boards, among others, the change of dialogue partners is necessary. This is why it's crucial to consider the user as a linguistic and social person when using the AAC. Emphasise should be given to language perspective that considers the social environment and

interlocutors, as well as the value of collaboration with family members, other professionals (special educators, speech and language pathologists), and cross-disciplinary work. As discussed in the ICF - International Classification of Functioning, Disability, and Health - proposed by the World Health Organization, it is critical that this approach not only considers the embodied structure and function aspects but also encompasses participation in society and personal and environmental factors (WHO, 2017).

Reviews of past researches on the barriers that SLPs face while working with AAC users revealed that there were social and environmental barriers followed by individual and material barriers. In social barriers, the knowledge-related and functioning-related barriers were significant. According to the study conducted by Romano and Chun (2018), the client's refusal to accept the gadgets reflected as a challenge that the SLPs had to overcome. When the material-related barriers were examined, difficulties with regard to the high cost of devices as well as the transport of devices were prominent findings.

To achieve the suggested roles, it's important to rule out the barriers that the professionals are facing while dealing with AAC users. A study conducted among 971 SLP’s from all around Australia looked into their understanding of AAC, practises related to AAC, resources related to AAC that are available to them, and preferred methods of additional education. The findings showed that 98% of respondents knew something about AAC, and only 13% had never suggested it in their practise. However, 36% said they wouldn't suggest AAC for a client who was presymbolic and 29% had advised a gadget they had never seen (Balandin and Iacono, 1998). Marvin (2003), conducted a survey with 71 SLPs to investigate concerns relating to their knowledge of

and experience using AAC. The findings showed that more than 50% of respondents thought they had only gotten rudimentary or inadequate training in AAC, and more than 80% said their postgraduate studies had not provided them with sufficient education. Although around one-third of respondents mentioned their work with AAC users, the majority of them (63%) indicated their frustration in using it, and (72%) expressed their incompetence in utilizing it. For instance, Wormnaes and Abdel Malek (2004) conducted a survey in Egypt with 30 SLP participants in an effort to learn more about their perspectives on AAC. Only 10 out of 23 participants (44%) who worked with children who had limited and/or non-functional speech abilities thought they were sufficiently qualified to work in the field of AAC. 22 respondents (74%) thought it was crucial for SLPs to learn more about AAC. Therefore, understanding with regards to the role of professionals helps us in order to refocus on the strengths and potentials of this group of people as well as the usage of AAC, rather than on their limitations. It is critical to evaluate the AAC users, caregivers, and associated professionals. For those who use AAC, a variety of characteristics serve as both facilitators and impediments. According to the suggestions given by Stark (2007), teachers and assistants frequently lack or fail to get effective literacy training in order to prepare AAC users for improved educational preparation. A survey by Fallon and Katz (2008) suggested that the majority of SLPs felt they lacked the experience and knowledge necessary to rule out problems related to AAC users' difficulties with literacy skills. This study suggested an overall decreased expertise level to help the children with written narratives, phonological awareness, phonics, spelling, and reading comprehension. Literacy team consists of Speech and Language Pathologists, Special Educators, and regular educators. Study conducted among the SLPs in the literacy team, suggested that SLPs had a negative attitude toward written language. This indicated a lack of effective

literacy instruction for AAC users. It was also noted that teachers and assistants frequently lack or fail to get effective literacy training in order to prepare AAC users for improved educational preparation (McNaughton et.al,2008). Ratcliff, Koul and Lloyd (2008) conducted a study to check the academic and clinical status of AAC. The survey results suggest that 73% of respondents claimed to have an independent AAC syllabus. SLPs working with young children in early intervention programs in Australia demonstrated comprehensive understanding of AAC and its many benefits (Iacono and Cameron, 2009). AAC services are generally scarce in underdeveloped nations because of lack of financial, clinical, and educational resources (Alant & Lloyd, 2005; Sutherland et al., 2010). Beukelman and Light (2020) observed that analyzing the variables affecting communication networks is crucial.

Soto et al. (2001), teachers emphasized the importance of having back-up services and support in place as essential requirements for the successful introduction and use of AAC. The groups involving teachers, teaching assistants, and parents, and they found that a significant barrier to the successful implementation of AAC systems was the lack of training for staff. They also noted the presence of technophobia among some staff members, which acted as a barrier to the introduction of AAC technology. In the study conducted by Clarke et al. (2001b) in the UK, they reported that the provision of therapy was often based on educational placement rather than individual needs. Children in mainstream schools received fewer hours of therapy provision compared to those in special schools ($p<0.001$). The study also revealed that 42% of direct therapy sessions occurred in classrooms, while in special schools, this number increased to 87% for group work. Additionally, a lack of stand by devices when systems were undergoing repairs was identified as another hindrance to the smooth implementation of AAC systems. Speech and language therapists, as observed in

studies like Iacono and Cameron (2009) and Johnson et al. (2006), noted that family perceptions and attitudes toward the technology could serve as barriers to the successful implementation of AAC systems.

Clarke et al. (2001b) analysed school records and described the official training of staff by communication specialists as "minimal". Goldbart and Marshall (2004) highlighted that parents often reported that professionals lacked sufficient experience or expertise in the field of AAC. This deficiency in expertise within schools was also emphasized by Hodge (2007). Lund and Light (2007) pointed out several issues, including the limited expertise of local professionals, a lack of collaboration among professionals, and the necessity for training for both families and teachers. Additionally, the study noted the presence of a negative attitude towards AAC among some professionals.

Parette et al. (2000) found that family members valued professionals who were honest about their level of knowledge and wanted clear, accurate, and trustworthy information, including precise timelines regarding the process of acquiring equipment. In Egypt, Wormnaes and Malek (2004) conducted a study in which 14 out of 30 Speech and Language Therapists (SLTs) reported having little or some knowledge about AAC. Meanwhile, 13 SLTs described themselves as quite knowledgeable in this area. Four respondents expressed concerns that their limited AAC knowledge and skills might prevent them from effectively using AAC with a client.

Matthews (2001) conducted a survey involving 320 SLPs across different clinical settings in UK. The study revealed that 57% of respondents had received training in AAC as part of their pre-qualification training, and 60% had accessed training in AAC since their qualification, with a focus mainly on signing. When it came

to high-technology AAC, the majority of respondents categorized their skills as either none (31%) or general knowledge/awareness (37%). Nearly half of the participants (49%) expressed an interest in accessing AAC training, specifically training designed for the entire speech and language therapy (SLT) team in a particular area, with ongoing support provided by a trainer.

Baxter et al. (2011) highlighted the need to involve potential users and the family members of users in the decision making process. By full involvement and detailed discussion, barriers such as the voice of a device, complexity of operation, and family attitudes may be overcome. Issues of reliability and lack of availability of technical support were significant recurring themes with the need for early discussion regarding advice and support, easily accessible technical back-loan devices to be in place. The need for training in skills to use the device functionally was also highlighted, such as learning to ask questions and how to introduce a communication partner to the device. This may overcome potential barriers relating to communication partner's negative responses.

A review of the available literature as detailed above indicates that, it is important to understand the hurdles faced by professionals and caregivers of AAC users. A knowledge of these hurdles will help the professionals to provide efficient service to AAC users. Identification of such factors would also help the caregivers to make the AAC use more effectively. Such studies have not yet been conducted with Indian AAC users. Hence the present study proposes to investigate the challenges faced by caregivers of Indian AAC users and their associated professionals namely SLPs and special educators.

CHAPTER III

METHOD

The aim of the study is to investigate the challenges faced by the professionals (SLPs & Special Educators) and parents/ caregivers of Indian AAC users in home/ school and clinical settings.

3.1 Participants

30 participants, divided into 2 groups were considered for the study. Group 1 consists of 15 parents/ caregivers and Group 2 includes 10 SLPs as well as 10 Special Educators. Purposive sampling was carried out for the selection of participants. Participants were explained about the study.

3.1.1 Inclusion Criteria

Group 1 included parents/ caregivers of children with complex communication need within the age range of 4-9 years and who can speak, read or write Kannada/ English. Parents/ caregivers of children who use low-tech or high-tech aided systems for a minimum time of six months and parents/ caregivers who interact more with the child in assisting with the use of AAC systems were included. SLPs and Special Educators with a minimum of two years of experience in working with AAC users and who can speak, read or write Kannada/English were included in Group 2.

3.1.2 Exclusion Criteria

The current study did not include SLPs and Special Educators who have not worked with Augmentative and Alternative Communication (AAC) users past two years or more. Additionally, Parents/ caregivers of AAC users who are older than 9

years or younger than 4 years were also excluded from the study.

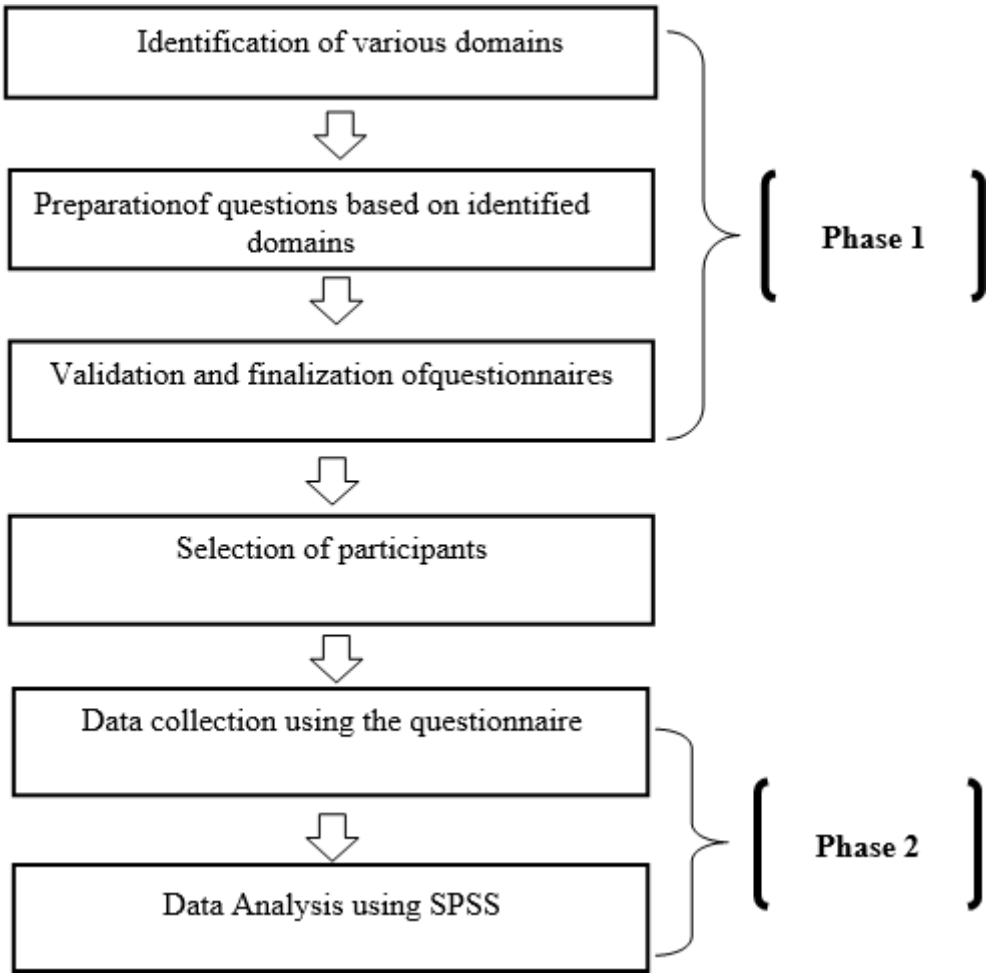
3.2 Procedure

The current study utilized a survey method.

