Implementation of Augmentative and Alternative Communication for People with Severe Intellectual Disabilities: Specialist Perceptions

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Abstract. This study aimed to identify the perceptions of specialists working with people with severe intellectual disabilities regarding the implementation of augmentative and alternative communication. A qualitative approach was used to analyse semi-structured interviews with nine specialists working with people with severe intellectual disabilities at the Comprehensive Rehabilitation Centres in Saudi Arabia. The main results indicated that all specialists had some knowledge of the use of augmentative and alternative communication methods for facilitating communication with people with severe intellectual disabilities, and a diversity of means and methods were discussed. Visual methods were the most widely used at these centres, however, while technological means were the least commonly used by specialists, despite their acknowledged importance. Near consensus also emerged among the specialists regarding the effectiveness and success of such methods in terms of communicating with people with severe intellectual disabilities. The results of the study also indicated that specialists faced numerous challenges in terms implementing augmentative and alternative communication from the people with severe intellectual disabilities themselves, as well as other specialists and centre procedures and staff. The most important proposed solutions for overcoming these challenges was the implementation of training courses to enable specialists to develop their capabilities regarding the use of more diverse methods and the implementation of augmentative and alternative communication with people with severe intellectual disabilities in a manner that allowed them to identify and select those augmentative and alternative communication methods that best align with the capabilities and needs of the relevant persons with severe intellectual disabilities.

Keywords: augmentative and alternative communication; Severe intellectual disability; Comprehensive Rehabilitation Centres; The Kingdom of Saudi Arabia

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1. Introduction

Global interest in supporting people with disabilities and addressing their issues has an extensive history. In the Kingdom of Saudi Arabia, the systems and legislation developed in relation to people with disabilities aims to allow them to obtain their rights as well as to enhance relevant medical, psychological, social and educational services to empower them and make allow them to be active members of society (Authority of People with Disability, 2023). Despite the Kingdom of Saudi Arabia's efforts in the field of disability, however, some deficiencies remain in terms of in providing appropriate high-quality services to people with intellectual disabilities (Al-Sharadqah & Al-Ghamdi, 2024). Al-Wabili and Al-Sajjan (2020) also reported deficiencies in the use of augmentative and alternative communication methods for people with intellectual disabilities in many centres and institutions in the Kingdom of Saudi Arabia. This suggests that there is a clear gap between current policies and their actual implementation (Abu-Alghayth et al., 2022; Yousef, 2018).

Severe intellectual disability is described as a marked decline in mental ability with a below-average intelligence quotient of 40 or less, accompanied by deficiencies in two or more adaptive behaviour skills that appear before the age of 22 (Hickey & Cotts, 2024). The number of people with intellectual disabilities in the Kingdom of Saudi Arabia is 130,820, which is 0.4% of the total population of 32,175,224 (General Authority for Statistics, 2022). Although there are no statistics on the number of people with severe intellectual disabilities, they usually represent 5% of the overall intellectual disability category (Al-Wabili, 2020; Al-Rosan, 2018).

The American Speech-Language-Hearing Association [ASHA] (2024) defined augmentative and alternative communication as a method that includes all non-verbal methods by which a person communicates with others and is used to express desires and needs. Augmentative and alternative communication methods facilitate communication for people with communication difficulties, such as those with severe intellectual disabilities, as they help them increase their expression and understanding (Allen et al., 2017).

Non-verbal communication plays a crucial role in enabling people with severe intellectual disabilities to communicate and interact with others. According to the American Association on Intellectual and Developmental Disabilities (AAIDD) (Schalock et al., 2021), people with severe intellectual disabilities face challenges in the use of verbal language, and the resulting deficits increase as their intelligence quotient decreases. This makes it necessary to find and develop communication programmes that can act as alternatives to spoken language to enable people with severe intellectual disabilities to communicate and interact effectively with the world around them (Johnson et al., 2012). The use of augmentative and alternative communication methods is one option to effectively enhance the ability of people with severe intellectual disabilities to communicate with others (Hanley et al., 2024).