Figure 3.1 depicts the flow chart of the survey methods.

Figure 3.1

Flow Chart of the Method



The data were collected primarily through close-ended questions based on predetermined categories. The present study was conducted in two phases.

Phase I dealt with the identification of various domains of challenges, the development of close-ended questions, and their validation. In the second phase, data collection was done using a Google form or through telephonic conversation with the parents.

3.2.1 Phase 1: Development of Close-ended Questionnaire

In phase 1, close-ended questions were developed in the following steps.

1. Collecting the resources: - Review of literature from journals, books, blogs, internet websites, and other search engines regarding challenges faced by professionals and caregivers of AAC users.
2. Identification of various domains: - Close-ended questions were formulated in English and Kannada for each domain from the collected resources. The questions were framed under six domains for each group. The domains are as follows: -

   For the parents/ caregivers: -

   - Device related barriers
   - Financial barriers
   - Environmental and situational barriers
   - Client related barriers
   - Knowledge related barriers
   - Home environment related barriers

   For the SLPs: -

   - Knowledge related barriers

- Device related barriers
- Financial barriers
- Training related barriers
- Work place barriers
- Client related barriers

For the Special Educators: -

- Knowledge related barriers
- Device related barriers
- Attitude related barriers
- Training related barriers
- Work place barriers
- Client related barriers

Questionnaire was developed in English and later translated to Kannada. Reverse translation of the same was also done. Translation as well as the reverse translation of the questionnaire was done by proficient native Kannada speaker. The Language Experience and Proficiency Questionnaire (LEAP Q) Indian adaptation (Goswami & Ramya, 2009) was used to check the proficiency level of the individual in their native language.

3. Validation of questionnaire :- The created questions were forwarded to 5 speech-language pathologists and special educators with expertise in AAC. Each question was validated using a 3-point Likert scale according to its importance to the selected domain (3- most significant; 2- moderate significant;

1: least significant). The selected questions were those with a 2- or 3-point rating, and validator suggestions were taken into consideration. The final questionnaire was created after taking the suggestions into consideration.

3.2.2 Phase 2: Data Collection and Analysis

Special Educators, Speech Language Pathologists from special schools, and institutional setups offering services and parents of AAC users were given the questionnaires by hand as well as through google forms to mark their responses. Both the groups were instructed to fill out the questionnaire using a 3-point Likert scale and the study's purpose and willingness to participate were discussed. A quantitative analysis of the data was done. The obtained score was subjected to statistical analysis using SPSS.

3.3 Statistical Analysis

The collected information was tabulated and subjected to statistical analysis in Statistical Package for the Social Sciences (SPSS) software package (Version 26.0). All five questions in all six domains of the questionnaire were analyzed for frequency count and percentage. Shapiro Wilks test of Normality was done for both the groups. Based on test of normality result, for caregivers' group, Friedman's test was carried out for within group comparison. For Special Educators and SLP's group, Man-Whitney U test was done for across group comparison as well as Friedman's test was carried out for within group comparison. Chi-Square test was done to check differences among the caregiver's groups classified based on device related barriers, financial barriers, environmental and situational barriers, client related barriers, knowledge-related barriers, and home environment related barriers. Descriptive statistics was carried out to calculate mean, median and standard deviation for both the groups.

CHAPTER IV

RESULTS

This study aimed to identify the barriers faced by caregivers and professionals while dealing with AAC users. 15 caregivers, of AAC users within the age range of 4-9 years, and 20 professionals including Special Educators and SLPs with a minimum of two years of experience participated in the study. Both the groups were given the questionnaire separately and were instructed to submit their response to each question on a 3-point Likert scale.

The results of the study are compiled as below:

4.1 Development and Validation of a Questionnaire in Kannada and English to Investigate the Challenges Faced by the Professionals and Caregivers of Indian AAC Users in Home/ School and Clinical Settings

10 questions were initially framed for each domain for the professional group as well as for the caregiver/ parent group. Later, it was reduced to five questions in each domain. Validation of the questionnaire was done by five professionals (including SLPs and Special Educators) and by five parents/ caregivers of AAC users. The questions were modified based on their feedback. The attitude domain replaced the money domain, as recommended by Special Educators. Finance related barrier domain was retained in the questionnaire for SLP with few modifications in client related domain. Changes were made to the client-related and knowledge-related domains in the caregivers/ parents questionnaire, as well as questions on the home environment. Each question was validated using a 3-point Likert scale according to its importance to the selected domain (3- most significant; 2- moderate significant; 1- least significant). The

selected questions were those with a 2 or 3-point rating, and were modified based on the suggestions. The final questionnaire is given the in Appendix A, B, and C.

4.2 Challenges Faced by the Parents/ Caregivers of Indian AAC Users at Home, School, and Clinical Settings

The questionnaire was administered on all the 15 participants of Group-1 (Parents/ caregivers of AAC users of both low-tech and high-tech AAC devices between 4-9 years of age). The response was taken on a 3 point Likert scale across six domains. The frequency count was calculated to represent the responses to the questionnaire. The frequency count and the percentage for each domain are displayed in Tables 4.1, 4.2, 4.3, 4.4, 4.5 & 4.6.

Table 4.1

Frequency Counts and Percentage of Device-Related Barriers for Parents'/ Caregivers' Questionnaire.

Device-related barrier	Frequency			Percentage		
	Never	Sometimes	Always	Never	Sometimes	Always
D1*	1	6	8	6.7	40.0	53.3*
D2	3	7	5	20.0	46.7	33.3
D3	2	9	4	13.3	60.0	26.7
D4	0	12	3	0	80.0	20.0
D5	3	8	4	20.0	53.3	26.7

Note: D1, D2, D3, D4, D5 refer to the 5 questions under the domain of device-related barriers.

* D1 refers to the question “How often do you encourage your child to use non symbolic communication/multi-modal communication?”. This question received highest percentage of ‘always’ response.

Table 4.2

Frequency Counts and Percentage of Finance-Related Barriers for Parents’/ Caregivers’ Questionnaire.

Finance-related barrier	Frequency			Percentage		
	Never	Sometimes	Always	Never	Sometimes	Always
F1	3	6	6	20.0	40.0	40.0
F2*	0	2	13	0	13.3	86.7*
F3	2	4	9	13.3	26.7	60.0
F4	0	13	2	0	86.7	13.3
F5	0	13	2	0	86.7	13.3

Note: F1, F2, F3, F4, F5 refer to the 5 questions under the domain of finance-related barriers.

*F2 refers to the question “Do you feel that no subsidies on these devices made it difficult for you to procure these devices?”. This question received highest percentage of ‘always’ response.

Table 4.3

Frequency Counts and Percentage of Environment and Situation-Related Barriers for Parents'/ Caregivers' Questionnaire.

Environment and situation-related barrier	Frequency			Percentage		
	Never	Sometimes	Always	Never	Sometimes	Always
E1*	0	6	9	0	40.0	60.0*
E2	3	4	8	20.0	26.7	53.3
E3	0	9	6	0	60.0	40.0
E4	5	6	4	33.3	40.0	26.7
E5	6	6	3	40.0	40.0	20.0

Note: E1, E2, E3, E4, E5 refer to the 5 questions under the domain of environmental and situational-related barriers.

*E1 refers to the question "Do you think that your child feels difficult to use the device with a third person in different settings?". This question received highest percentage of 'always' response.

Table 4.4

Frequency Counts and Percentage of Client-Related Barriers for Parents'/ Caregivers' Questionnaire.

Client-related barrier	Frequency			Percentage		
	Never	Sometimes	Always	Never	Sometimes	Always
C1	2	12	1	13.3	80.0	6.7
C2	4	8	3	26.7	53.3	20.0
C3	3	12	0	20.0	80.0	0
C4*	0	10	5	0	56.7	33.3*
C5	10	5	0	66.7	33.3	0

Note: C1, C2, C3, C4, C5 refer to the 5 questions under the domain of client-related barriers.

* C4 refers to the question "Do you feel your child face communication break while using device to communicate?". This question received highest response combining 'always' and 'sometimes'.

Table 4.5

Frequency Counts and Percentage of Knowledge-Related Barriers for Parents'/ Caregivers' Questionnaire.

Knowledge-related barrier	Frequency			Percentage		
	Never	Sometimes	Always	Never	Sometimes	Always
K1	2	12	1	13.3	80.0	5.7
K2	2	9	4	13.3	66.7	20.0
K3	2	10	3	13.3	66.7	20.0
K4	1	12	2	6.7	80.0	13.3
K5*	1	6	8	6.7	40.0	53.3*

Note: K1, K2, K3, K4, K5 refer to the 5 questions under the domain of knowledge-related barriers.

*K5 refers to the question "Do you find it difficult for you to help your child out in a linguistically competing situation?". This question received highest percentage of 'always' response.

Table 4.6

Frequency Counts and Percentage of Home Environment-Related Barriers for Parents'/ Caregivers' Questionnaire.

Client-related barrier	Frequency			Percentage		
	Never	Sometimes	Always	Never	Sometimes	Always
H1	2	10	3	13.3	66.7	20.0
H2*	4	5	6	26.7	33.3	40.0*
H3	3	9	3	20.0	60.0	20.0
H4	2	10	3	13.3	66.7	20.0
H5	3	7	5	20.0	46.7	33.3

Note: H1, H2, H3, H4, H5 refer to the 5 questions under the domain of Home environment-related barriers.

*H2 refers to the question "Do you feel it's impersonal to use the device at home?". This question received highest percentage of 'always' response

Shapiro Wilks' test of normality was administered to check the distribution of the parameters. Many of the parameters were not normally distributed (p <0.05). The finance-related barrier and client-related barrier were more significant ($p < 0.05$) across the five domains in the parents/ caregiver group.

Descriptive statistics were done to calculate the Mean, Standard Deviation, Median, and Inter-Quartile Range and the values are displayed in Table 4.7. The Mean value was highest for the finance-related barrier questions (μ =6.80, σ =1.42) and was least for client related barrier (μ =4.33 σ =0.89). Similarly, the median value was also found to be higher for finance-related barrier questions (M =7.00) and was least for client-related barriers (M =4.00).

Table 4.7

Mean, Standard Deviation, Median and Inter-Quartile Range for Domains within the Caregivers'/ Parents' Group.

Sl. No	Domain	Mean	Standard Deviation	Median	Interquartile Range
1	Device related barrier	6.00	1.30	6.00	2.00
2	Finance related barrier	6.80	1.42	7.00	2.00
3	Environment and situational barrier	6.07	1.67	6.00	2.00
4	Client related barrier	4.33	0.89	4.00	1.00
5	Knowledge related barrier	5.67	1.17	6.00	1.00
6	Home environment-related barrier	5.40	1.18	6.00	2.00

As the data was not normally distributed, for within group comparison inferential statistics Friedman's two-way analysis of variance was administered and it was found that $\chi^2(5)=22.58$, $p < 0.01$. From the Bonferroni multiple comparisons test results, it's evident that the client-related barrier in comparison with finance-related barrier showed a significant difference (p <0.01). The remaining domain comparisons showed no significant difference. The results are depicted in Table 4.8.

Table 4.8

Results of Within-Group Comparison of 6 Domains within the Caregivers'/ Parents' Group.

Sl. No	Domain comparison	/Z/-value	p-value
1.	Client-related barrier vs Home environment-related barrier	1.36	0.04
2.	Client-related barrier vs Knowledge-related barrier	1.40	0.04
3.	Client-related barrier vs Device-related barrier	1.80	0.12
4.	Client-related barrier vs Environmental and situational-barriers	1.86	0.09
5.	Client-related barrier vs Finance-related barrier*	2.96	<0.01*
6.	Home environment-related barrier vs Knowledge-related barrier	0.03	0.96
7.	Home environment-related barrier vs Device-related barrier	0.43	0.52
8.	Home environment related barrier vs Environmental and situational barriers	0.50	0.46
9.	Home environment related barrier vs Finance related barrier	1.60	0.02
10.	Knowledge related barrier vs Device related barrier	0.40	0.56
11.	Knowledge related barrier vs Environmental and situational barriers	0.47	0.49
12.	Knowledge related barrier vs Finance related barrier	1.57	0.02
13.	Device related barrier vs Environmental and situational barriers	0.07	0.92
14.	Device related barrier vs Finance related barrier	1.16	0.09
15.	Environmental and situational barriers vs Finance related barrier	1.10	0.11

*Note:** refers to the domain that was most severely impacted when compared with in the 5 domains.

4.3 Challenges Faced by the Professionals (SLPs & Special Educators) while Dealing with Indian AAC Users in School and Clinical Settings

All the participants of Group-2 (Speech Language Pathologists and Special Educators) who had dealt with Indian AAC users in clinical settings and school setting were provided with the questionnaire. The response was taken on a 3-point Likert scale across the predetermined domains.

The frequency count was calculated from the responses from the questionnaire. The frequency count and the percentage are displayed in Tables 4.9, 4.10, 4.11, 4.12, 4.13, 4.14.

Table 4.9

Frequency Counts and Percentage of Knowledge Related Barrier for Professionals' Questionnaire.

Knowledge related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
K1*	SLP	1	10	7	70	2	20*
	SE	1	10	8	80	1	10
K2	SLP	3	30	7	70	0	00
	SE	4	40	6	60	0	00
K3	SLP	6	60	4	40	0	00
	SE	5	50	4	40	1	10
K4*	SLP	1	10	9	90	0	00
	SE	1	10	7	70	2	20*
K5	SLP	1	10	4	40	1	10
	SE	5	50	9	90	0	00

Note: K1, K2, K3, K4, K5 refer to the 5 questions under the domain of knowledge-related barriers for professionals.

*K4 refers to the question “Are you able to select the options (required word) with adequate speed?”

* K1 refers to the question “As a clinician do you feel your knowledge is sufficient/enough to recommend an appropriate AAC device?”. These two questions received highest percentage of ‘always’ response.

Table 4.10

Frequency Counts and Percentage of Device Related Barrier for Professionals' Questionnaire.

Device related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
D1	SLP	2	20	8	80	0	00
	SE	2	20	8	80	0	00
D2	SLP	2	20	7	70	1	10
	SE	4	40	5	50	1	10
D3*	SLP	1	10	1	10	8	80
	SE	2	20	3	30	5	50*
D4*	SLP	0	00	1	10	9	90*
	SE	3	30	1	10	6	60
D5	SLP	1	10	5	50	4	40
	SE	5	50	4	40	1	10

Note:

D1, D2, D3, D4, D5 refer to the 5 questions under the domain of device-related barriers for professionals.

*D3 refers to the question "Do you feel subsidies if provided for AAC device can make it available for all the users?"

* D4 refers to the question "Are you patient enough to wait for your child's replay using device?". These two questions received highest percentage of 'always' response.

Table 4.11

Frequency Counts and Percentage of Client Related Barrier for Professionals' Questionnaire.

Client related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
C1	SLP	2	20	5	50	3	30
	SE	6	60	4	40	0	00
C2	SLP	1	10	6	60	3	30
	SE	7	70	3	30	0	00
C3*	SLP	0	00	0	00	10	100*
	SE	3	30	0	00	7	70*
C4	SLP	1	10	8	80	1	10
	SE	4	40	5	50	1	10
C5	SLP	0	00	5	50	5	50
	SE	4	40	6	60	0	00

Note:

C1, C2, C3, C4, C5 refer to the 5 questions under the domain of client-related barriers for professionals.

*C3 refers to the question "Do you feel parents cooperation plays a major role in making their child proficient with his/her device?". This question received highest percentage of 'always' response.

Table 4.12

Frequency Counts and Percentage of Training Related Barrier for Professionals' Questionnaire.

Training related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
T1*	SLP	1	10	4	40	5	50
	SE	4	40	2	20	4	40*
T2	SLP	2	20	8	80	0	00
	SE	7	70	2	20	1	10
T3	SLP	5	50	4	40	1	10
	SE	8	80	2	20	0	00
T4*	SLP	0	00	2	20	8	80*
	SE	4	40	2	20	4	40*
T5	SLP	1	10	5	50	4	40
	SE	5	50	2	20	3	30

Note: T1, T2, T3, T4, T5 refer to the 5 questions under the domain of training-related barriers for professionals

*T4 refers to the question "Do you feel there is a lack of hands on exposure to AAC device for better understanding?"

*T1 refers to the question "Do you feel the training received to deal with AAC is limited?". These two questions received highest percentage of 'always' response.

Table 4.13

Frequency Counts and Percentage of Work Place Related Barrier for Professionals' Questionnaire.

Work place related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
W1*	SLP	1	10	3	30	6	60*
	SE	4	40	1	10	5	50*
W2	SLP	3	30	6	60	1	10
	SE	5	50	5	50	0	0
W3	SLP	2	20	7	70	1	10
	SE	7	70	3	30	0	0
W4	SLP	0	00	6	60	4	40
	SE	3	30	6	60	1	10
W5	SLP	3	30	3	30	4	40
	SE	4	40	3	30	3	30

Note: W1, W2, W3, W4, W5 refer to the 5 questions under the domain of workplace-related barriers for professionals.

*W1 refers to the question "Does your workplace provide adequate network support?". This question received highest percentage of 'always' response.

Table 4.14

Frequency Counts and Percentage of Finance Related Barrier for Professionals' Questionnaire.

Finance related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
F1	SLP	0	0	3	30	7	70
F2	SLP	0	0	4	40	6	60
F3	SLP	1	10	4	40	5	50
F4	SLP	0	0	5	50	5	50
F5*	SLP	0	0	1	10	9	90*

Note: F1, F2, F3, F4, F5 refer to the 5 questions under the domain of finance-related barriers for Speech and Language Pathologist

*F1 refers to the question "Do you feel the AAC devices/ software available are expensive?". This question received highest percentage of 'always' response.

Table 4.15

Frequency Counts and Percentage of Attitude Related Barrier for Professionals' Questionnaire.

Attitude related barrier	SLP/SE	Never		Sometimes		Always	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
A1	SE	4	40	4	40	2	20
A2	SE	9	90	1	10	0	00
A3	SE	8	80	2	20	0	00
A4*	SE	3	30	4	40	3	30*
A5	SE	7	70	2	20	1	10

Note: A1, A2, A3, A4, A5 refer to the 5 questions under the domain of Attitude-related barriers for professionals

*A4 refers to the question "Do you feel usage of AAC makes the children refuse/less motivated to use other modes (verbal/ written)?". This question received highest percentage of 'always' response

Shapiro Wilks' test of normality was administered to check the distribution of the parameters. Many of the parameters were not normally distributed ($p < 0.05$).

Descriptive statistics were done to calculate the Mean, Standard Deviation, Median, and Inter-Quartile Range and the values are displayed in Table 4.16. The Mean value was highest for the device-related barrier questions (μ=4.70, σ=2.62) and was least for attitude related barrier (μ=2.50 σ=1.95) for Special Educators. For SLPs, the mean value was highest for the device-related barrier questions (μ=8.1, σ=1.59) and was least for attitude related barrier (μ=4.00 σ=0.81). Similarly, the median value was also found to be higher for finance-related barrier questions (M=8.00) for SLP's and

for Special Educators. It was highest for device related barrier (*M*=5.50) and was least for attitude-related barrier (*M*=3.00) for Special Educators and with a median (*M*=4.00) for Speech-Language Pathologists.

Table 4.16

Mean, Standard Deviation, Median and Inter-Quartile Range for Domains within the Caregivers/ Parents Group.

Domain	Professionals	Mean	Std. Deviation	Median	Interquartile Range
Knowledge related barrier	SE	3.90	1.45	4.00	2.50
	SLP	4.00	0.81	4.00	2.00
Device related barrier	SE	4.70	2.62	5.50	5.25
	SLP	6.60	1.50	7.00	3.00
Client related barrier	SE	3.40	2.50	4.00	5.00
	SLP	6.80	1.81	6.00	3.25
Attitude related barrier	SE	2.50	1.96	3.00	4.25
	SLP	-	-	-	-
Finance related barrier	SE	-	-	-	-
	SLP	8.10	1.59	8.00	3.25
Workplace related barrier	SE	3.60	2.59	3.50	4.50
	SLP	5.70	1.83	6.00	3.25

As the data size was small, between group comparison using chi-square could not be done. Therefore, both the groups are separately analysed and within group comparison for both the groups was done using the Friedman's test (Table 4.17). Between group comparison was done using Mann-Whitney U test (Table 4.18).

Table 4.17

Results of within group Comparison of 6 Domains within the Speech and Language Pathologists Group.

Sl. No	Domain comparison	/Z/ value	P-value
1.	Knowledge related barrier vs workplace related barrier	1.95	0.02
2.	Knowledge related barrier vs Training related barrier	2.05	0.01
3.	Knowledge related barrier vs Client related barrier	2.75	<0.01*
4.	Knowledge related barrier vs Device related barrier	2.90	<0.01*
5.	Knowledge related barrier vs Finance related barrier	3.85	<0.01*
6.	Workplace related barrier vs Training related barrier	0.10	0.90
7.	Workplace related barrier vs Client related barrier	0.80	0.34
8.	Workplace related barrier vs Device related barrier	0.95	0.26
9.	Workplace related barrier vs Finance related barrier	1.90	0.02
10.	Training related barrier vs Client related barrier	0.70	0.40
11.	Training related barrier vs Device related barrier	0.85	0.31
12.	Training related barrier vs Finance related barrier	1.80	0.03
13.	Client related barrier vs Device related barrier	0.15	0.86
14.	Client related barrier vs Finance related barrier	1.10	0.19
15.	Device related barrier vs Finance related barrier	0.95	0.26

Note: * signifies the group comparison which are more significant

Friedman's two-way analysis of variance results for SLP group shows that $\chi^2(5)=25.45$, $p < 0.01$. Test results from Bonferroni multiple comparisons it's evident that the knowledge-related barrier in comparison with client -related barrier, knowledge-related barrier in comparison with device-related barrier, knowledge-related barrier in comparison with finance-related barrier showed a significant difference at 0.01 level of significance. The remaining domain comparisons showed no significant difference.

Table 4.18

Results of within-group comparison of 6 domains within the Special Educator group.

Sl. No	Domain comparison	/Z/-value	p-value
1.	Attitude related barrier vs Training related barrier	0.90	0.28
2.	Attitude related barrier vs Client related barrier	1.20	0.15
3.	Attitude related barrier vs Knowledge related barrier	1.40	0.09
4.	Attitude related barrier vs Workplace related barrier	1.65	0.04
5.	Attitude related barrier vs Device related barrier*	2.95	<0.01*
6.	Training related barrier vs Client related barrier	0.30	0.72
7.	Training related barrier vs Knowledge related barrier	0.50	0.55
8.	Training related barrier vs Workplace related barrier	0.75	0.37
9.	Client related barrier vs Knowledge related barrier	0.20	0.01
10.	Client related barrier vs Workplace related barrier	0.45	0.81
11.	Client related barrier vs Device related barrier	1.75	0.59
12.	Knowledge related barrier vs Workplace related barrier	0.25	0.03
13.	Knowledge related barrier vs Device related barrier	1.55	0.76
14.	Workplace related barrier vs Device related barrier	1.30	0.06

Note: * signifies the group comparison which are more significant

Friedman's two-way analysis of variance results for Special Educators group shows that $\chi^2(5)=14.78$, $p < 0.01$. Test results from Bonferroni multiple comparisons it's evident that the attitude-related barrier in comparison with device-related barrier showed a significant difference at 0.01 level of significance. The remaining domain comparisons showed no significant difference.

Mann Whitney U test was done to compare two independent groups' distribution to determine whether there was a significant difference present or not. Within the professional group, 5 domains were set same across the SLP and Special Educators, those five groups were compared.

The results of Mann Whitney U test suggest in comparison of 2 groups within the professionals across 5 domain there is a significant difference that was shown for the client related barriers (U statistics= 10.5, p value=0.002). The remaining 4 domains showed no significant difference according to Mann Whitney U test (Table 4.19).

Table 4.19

Results of Mann Whitney U test for 5 domains of the professional group.

Test	Knowledge related barrier	Device related barrier	Client related barrier	Training related barrier	Workplace related barrier
Mann-Whitney U	46.50	26.00	10.50*	27.00	26.00
Asymp. Sig. (2-tailed)	0.78	0.06	0.00*	0.07	0.07

Note: * signifies the group which is more significant with p value <0.05.

The study's findings indicate that among the first group, which consists of caregivers/ parents, financial issues posed the most formidable challenge, while factors related to clients were the least influential barriers. When examining these two domains, namely financial and client-related obstacles, within the population of parents and caregivers, they displayed the greatest significance both when compared to other domains and when analysed separately.

The second group, which included professionals (Special Educators & Speech and Language Pathologists), showed varied affect with respect to the profession they were. When both the professionals were separately evaluated, for Special Educators the device related barriers were most affected. And they reported their attitude towards the AAC users were least affected. Likewise, in the case of Speech and Language Pathologists, the study observed that financial barriers had a more pronounced effect, while barriers related to knowledge were the least influential among the domains under consideration.

CHAPTER V

DISCUSSION

The current study aimed to identify the barriers faced by caregivers and professionals while dealing with Indian AAC users. Questionnaires were developed for identifying the barriers faced by the communication partners of AAC users. The study results provide information on the most influenced barriers for the caregivers as well as for the professional group in the Indian context while using low-tech and high-tech aided devices. The validated questionnaire was administered to the parents/ caregiver group and also to the professional group to analyse the barriers of each group while dealing with AAC users.

The study identified the influential domains in both the groups and also suggests which domain was most affected, as well as least affected in each. The results of the study shows that several domains have substantial differences when the domains are compared in both the group (parents/caregivers and professionals) and individually within the group.

In the first group i.e., caregivers/parents, the questionnaire has been framed to include device-related barriers, financial barriers, environmental and situational barriers, client-related barriers, knowledge-related barriers, and home environment-related barriers. Among these financial and client-related factors, there is considerable variation in the case of parent/caregiver groups. The results of the current study suggest that caregiver/parent groups are more likely to encounter financial hurdles and client-related constraints to a lesser extent when working with AAC users in the Indian context. Other domains including device-related, environment and situation-related, knowledge-related, home environment-related barriers had a moderate effect.

According to a study by Romano & Chun (2018), Johnston et al. (2022), issues relating to finance-related barriers were the ones that had the least impact among the barriers that were taken into consideration. This component includes the price of high-tech and low-tech devices as well as the challenges associated with delivering the gadget. High technology device costs were found to be most impacted by material-related barriers among the other three sub factors considered. This contradicts the results of the present study. This may be because of the less affordability of Indian clients, possibly due to the limited financial accessibility among Indian customers. This can also be attributed to the fact that the majority of advanced AAC devices are not manufactured in India but are instead imported from other nations, resulting in elevated and unattainable costs.

In a survey conducted by Angelo (2000), few parents agreed that the AAC system required repair too frequently, while the majority disagreed with this statement. Similarly, Hodge (2007) highlighted the need for improved reliability and maintenance of these systems. McNaughton et al. (2008) observed that the expense of AAC systems is a big issue for many parents, and more particularly, parents were worried about getting funding for the finest AAC systems for their children. In the present study, finance related barriers were more influential for caregivers/ parents which is in accordance with McNaughton et al. (2008).

Mikolay et al. (2015) investigated the problem faced by the AAC system users. Speed of conversation, malfunction vocabulary, and cost of device were considered. Results suggest that child needs frequent and consistent training and practice to increase efficiency at using a device, but if the speed of conversation is always a concern and the child's time is cut short, his or her proficiency and speed using the device will not

improve. Parents, who are more understanding of the extra time their child takes to communicate, finds it frustrating. According to McNaughton et al. (2008) the reason for the decreased pace of communication using AAC devices is the effort the user needs to put in to compensate for their motor/physical limitation, and ability to access the required information from the stored data. In the present study, the client related barrier showed minimal influence on Indian parents/ caregivers. This may be because the parents included in our study had minimum of six months of AAC user experience. Hence, they could have been well versed with the time issues.

In a separate survey conducted by Angelo (2000), it was found that 25% of parents agreed that their child's AAC device was challenging to use at home, while 50% disagreed with this notion which does corelates with the current study results where home environment related factors had no significant influence except for the question “Do you feel it’s impersonal to use the device at home?”

Moving on to device-related barriers, Cooper et al. (2009) reported several issues related to AAC devices, including problems with the battery running out, devices breaking or malfunctioning, and improper device setup. These technical challenges were noted as barriers to effective AAC use. The limited availability of technical support emerged as a significant barrier, as highlighted by several studies including Bailey et al. (2006), Dattilo et al. (2008), Hodge (2007), Smith and Connolly (2008), Rackensperger et al. (2005), Parette et al. (2000), Clarke et al. (2001a), and Soto et al. (2001). Family members often expressed their own limitations when it came to handling the technical aspects of equipment, emphasizing the need for readily available support (Bailey et al., 2006; Parette et al., 2000).

McCord and Soto (2004) suggested that speech synthesizer was challenging for some family members, who did not speak English as their first language. Lund and Light (2007) similarly highlighted cultural issues. Bailey et al. (2006) reported that limited vocabularies within AAC devices were an obstacle to effective usage. Indian AAC users' parents reported similar experiences in the present study. Furthermore, device-related barriers showed no significant influence in the current study. The lack of significance of device related barriers in our study may be because of the fact that most of the participants were users of PECS, Picture books, and Avaz, a picture-based communication system which is a software application looking on a mobile/ tab. Hence issues such as battery backup issues will not be there. Moreover, the software has got ‘help’ menu which properly guides the user. Also, the navigation is available in regional language which may help user for easy navigation.

McCord and Soto (2004) conducted interviews with young individuals diagnosed with cerebral palsy (CP) and their families who had been using AAC for a minimum of one year. The findings from these interviews revealed that the families perceived the AAC technology as something mysterious and complex. Marshall and Goldbart (2008) found that parents had concerns about high-technology assistive devices, expressing that they found these aids to be demanding or effortful. They also had first hand experiences with difficulties associated with using such systems. However, in the current study conducted among parents and caregivers who had been using devices for a minimum of six months, it was found that handling the device became much easier and also the knowledge related to the same is also found to be better with in the group.

In the second group i.e., professionals, the result were viewed under the two primary experts who indulge with AAC users including SLPs and Special Educators. There was a considerable variation in the domains which influenced both the groups. These results suggest that professional groups are more likely to encounter different hurdles depending on the professional group they belong to, while dealing with AAC users in the Indian context.

Results of present study indicates that the SLP group was more impacted by financial constraints, which is viewed under finance related barrier domain. The knowledge-related barrier was found to be the one with the least impact. Whereas, for the Special Educators groups, device-related constraints were seen to be more prevalent, which is considered under device-related barriers. However, attitude-related barriers showed the least impact.

In most of the previous studies, knowledge-related barriers were demonstrated to be more prevalent among SLPs, while they were shown to be least affected in the current study. An Australian study (Balandin & Iacono, 1998) across SLPs showed that majority of respondents knew something about AAC, and few had never suggested it in their practise. However, 36% said they wouldn't suggest AAC for a client who was presymbolic and 29% had advised a gadget they had never seen. In order to better educate AAC users for educational preparation, teachers and aides usually lack or fail to receive effective literacy training, according to Stark (2007). A survey by Fallon and Katz (2008) revealed that the majority of SLPs believed they lacked the expertise and knowledge required to rule out issues connected to AAC users' struggles with literacy abilities. Romano and Chun (2018) also found that social and environment barriers followed by individual and material barriers, influences SLPs while working with AAC

users. In social barriers, author specifies that knowledge-related and functioning related barriers were more faced by the professionals. The client's refusal to accept the gadgets reflected as challenges that the SLPs had to overcome. When the material-related barriers were examined, difficulties with regard to the high cost of devices as well as the transport of devices were shown in the findings (Romano & Chun, 2018). In the present study, work place related barriers had moderated impact as per SLPs and special educators. Knowledge related barrier had little impact. The SLPs participated in our study had a minimum of two-year experience. Hence, they had sufficient knowledge and had little influence of workplace.

In Soto et al. (2001), they noted the presence of fear of technology usage among some staff members (teachers), which acted as a barrier to the introduction of AAC technology. According to the current study, Special educators had a positive attitude towards inclusion of AAC users in their setting, where as they lacked experience and reported of having device related barriers. Additionally, non-availability stand by devices, when systems were undergoing repairs was identified as another hindrance to the smooth implementation of AAC systems in different settings.

Soto et al. (2001) investigated focus groups involving teachers, teaching assistants, and parents, and they found that a significant barrier to the successful implementation of AAC systems was the lack of training for staff. This deficiency in expertise within schools was also emphasized in the study by Hodge (2007). This observation is even reflected in the current study. In the present study, training related barriers had moderate impact. Only the barrier question “Do you feel the training received to deal with AAC is limited?”, “Do you feel there is a lack of hands on exposure to AAC device for better understanding?” had significant impact on SLPs and

Special Educators respectively. Many Special Educators reported the absence of AAC in their curriculum. Moreover, the number of children using AAC were very few in their classrooms.

Lund and Light (2007) pointed the presence of a negative attitude towards AAC among some professionals as a result of limited expertise and also lack of collaboration. Whereas in the current study the professionals observed to have a positive attitude towards the AAC users. This may be because, the professionals participated in the present study were aware that AAC will have a positive impact on their quality of life of the users. Moreover, professionals were found to be minimally affected by knowledge-related barriers.

Goldbart and Marshall (2004) highlighted that parents often reported that professionals lacked sufficient experience or expertise in the field of AAC. Clarke et al. (2001b) analysed school records and described the official training of staff was minimal. These findings align with the current study's results, where professionals reported having limited hands on experience with AAC users. Matthews (2001) revealed that in UK half of respondents had received training in AAC as part of their pre-qualification training, and majority had accessed training in AAC since their qualification, with a focus mainly on signing. When it came to high-technology AAC, the majority of respondents categorized their skills as either none (31%) or general knowledge/awareness (37%). Nearly half of the participants (49%) expressed an interest in accessing AAC training, specifically training designed for the entire speech and language therapy (SLT) team in a particular area, with ongoing support provided by a trainer.

Thus, the present study could identify certain significant barriers specific to Indian context for professionals and caregivers, in various domains. Disagreement of the result of the present study with the previous studies clearly indicate the influence of Indian context.

CHAPTER VI

SUMMARY AND CONCLUSION

Augmentative and Alternative Communication (AAC) is aimed at improving communication for individuals with diverse communication impairments. Significant improvements in their overall communication skills and social behaviors have been observed in children with special needs who received intervention through AAC systems. Parents, Speech and Language Pathologist, and Special Educators play a significant role in improving their quality of life. Professionals and parents working with AAC users encounter various barriers and challenges during the intervention and assessment process. However, limited studies have been done in the Indian context to identify such issues. Hence, the present study investigated these challenges faced by the professionals and caregivers of Indian AAC users.

The present study was conducted using the survey method in two phases. The survey was conducted for two groups, parents/ caregivers and professionals (Speech and Language Pathologist & Special Educators). In the initial stage, six predefined domains were established through a literature review. Subsequently, close-ended questions were developed to align with these domains, and professionals and parents participated in the validation process. A validated questionnaire in English and Kannada with five questions each across six domains was used for the study. The second phase involved the collection and analysis of data. Information was gathered from a sample comprising 15 parents of AAC users aged between 4 and 9 years, as well as 10 Speech-Language Pathologists (SLPs) and Special Educators who had a minimum of two years of experience working with AAC users. Data collection was done through questionnaires by

hand as well as through google forms to mark their responses. Both groups were instructed to fill out the questionnaire using a 3-point Likert scale.

The findings of the present study indicate that, among the barriers examined, financial obstacles were more prominent for parents/caregivers and for SLPs, while Special Educators faced greater challenges related to devices. Among the different domains, it was noticed that parents found it least challenging to assist their child who uses AAC in various settings. From the perspective of Speech and Language Pathologists, they indicated that the knowledge they received regarding AAC was satisfactory. Among the barriers considered, they noted that the knowledge barrier had the least impact. Special Educators displayed a more positive attitude when it came to accepting and handling AAC, and this resulted in better outcomes, suggesting that attitude-related factors had the least influence on Special Educators.

6.1 Major Findings of the Study

- Caregivers/ parents groups are more prone to face financial hurdles and client-related constraints to a lesser extent when working with AAC users in the Indian context.
- In professionals working with AAC users' group,

  SLP group was more impacted by financial constraints, which is viewed under finance related barrier domain. The knowledge-related barrier was found to be the one with the least impact in the Indian context.

  Special Educators groups was more significantly affected by device-related constraints, which is considered under device-related barriers. However, attitude-related barriers showed the least impact in the Indian context.

6.2 Limitations of the Study

- The study had a relatively small number of participants.
- An equal representation of high-tech and low-tech AAC users was not achieved among the participants.
- The participants did not achieve an equitable distribution of AAC users within the population.
- The study can be extended to other Indian languages.

6.3 Implications of the Study

- The present study gives information about the challenges faced by the professionals and parents/ caregivers of AAC users. The knowledge collected from this study may be used in the future to enhance the teamwork between parents and SLPs and for the professional development of SLPs.
- The results of the study would help in finding out ways to overcome the challenges to AAC device implementation.
- Expectations and challenges faced by the professionals and parents/ caregivers can be looked upon by the AAC system developers for upgradation/ modification.

6.4 Future Directions

- Future research could involve a larger and more diverse sample of participants to generalize the perspectives across various geographical regions in India.
- Subsequent studies could also explore and compare the perspectives of parents using high-tech and low-tech aided AAC devices.

- Future research should aim to achieve an equal distribution of the AAC user population among participants.
- The study can be extended to other Indian languages.

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APPENDIX-A

Close ended Questionnaire for Parents/ Caregivers in English.

Sl no	QUESTION	Never	Sometimes	Always
I.	**D1.** How often do you encourage your child to use non symbolic communication/multi-modal communication? **D2.** Do you feel communication using AAC is inefficient compared to verbal mode? **D3.** Do you feel it's effortful for your child to use his/ her AAC device? **D4.** How efficient you feel that you are able to give practice and training to your child to make him proficient with device? **D5.** Do you feel the vocabulary is appropriate for everyday situation?			
II	**F1.** Are you satisfied with the financial investment that you have made for your child's device? **F2.** Do you feel that no subsidies on these devices made it difficult for you to procure these devices? **F3.** Do you feel the device available is expensive? **F4.** Do you feel the recurring expenses for these devices are very high? **F5.** Do you find the cost of upgradation too high?			

III	**E1.** Do you think that your child feels difficult to use the device with a third person in different settings? **E2.** Do you feel that your device is bulky to be carried to different settings? **E3.** Have you noticed that your child find difficulty in selecting options in particular settings? **E4.** Do you feel the options /icons provided by the system is not adequate for Indian settings? **E5.** How competent your child is to use his/her device in school setting?			
IV.	**C1.** Do you feel that the pictures represented in your child's device are having a good transparency with respect to your believes? **C2.** Do you feel your child's efficiency in using the device is not improving? **C3.** Do you feel the symbols of the device are ambigious and are unclear for your child? **C4.** Do you feel your child face communication break while using device to communicate? **C5.** Do you feel your child is independent with the use of AAC device?			
V.	**K1.** Do you have sufficient knowledge about all the features in your child's device? **K2.** Do you feel frustrated with the limited vocabulary provided by the device for communication?			

	K3. Are you content with the training you and your child received for using the aid in different settings? **K4.** Do you have the sufficient knowledge to maintain and care for your child's aid? **K5.** Do you find it difficult for you to help your child out in a linguistically competing situation? (Linguistic competence: vocabulary selection, skills for creating sentences etc..)			
VI.	**H1.** Do you feel child is able to use adequate vocabulary during home setting? **H2.** Do you feel it's impersonal to use the device at home? **H3.** Are you satisfied with the support you are able to provide your child in using the device at home? **H4.** Are you happy with the child's performance at home setting? **H5.** Do you feel difficulty in understanding what your child is trying to convey using the device?			

Close ended Questionnaire for Parents/ Caregivers in Kannada.

Sl no	ಪ್ರಶ್ನೆಗಳು	ಎಂದಿಗೂ	ಕೆಲವೊಮ್ಮೆ	ಯಾವಾಗಲೂ
I.	**D1.** ಸಾಂಕೇತಿಕವಲ್ಲದ ಸಂವಹನ/ಬಹು-ಮಾದರಿ ಸಂವಹನವನ್ನು ಬಳಸಲು ನಿಮ್ಮ ಮಗುವನ್ನು ನೀವು ಎಷ್ಟು ಬಾರಿ ಪ್ರೋತ್ಸಾಹಿಸುತ್ತೀರಿ?			
	D2. ಮೌಖಿಕ ಮೀಡಿಯೇಟೆಡ್ AAC ಬಳಸಿಕೊಂಡು ಸಂವಹನವು ಅಸಮ್ಮಾRದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			
	D3. ನಿಮ್ಮ ಮಗುವಿಗೆ ಅವನ/ಅವಳ AAC ಸಾಧನವನ್ನು ಬಳಸುವುದು ಶ್ರಮದಾಯಕವಾಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			
	D4. ನಿಮ್ಮ ಮಗುವಿಗೆ ಸಹಾಯಕ ಪರಿಣತಿಯನ್ನು ನೀಡಲು ನೀವು ಅಭಾಾ ಸ ಮತ್ತ ತರಬೇತಿಯನ್ನು ನೀಡಲು ಸಮ್ಮಾRØದ ೀರಿ ಎಂದು ನೀವು ಎಷ್ಟುಪರಿಣಾಮಾಕಾರಿಯಾR ಭಾವಿಸುತ್ತೀರಿ?			
	D5. ದೈನಂØನ ಪರಿಸಿ ತಿಗೆ ಶಬ್ದ ಕೀಶವು ಸೂಕ ವಾRದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			

II.	**F1.** ನಿಮ್ಮ ಮುಸಿವಿನ AAC ಸಧನಕಾ R ನೀವು ಮಾಡಿದ ಹಣಕಾಸಿನ ಹೂಡಿಕೆಯಾಂದ ನೀವು ತೃಪರಾRØದ ೀರಾ? **F2. AAC** ಸಧನಗಳನ್ನು ಖರೀØಸಲು ,ಸಬ್ಸಾ ಡಿಗಳು ಇಲ್ಲ ದ ಕಾರಣ ನಿಮ್ಗೆ ಖರೀØಸಲು ಕಷ್ು ವಾಯತ್ತ ಎಾಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? **F3.** ಲ್ಭಾ ವಿರುವ AAC ಸಧನವು ದುಬಾರಿಯಾRದೆ ಎಾಂದು ನಿೀವು ಭಾವಿಸುತಿೀರಾ? **F4.** ಈ ಸಧನಗಳಿಗೆ ಮ್ರುಕಳಿಸುವ ವಚ್ಚ ಗಳು ತ್ತಾಂಬಾ ಹೆಚ್ಚಚ ವ ಎಾಂದು ನೆೀವುಭಾವಿಸುತಿೀರಾ? **F5.** ಉನು ತೀಕರಣದ ವಚ್ಚ ವು ತ್ತಾಂಬಾ ಹೆಚ್ಚಚ ದೆ ಎಾಂದು ನೆೀವುಭಾವಿಸುತಿರ?			
III.	**E1**. ವಿಭಿನು ಸೆಟ್ು ಾಂಗಗಳಲ್ಲಿ ಮೂರನೇ ವಾ ಕ್ತ ಯಾಂØಗೆ ಸಧನವನ್ನು ಬಳಸಲು ನಿಮ್ಮ ಮುಸಿವಿಗರೆ ಕಷು ವಾಗುತಿದೆ ಎಾದು ನಿಿೀವು ಭಾವಿಸುತಿೀರಾ? **E2.** ನಿಮಮ್ಮ AAC ಸಧನವು ವಿಭಿನು			

	ಸೆಟ್ಾ ಾಂಗಗಳಿಗೆ ಸRಸಲು			

	ದೊಡಡ ದಾRದೆ ಎಾಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? **E3.** ನಿರ್ಧಷ್ು ಸೆಟ್ು ುಾಂಗಗಳಲಿಲಆಯ್ಕೆ ಗಳನ್ನು ಆಯ್ಕೆ ಮಾಡುವಲಿನಿಮ್ಮ ಮುಸವು ಕಷ್ು ಪಡುವುದನ್ನು ನೀವುಗಮ್ನಿಸಿರುವ ೀರಾ? **E4.** ಸಿಸು ುಾಂ ಒದRಸಿದ ಆಯ್ಕೆ ಗಳು / ಐಕಾನಗಳು ಭಾರತೀಯ ಸೆಟ್ು ುಾಂಗಗಳಿಗೆ ಸಮ್ಪರ್ಕವಾRಲ್ಲ ಎಾಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? **E5.** ಶಾಲೆಯ ವಾ ವಸತಿ ಯಲಿಲ ಅವನ/ಅವಳ AAC ಸಾಧನವನ್ನು ಬಳಸಲು ನಿಮ್ಮ ಮುಸ ಎಷ್ಟು ಸಮ್ಪರ್ಕವಾRದೆ?			

IV.	**C1**. ನಿಮ್ಮ ಮುಖವಿನ ಸ್ನಾಯುಗಳು ತಿನಿಧಿಸುವ ಭಾವನೆಗಳು ನಿಮ್ಮ ನಂಬಿಕೆಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಉತ್ತಮ್ ಪಾರದರ್ಶಕತೆಯನ್ನು ಹೊಂದಿವೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? **C2.** ಸಾಧನವನ್ನು ಬಳಸುವಲಿಲ ನಿಮ್ಮ ಮುಖವಿನ ದೃಷ್ಟತೆಯು ಸುಧಾರಿಸುತಿಲ್ಲ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? **C3.** AAC ಸಾಧನಗಳ ಭವಿಷ್ಯ ಗಳು ಅಸಫ ಷ್ಟ ವಾRವ ಮತ್ತ ನಿಮ್ಮ			

	ಮ್ಮುವಿಗೆ ಅಸಪ ಷ್ಂ ವಾRವ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? **C4.** ನಿಮ್ಮ ಮ್ಮು AAC ಸಧನವನ್ನು ಉಪಯೀRಸಿಕೊಂಡು ಸಂವಹನ ಮಾಡುವಾಗ ಸಂವಹನದ ತಾಂದರೆಯನ್ನು ಎದುರಿಸುತ್ತಿದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? **C5.** AAC ಸಧನದ ಬಳಕೆಯಾಂದ ನಿಮ್ಮ ಮ್ಮು ಸವ ತಂತರ ವಾಗಿದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			
V.	**K1.** ನಿಮ್ಮ ಮ್ಮುವಿನ AAC ಸಧನದಲಿಲ ನ ಲ್ಲಿರುವ ವೈಶಿಷ್ಂ ಾ ಗಳ ಬಗೆ ನಿಮ್ಗೆ ಸಕಷ್ಟಂ ಜ್ಞಾ ನವಿದೆಯೇ? **K2.** ಸಂವಹನಕಾಾ R AAC ಸಧನವು ಒದRಸಿದ ಸೀಮಿತ ಶಬ್ದ ಕೋಶದಿಂದ ನೀ ವು ನಿರಾಶೆಗಾಂಡಿದ್ದೀರಾ? **K3.** ವಿವಿಧ ಸೆಟ್ಂ ಾಗಳಲಿಸಹಾಯವನ್ನು ಬಳಸುವುದಕಾಾ R ನೀವು ಮತ್ತಿಮ್ಮ ಮ್ಮು ಪಡೆದ ತರಬೇತಿಯಲಿಲ ನೀವು ತೃಪರಾRದ್ದೀರಾ? **K4.** ನಿಮ್ಮ ಮ್ಮುವಿನ			

	ಸಹಾಯವನ್ನು ನಿವಥಹಿಸಲು			

	ಮತ್ತ ಕಾಳಜಿ ವಹಿಸಲು ನೀವು ಸಕಷ್ಟಂ ಜ್ಞಾ ನವನ್ನು ಹಂಚಿಕೊಂಡದ ೀರಾ? **K5.** ಭಾಷಾವಾರು ಸಪ ಧಾಷ್ಟಕಮ ಕ ಪರಿಸಿ ತಿಯಲಿಲ ನಿಮ್ಮ ಮ್ಸುವಿಗೆ ಸಹಾಯ ಮಾಡಲು ನಿಮ್ಗೆ ಕಷ್ಂ ವಾಗುತಿದೆಯೇ? (ಭಾಷಾ ಸಮ್ಸ್ಂ ಷ್ಟಶಬದ ಕೀಶದ ಆಯ್ಕಾ , ವಾಕಾ ಗಳನ್ನು ರಚಿಸುವ ಕೌಶ್ಲಾ ಇತ್ಾ Ø..)			
VI.	**H1.** ಮ್ನೆಯ ಸೆಟ್ಂ ಜಿಗ ಸಮ್ಯದಲಿಲ ಮ್ಸುವಿಗೆ ಸಕಷ್ಟಂ ಶಬದ ಕೀಶವನ್ನು ಬಳಸಲು ಸಧಾ ವಾಗುತ ದೆಎಂದು ನೀವು ಭಾವಿಸುತಿ ೀರಾ? **H2.** ಮ್ನೆಯಲಿಲ AAC ಸಧನವನ್ನು ಬಳಸುವುದು ವಾ ಕ್ತ ಗತವಲ್ಲ ಎಂದು ನಿೀವು ಭಾವಿಸುತಿ ೀರಾ? **H3.** ಮ್ನೆಯಲಿಲ AAC ಸಧನವನ್ನು ಬಳಸುವಲಿಲ ನಿಮಕ್ಮ ಮ್ಸುವಿಗೆ ನೀವು ಒದRಸುವ ಬಾಂಬಲ್Øಾಂದ ನೀವು ತೃಪರಾRØದ ೀರಾ?			

	H4. ಮ್ಕಿಯ ಸೆಟ್ು ುಂಗನಲಿ ಮ್ಗುವಿನ			

	ಕಾಯಥಕ್ಷಮ್ತೆಯಾಂದ ನಿಮ್ಮ ಸಂತೀಷಾ್ವRದೆಯೇ? **H5.** AAC ಸಧನವನ್ನು ಬಳಸಿಕಾಂಡು ನಿಮಮ್ಮ ಮ್ಗು ಏನನ್ನು ತಿಳಿಸಲು ಪರ ಯತಿು ಸುತಿದೆ ಎಾುದನ್ನು ಅರ್ಥಮಾಡಿಕಳಳ ಲು ನಿಮ್ಮ ಕಷ್ು ವಾಗುತಿದೆಯೇ?			

APPENDIX-B

Close ended Questionnaire for Speech and Language Pathologists in English.

Sl no	QUESTION	Never	Sometimes	Always
I.	**K1.** As a clinician do you feel your knowledge is sufficient/enough to recommend an appropriate AAC device? **K2.** Do you feel the technical operations are difficult? **K3.** Do you feel there is a reduced social interaction by children who uses an AAC device? **K4**. Are you able to select the options(required word) with adequate speed? **K5**. Do you feel your technical knowledge is poor while interacting with the AAC users?			
II	**D1.** Are you able to mange device malfunction all the time? **D2.** Are you able to communicate efficiently with adequate conversation speed with an AAC user? **D3.** Do you feel subsidies if provided for AAC device can make it available for all the users? **D4.** Are you patient enough to wait for your child's replay using device? **D5.** Do you feel there is a lack of culture specific vocabulary in the AAC devices available?			

III	**C1.** Do you find difficulty to work with clients with drooling? **C2.** Do you find difficulty to work with clients with physical /dexterity issues? **C3.** Do you feel parents cooperation plays a major role in making their child proficient with his/her device? **C4.** Do you feel child takes longer time searching for options? **C5.** Do you feel child communicates better at clinical setting compared to outside situation?			
IV	**F1.** Do you feel the AAC devices/ software available are expensive? **F2.** Do you feel the maintenance charges for these technical devices are very high? **F3.** Do you find difficulties in getting periodic subscription for the device software? **F4.** Do you feel the reoccurring costs for the devices are difficult to maintain? **F5.** Do you feel there should be some allowances given for AAC devices for improving the availability as well as the accessibility?			
V.	**T1.** Do you feel the training received to deal with AAC is limited? **T2.** Is your expectation of AAC fulfilled from the training and experience you received? **T3.** Do you believe you have received			

	enough exposure to AAC devices? **T4.** Do you feel there is a lack of hands on exposure to AAC device for better understanding? **T5.** Do you feel during training period there was a limited exposure to the AAC devices?			
VI.	**W1.** Does your workplace provide adequate network support? **W2.** Do you feel the technical support provided from your clinical setting is very limited? **W3.** Do you feel your clinical setting doesn't provide supportive instruments for AAC users? **W4.** Do you feel there is an increased case load because of which you find difficult to invest time for exploring information related to AAC device? **W5.** Do you feel that there are less number of AAC uses coming to your clinical setting?			

Close ended Questionnaire for Speech and Language Pathologists in Kannada.

Sl no	ಪ್ರಶ್ನೆಗಳು	ಎಂದಿಗೂ	ಕೆಲವೊಮ್ಮೆ	ಯಾವಾಗಲೂ
I.	K1. ಸೂಕ AAC ಸಾಧನವನ್ನು ಶಿಫಾರಸು ಮಾಡಲು ನಿಮ್ಮ ಜ್ಞಾನವು ಸಾಕಾಗುತ ದೆ/ಸಾಕಷ್ಟು ಎಂದು ವೈದಾ ರಾR ನೀವು ಭಾವಿಸುತ್ತೀರಾ? K2. AAC ಸಾಧನವನ್ನು ಆಪರೇಟ್ ಮಾಡುವುದರಲಿಲ ಕಷ್ಟು ವಿದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ ್ತೀರಾ? K3. AAC ಸಾಧನವನ್ನು ಬಳಸುವ ಮ್ಯಾಳ ಸಮಾಜಿಕ ಸಂವಹನ ಕಡಿಮೆಯಾRದೆ ಎಂದು ನಿೀವು ಭಾವಿಸುತ ್ತೀರಾ? K4. ನಿೀವು ಸಾಕಷ್ಟುವೇಗದಲಿಲ ಆಯ್ಕೆಗಳನ್ನು (ಅಗತಾ ವಿರುವ ಪದ) ಆಯ್ಕೆ ಮಾಡಲು ಸಧಾ ವೇ? K5. AAC ಬಳಕೆದಾರರೊಂದಿಗೆ ಸಂವಹನ ನಡೆಸುವಾಗ ನಿಮ್ಮ ತ್ಸಾಂತಿರ ಕ ಜ್ಞಾನವು ಕಳಪೆಯಾRದೆ ಎಂದು ನಿೀವು ಭಾವಿಸುತ್ತೀರಾ?			

II	D1. ನೀವು AAC ಸಧನವುಕೆಟ್ಟುಗ, ಅದನ್ನು ನಿವಥಹಿಸಲು ಸಧಾವೇ? D2. ನೀವು AAC			

	ಬಳಕೆದಾರರಾಂಂಗೆ ಸಕಷ್ಟ ಸಂಭಾಷೆಣೆಯನ್ನು ವೇಗದೊಾಂಂಗೆ ಪರಿಣಾಮ್ಕಾರಿಯಾR ಸಂವಹನ ಮಾಡಲು ಸಧಾ ವೇ? D3. AAC ಸಧನಕೆ ಒದRಸಿದ ಸಬ್ಸಾ ಡಿಗಳು ಎಲ್ಲಲ ಬಳಕೆದಾರರಿಗೆ ಲ್ಭಾ ವಾಗುವಂತೆ ಮಾಡಬಹುದು ಎಾಂದು ೀವು ಭಾವಿಸುತಿೀರಾ? D4. AAC ಸಧನವನ್ನು ಬಳಸಿಕಾಂಂಡು ನಿಮ್ಮ ಮ್ಸುವಿನ ಮ್ರುಉತರಕಾR ಕಾಯಲು ನಿೀವು ಸಕಷ್ಟ ತ್ಸಣ ಹಾಂಂಂದ ೀರಾ? D5. ಲ್ಭಾ ವಿರುವ AAC ಸಧನಗಳಲಿಲ ಸಂಸಾ ೃತಿಯ ನಿಂಥಷಕು ಶಬದ ಕೀಶದ ಕರತೆಯದೆ ಎಾಂದು ನಿೀವು ಭಾವಿಸುತಿೀರಾ?			

III.	C1. ಜೊಲುಲ ಸುರಿಸುವ ವ್ಯಕ್ತಿಯಾಂದಿಗೆ ಕೆಲಸ ಮಾಡಲು ನಿಮ್ಗೆ ಕಷ್ಟವಾಗುತ್ತಿದೆಯೇ? C2. ದೈಹಿಕ ಸಮಸ್ಯೆಗಳಿರುವ ವ್ಯಕ್ತಿಯಾಂದಿಗೆ ಕೆಲಸ ಮಾಡಲು ನಿಮ್ಗೆ ತೊಂದರೆ ಇದೆಯೇ?			

	C3. ತಮ್ಮ ಮುಸವನ್ನು ಅವನ/ಅವಳ ಸಧನದೊಂಾಂ೦ಗೆ ಪರ ವೀಣರನ್ನು Rಸುವಲಿಲ ಪಂಕೀಷ್ಕರ ಸಹಕಾರವು ಪರ ಮಂಖ ಪಂಾತರ ವಹಿಸುತ ದೆ ಎಾಂದಂ ನಂೀವು ಭಾವಿಸಂತಿೀರಾ? C4. ಆಯ್ಕಾ ಗಳನ್ನು ಹುಡುಕಲು ಮ್ಸು ಹೆಚ್ಚಚ ಸಮ್ಯ ತೆಗೆದುಕಳುಳ ತ ದೆ ಎಾಂದು ನಂೀವುಭಾವಿಸಂತಿೀರಾ? C5. ಹರRನ ಪರಿಸಿತಿಗೆ ಹೊೀಲಿಸಿದರೆ ಕ್ಲು ನಿಕಲ್ ಸೆಟ್ಂ ಾಂಗನಲಿಲ ಮ್ಸು ಉತ ಮ್ಾR ಸಂವಹ ನ ನಡೆಸುತ ದೆ ಎಾಂದಂ ನಂೀವು ಭಾವಿಸಂತಿೀರಾ?			

IV.	F1. ಲ್ಪಾ ವಿರುವ AAC ಸಧನಗಳು/ಸಫ್ು ವೇರ್ ದುಬಾರಿಯಾRದೆ ಎಾಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? F2. ಈ ತ್ಸಾಂತಿರ ಕ ಸಧನಗಳಿಗೆ ನಿವಥಹಣಾ ಶುಲ್ಾ ಗಳು ತ್ತಾಂಬಾ ಹೆಚ್ಚಚ ಎಾಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? F3. ಸಧನ ಸಫ್ು ವೇರ್ಗಾR ಸಮ್ಯಕೆಾ ತಕಾ ಾಾಂತೆ ಚಂದಾದಾರಿಕೆ ಪಡೆಯುವಲಿಲ ನೀವು ತಾಂದರೆಗಳನ್ನು			

	ಕಂಡುಕಾಂಡಿØದ ೀರಾ? F4. ಸಧನಗಳಿಗೆ ಮ್ರುಕಳಿಸುವ ವಚ್ಚ ವನ್ನು ನಿವಥಹಿಸುವುದು ಕಷ್ ು ಎಾಂದು ನೀವು ಭಾವಿಸ ುತಿ ೀರ ಾ? F5. ಲ್ಬ್ ರ ಾ ತೆ ಮ್ತ್ತ ಷು ವೇಶ್ವನ್ನು ಸುಧಾರಿಸಲು AAC ಸಧನಗಳಿಗೆ ಕೆಲ್ವು ಅನ್ನಮ್ತಿಗಳನ್ನು ನೀಡಬೇಕು ಎಾಂದು ನೀವು ಭಾವಿಸ ುತಿ ೀರ ಾ?			
V.	T1. AAC ಯಾಂØಗೆ ವಾ ವಹರಿಸಲು ಪಡೆದ ತರಬೇತಿಯು ಸೀಮಿತವಾRದೆ ಎಾಂದ ು ನ ೀವು ಭಾವಿಸ ುತಿ ೀರ ಾ? T2. ನೀವು ಪಡೆದ ತರಬೇತಿಮ್ತ್ತ ಅನ್ನಭ್ವØ ಾ ಂದ AAC ಯ ನಿಮ್ಮ ನಿರೀಕ್ ಯಈಡೇರಿದೆಯ ೀ? T3. ನೀವು AAC ಸಧನಗಳಿಗೆ ಸಕಷ್ ು ಮಾನ ಾ ತೆ ಪಡ ØØದ ಿ ಎಾಂದ ು ನ ೀವು ನಂಬ ುತಿ ೀರ ಾ? T4. ಉತ ಮ್ ತಿಳುವಳಿಕ ೆಗಾR AAC ಸಧನಕೆ ಒಡಿಡಕೊಳುವ ಅನ್ನಭ್ವದ ಕೈಕೆಲ್ಸದಲಿ ಕೊರತೆಯದೆ ಎಾಂದ ು ನ ೀವು ಭಾವಿಸ ುತಿ ೀರಾ? T5. ತರಬೇತಿ ಅವಧಿಯಲಿಲ AAC ಸಧನಗಳಿಗೆ ಸೀಮಿತವಾದ			

	ಮಾನಂ ತೆ ಇತ್ತ ಎಂದಂ ನಿಪ್ಪು			

	ಭಾವಿಸುತ್ತೀರಾ?			
VI.	W1. ನಿಮ್ಮ ಕೆಲಸದ ಸಿ ಳುವು ಸುಕಷ್ಟ ು ನಿಟ್ವ ರ್ಥ ಬಾಂಬಲ್ವನ್ನು ನಿರೀಡುತ ದೆಯೇ? W2. ನಿಮಿಷ ಕ್ಕು ನಿಕಲ್ ಸೆಟ್ು ಾಂಗನಿಾಂದ ಒದRಸಲ್ಲದ ತ್ಸಾಂತಿರ ಕ ಬಾಂಬಲ್ಲು ತ್ತಾಂಬಾ ಸೀಮಿತವಾRದೆ ಎಾಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? W3. ನಿಮಿಷ ಮ ಕ್ಕು ನಿಕಲ್ ಸೆಟ್ು ಾಂಗ AAC ಬಳಕೆದಾರರಿಗೆ ಬಾಂಬಲ್ ಸುಧನಗಳನ್ನು ಒದRಸುವುಲ್ಲ ಎಾಂದು ನಿೀವು ಭಾವಿಸುತ್ತೀರಾ? W4. AAC ಸಧನಕೆ ಾ ಸಂಬಂಧಿಸಿದಂತೆ ಹಲವಾರು ಪರ ಕರಣಗಳನ್ನು ಅನೆವ ಿಷಿಸುವ ಸಲುವಾR ಸಮ್ಯವನ್ನು ಹೂಡಿಕೆ ಮಾಡಲು ನಿಮ್ಗೆ ಕಷ್ು ವಾಗುತಿದೆ ಎಾಂದು ನಿರೀವು ಭಾವಿಸುತ್ತೀರಾ? W5. ನಿಮಿಷ ಮ ಕ್ಕು ನಿಕಲ್ ಸರಿಟ್ು ಿಗೆ ಕಡಿಮೆ ಸಂಖ್ಯಾ ಯ AAC ಬಳಕೆಗಾರರು ಬರುತಿ ದಾದ ರೆ			

	ಎಾಂದಂ ನಶೀವು ಭಾವಿಸಂತಿೀರಂ?			

APPENDIX-C

Close ended Questionnaire for Special Educators in English

Sl no	QUESTION	Never	Sometimes	Always
I.	**K1.** As a special educator do you feel your knowledge is sufficient/enough to recommend an appropriate AAC device? **K2.** Do you feel the technical operations are difficult? **K3.** Do you feel there is a reduced social interaction by children who uses an AAC device? **K4.** Are you able to select the options (required word) with adequate speed? **K5.** Do you feel your technical knowledge is poor while interacting with the AAC users?			
II	**D1.** Are you able to mange device malfunction all the time? **D2.** Are you able to communicate efficiently with adequate conversation speed with an AAC user? **D3.** Do you feel subsidies if provided for AAC device can make it available for all the users? **D4.** Are you patient enough to wait for your child's replay using device? **D5.** Do you feel there is a lack of culture specific vocabulary in the AAC devices available?			

III	**C1.** Do you find difficulty to work with clients with drooling? **C2.** Do you find difficulty to work with clients with physical /dexterity issues? **C3.** Do you feel parents cooperation plays a major role in making their child proficient with his/her device? **C4.** Do you feel children takes longer time searching for options? **C5.** Do you feel children communicates better at school compared to outside situation?			
IV.	**A1.** Do you feel your setting supports AAC usage in children? **A2.** Do you feel child's literacy gets affected in AAC users? **A3.** Do you feel usage of AAC makes the children refuse/less motivated to use other modes(verbal/written)? **A4**. Do you encourage usage of AAC in class room setting? **A5**. Do you feel sometimes you tend to give less attention to AAC user in your class room setting due to time constrain?			
V.	**T1.** Do you feel the training received to deal with AAC is limited? **T2.** Is your expectation of AAC fulfilled from the training and experience you received? **T3.** Do you believe you have received			

	enough exposure to AAC devices? **T4.** Do you feel there is a lack of hands on exposure to AAC device for better understanding? **T5.** Do you feel during training period there was a limited exposure to the AAC devices?			
VI.	**W1.** Does your workplace provide adequate network support? **W2.** Do you feel the technical support provided from your school setting is very limited? **W3.** Do you feel your setting doesn't provide supportive instruments for AAC users? **W4.** Do you feel there is an increased case load because of which you find difficult to invest time for exploring information related to AAC device? **W5**. Do you feel that there are less number of AAC uses coming to your school setting?			

Close ended Questionnaire for Special Educators in Kannada

Sl no	ಪ್ರಶ್ನೆಗಳು	ಎಂದಿಗೂ	ಕೆಲವೊಮ್ಮೆ	ಯಾವಾಗಲೂ
I.	**K1.** ವಿಶೇಷ್ ಶಿಕ್ಷಕರಾR AAC ಯಂತರ ಗಳನ್ನು ಬಳಸಲು ಸೂಚ್ಯಸುವುದಕೆ ನಿಮ್ಗೆ AAC ಯಂತರ ಗಳ ಬಗೆಗೆ ಸಕಷ್ಟು ಮಾಯತಿ ಇದೆಯ್ಕ? **K2.** ನಿಮ್ಗೆ ತ್ಸಾಂತಿರಕ ಕಾಯಾಥಚ್ರಣೆಗಳನ್ನು ಅನ್ನಸರಿಸಲು ಕಷ್ಟ ವಾಗುತಿದೆ ಎಾಂದು ಅನಿಸುತ ದೆಯೇ? **K3.** ನಿಮ್ಗೆ ಅನಿಸುತದೆಯ್ಕ AAC ಯಂತರ ಗಳನ್ನು ಬಳಸುವ ಮ್ಕಾ ಳಲಿಲ ಸಮಾಜಿಕ ಸಂವಹನೆ ಕಡಿಮೆಯಾRದೆ ಅಾಂತ? **K4.** ನೀವು ಸಕಷ್ಟು ವೇಗದಲಿಲ ಯಂತರ ದಲಿಯ್ಕಾ ಯನ್ನು ಆಯ್ಕಾ ಮಾಡಲು ಸಧಾ ವಾಗುತದೆ ಯೇ? **K5.** AAC ಬಳಕೆದಾರರಾಂಥಿಗೆ ಸಂವಹನ ನಡೆಸುವಾಗ ನಿಮ್ಮ ತ್ಸಾಂತಿರಕ ಜ್ಞಾನವು ಕಡಿಮೆ ಇದೆ ಎಾಂದು ನೀವು ಭಾವಿಸುತಿರಾ?			
II.	**D1.** ನೀವು ಎಲ್ಲಲ ಸಮ್ಯದಲಿಲ ಸಧನದ			

	ಅಸಮ್ಮಥಕ ಕಾಯಥವನ್ನು ನಿವಥಹಿಸಲು ಸಧಾ ವೇ? **D2.** AAC ಬಳಕರಿದ಼ಾರರ಼಼಼ಾ಼ಂØಗೆ ಸಕಷ್ಟ಼ು ಸ಼ಂಭಾಷ್ಣೆಯ ವೇಗದೊ಼ಾಂØಗೆ ಪರಿಣಾಮ್ಕಾರಿಯಾR ಸಂವಹನ ನಡೆಸಲು ನಿಮ್ಗೆ ಸಧಾ ವೇ? **D3.** AAC ಸಧನಕಾR ಒದRಸಲ್ಲದ ಸಬ್ಸಾ ಡಿಯನ್ನು ನೀಡಿದರೆ ಎಲ್ಲ ಬಳಕೆದಾರರಿಗೆ ಲ್ಭ಼ಾ ವಾಗುವಂತೆ ಮಾಡಬಹುದು ಎಾಂದು ನೀವು ಭಾವಿಸ಼ುತಿ಼ೀರ಼ಾ? **D4.** AAC ಸಧನವನ್ನ಼ು ಬಳಸ಼ಿಕ಼ಾ಼ಂಡ಼ು ನ಼ಿಮ಼ಮ ಮಕ಼ಾಳ ಉತ ರಕ಼ಾR ಕಾಯಲು ನ಼ಿೀವು ಸಕಷ್ಟ಼ು ತ್ಸ಼ಮ ಹ಼ಾ಼ಂØØದ ಼ೀರ಼ಾ? **D5.** ಲ್ಭ಼ಾ ವಿರುವ AAC ಸಧನಗಳಲಿಲ ಸಂಸಾ ಕ಼ಿಯುನಿØಥಷ಼್ು ಶ್ಬದ ಕ಼ೀಶ಼ದ ಕರತೆಯದೆ ಎಾಂದು ನೀವು ಭಾವಿಸ಼ುತಿ಼ೀರ಼ಾ?			
III.	**C1.** ಜೊಲುಲ ಸುರಿಸುವ ವ಼ಾ ಕ್ತಯಾಂØಗೆ ಕೆಲ್ಸ			

	ಮಾಡಲು ನಿಮ್ಮ ಕಷ್ಟಕರ ವಾಗುತ್ತಿದೆಯೇ? **C2.** ದೈಹಿಕ ಸಮಸ್ಯೆಗಳಿರುವ ವ್ಯಕ್ತಿಯಾಂತರಿಗೆ ಕೆಲಸ ಮಾಡಲು ನಿಮ್ಮ ಕಷ್ಟಕರ ವಾಗುತ್ತಿದೆಯ್ಯ? **C3.** ತಮ್ಮ ಮನೆಯು AAC ಸಾಧನದೊಂದಿಗೆ ಪರಿವೀಣರನ್ನು R ಮಾಡುವಲ್ಲಿ ಪರಿಷ್ಕರ ಸಹಕಾರವು ಪರ ಮುಖ ಪರಿವರ್ತನವಹಿಸುತ ದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? **C4.** AAC ಸಾಧನದಲ್ಲಿಲಆಯ್ಕೆ ಗಳನ್ನು ಹುಡುಕಲುಮ್ಮಾಳು ಹೆಚ್ಚಿಸಮಯ ತೆಗೆದುಕಳುಳ್ಳತ್ತರೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ? **C5.** ಹರRನ ಪರಿಸಿತಿಗೆ ಹೊಂದಿಲಿಸಿದರೆ ಮ್ಮು ಶಾಲೆಯಲ್ಲಿಲ ಉತಮ್ಮಾR ಸಂವಹನ ನಡೆಸುತ್ತರೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			
IV.	**A1.** ನಿಮ್ಮ ಸೆಟ್ಟಿಂಗ್ಸ್ ಮಾಂಗ ಮ್ಮಾ ಈ AAC ಸಧನದ ಬಳಕೆಯನ್ನು ಬಾಂಬಲಿಸುತ ದೆ ಎಂದು ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			

	A2. AAC ಬಳಸುವ ಮ್ಮಾ ಳ ಸಕ್ಷರತೆ ಪರಿಣಾಮ ಬ್ಸೀರುತ ದೆ ಎಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? **A3.** AAC ಬಳಕೆಯು ಇತರ ವಿಧಾನಗಳನ್ನು (ಮೌಖಿಕ/ಲಿಖಿತ) ಬಳಸಲು ಮ್ಮಾ ಳನ್ನು ಕಡಿಮೆ ಪೆರ ೀಪಿಸುತದೆ ಎಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ? **A4.** ತರಗತಿಯ ವಾ ವಸೆಿ ಯಲ್ಲಿ AAC ಬಳಕೆಯನ್ನು ನೀವು ಪ್ರೀತ್ಸಾ ಹಿಸುತಿೀರಾ? **A5.** ಸಮ್ಯದ ನಿಬಥಾಂಧದ ಕಾರಣಂಾಂದಾR ನಿಮ್ಮ ತರಗತಿಯ ಸೆಟ್ಂ ಾಂಗನಲಿಲ ನೀವು AAC ಬಳಕೆದಾರರಿಗೆ ಕಡಿಮೆ ಗಮ್ನವನ್ನು ನೀಡುತಿ ೀರಿ ಎಂದು ನೀವು ಭಾವಿಸುತಿೀರಾ?			

V.	**T1.** AAC ಸಧನಯಾಂØಗೆ ವಾ ವಹರಿಸಲು ಪಡೆದ ತರಬೇತಿಯು ಸೀಮಿತವಾRದೆ ಎಂದು ನೀವು ಭಾವಿಸುತಿ ೀರಾ? **T2.** ನೀವು ಪಡೆದ ತರಬೇತಿಮ್ತ ಅನ್ನಭ್ವØಾಂದ AAC ಯಂತರ ಗಳು ನಿಮ್ಮ ನಿರೀಕೆ್ಷಗಳು ಈಡೇರಿದೆಯೇ? **T3.** ನೀವು AAC ಸಧನಗಳಿಗೆ ಸಕಷ್ಟು ಅನ್ನಭ್ವ			

	ಪಡೆಯೊದ ೀರಿ ಎಾಂದು ನೀವುನಂಬಂುತಿೀರಾ? **T4.** ಉತ ಮ್ ತಿಳುವಳಿಕೆಗಾR AAC ಸಧನಕೊ ಒಡಿಡ ಕಳುಳ ವಲಿಲ ಕೈ ಕ್ಷಿಪ ಕರತೆಯದೆ ಎಾಂದಂು ನೀವು ಭಾವಿಸಂುತಿೀರಾ? **T5.** ತರಬೇತಿ ಅವಧಿಯಲಿಲ AAC ಸಧನಗಳಿಗೆ ಸೀಮಿತವಾದ ಅನ್ನಭ್ವವನ್ನು ಪಡೆಯೊದ ೀರಿ ಎಾಂದು ನೀವು ಭಾವಿಸಂುತಿೀರಾ?			
VI.	**W1.** ನಿಮ್ಮ ಕೆಲ್ಸದ ಸಿ ಳವು ಸಕಷ್ಟಂು ನೆಟತ್ವರ್ಕ ಥ ಬಾಂಬಲ್ವನ್ನು ಒದRಸುತದೆಯೇ? **W2.** ನಿಮ್ಮ ಶಾಲೆಯು ಸೆಟ್ಂು ಾಂಗನಿಾಂದ ಒದRಸಲ್ಲದ ತ್ಸಾಂತಿರ ಕ ಬಾಂಬಲ್ವು ತ್ತಾಂಬಾ ಸೀಮಿತವಾRದೆ ಎಾಂದು ನೀವು ಭಾವಿಸಂುತಿೀರಾ? **W3.** ನಿಮ್ಮ ಸೆಟ್ಂು ಾಂಗ A ಬಳಕೆದಾರರಿಗೆ ಬಾಂಬ ಲ್ಸಧನಗಳನ್ನಂು ಒದRಸುವುಲ್ಲ ಎಾಂದು			

	ನೀವು ಭಾವಿಸುತ್ತೀರಾ?			

	W4. AAC ಸಧನಕೆ ಾ ಸಂಬಂಧಿಸಿದಂತೆ ಹೆಚ್ಚಚ ಪರ ಕರಣಗಳನ್ನು ಅನೆವ ೀಷಿಸುವ ಸಲುವಾR ಸಮ್ಯವನ್ನು ಹೂಡಿಕೆ ಮಾಡಲು ನಿಮ್ಗೆ ಕಷ್ ವಾಗುತಿದೆ ಎಾಂದು ನೀವು ಭಾವಿಸುತೀರಾ? **W5.** ನಿಮ್ಮ ಶಾಲೆಯ ಸೆಟ್ ಾಂಗೆ ಕಡಿಮೆ ಸಂಖ್ಯಾ ಯAAC ಬಳಕೆಗಾರ ರು ಬರುತಿ ದಾದ ರೆ ಎಾಂದು ನೀವು ಭಾವಿಸುತೀರಾ?			

APPENDIX-D

Question No. 10 in LEAP Q (Ramya & Goswami,2009) which was used to self-rate the bilingual proficiency.

On a scale from one to five, mark your level of proficiency in each of the skill (1-Zero proficiency, 2- Low, 3- Good, 4- Native like/perfect)

Language	Understanding	Speaking	Reading	Writing
L1				
L2				