People with severe intellectual disabilities often communicate more freely through non-verbal methods such as augmentative and alternative communication (Danker et al., 2023). According to the International Society for Augmentative and Alternative Communication (ISAAC, 2011), augmentative and alternative communication aims to help people with severe intellectual disabilities communicate their ideas, exchange information, articulate their needs, and express their feelings. Moreover, it provides them with ways to express themselves and helps them initiate communication with others wherever and whenever they desire. Additionally, AAC helps such people develop their ability to acquire new information and reduces the risk of behavioural problems resulting from their not having sufficient language to enable communication and self-expression (Topia & Hocking, 2012). It also helps them develop their language skills and their awareness and understanding of the language while reducing the gap between their linguistic understanding and awareness and linguistic expression (Sigafoos et al., 2014). Langarika-Rocafort et al. (2021) further confirmed that augmentative and alternative communication is effective in increasing the ability of people with severe intellectual disabilities to express their desires and needs.

Despite the importance of specialists implementing augmentative and alternative communication to support people with severe intellectual disabilities, several challenges currently limit such implementation. Jarar and Al-Qattanani (2017) revealed that specialists believe that making means and tools available or simply equipping a room for speech and language therapy to support communication with people with severe intellectual disabilities may be insufficient. Andzik et al. (2019) also argued that a comprehensive evaluation of specialists' performance and their team members' cooperation in terms of implementing augmentative and alternative communication methods is currently lacking. The specialists who participated in a study by Simmons et al. (2019) similarly reported that they had received insufficient training on implementing augmentative and alternative communication with people with severe intellectual disabilities, and that they needed to learn more about this to enable them to communicate with such people more effectively. Additionally, other studies have revealed challenges arising from the nature of people with severe intellectual disabilities, such as their low mental capacity and the commonality of physical factors such as difficulties related to fine motor skills (Ghalib, 2019).

Based on the current authors' experiences, specialisations, and interest in issues related to people with severe intellectual disabilities, the concurrent observation arose that most supportive programmes and services are provided to people with mild and moderate intellectual disabilities; those provided to people with severe intellectual disabilities are highly limited. The AAIDD has also confirmed that most services and programmes are focused on mild to moderate rather than severe intellectual disabilities (Biggs et al., 2023). Based on visits to comprehensive rehabilitation centres and ongoing work in the educational field, the authors also noted that the process of communication between specialists and people with severe intellectual disabilities remains difficult. After extensive research and a review of Arab studies related to this issue across various Arab libraries and

databases, a current lack of research on this topic, especially in the Arab context was confirmed. The current study thus aims to investigate perceptions of specialists working with people with severe intellectual disabilities regarding the implementation of augmentative and alternative communication as well as assessing the challenges faced by such specialists in their efforts in order to develop strategies to overcome these. Based on this, the following research questions were formulated:

1. How do specialists working with people with severe intellectual disabilities perceive the implementation of augmentative and alternative communication?
2. What are the challenges faced by specialists in the process of implementing augmentative and alternative communication for people with severe intellectual disabilities?
3. What are some proposed solutions to overcome the challenges faced by specialists in implementing augmentative and alternative communication for people with severe intellectual disabilities?

2. Methodology

The researchers opted for a thematic analysis method, based on its proven suitability for this type of study. This method focuses on analysing qualitative data by identifying, analysing, and interpreting emergent patterns of meaning (Clarke & Braun, 2016).

2.1 Participants

Poles (2020) confirmed that the number of participants in qualitative studies is usually small, commonly ranging from six to ten; however, each participant may be interviewed several times. Accordingly, the study participants in this case were nine specialists from the fields of special education, social work, and psychology, who had been working recently with people with severe intellectual disabilities in comprehensive rehabilitation centres in the Kingdom of Saudi Arabia. The participants were selected intentionally, which is a common feature in qualitative work. Table 1 outlines the participants' data as anonymised using codes, both to hide their original identities and to maintain scientific integrity and confidentiality regarding data collection.

Table 1: Interview participants

Interviewee code	Sex	Qualification	Years of experience
PSY.1	F	Master Degree in Psychology	8
S.ED.1	F	Master Degree in Special Education	3
S.W.1	F	Bachelor Degree in Social Work	6
PSY.2	F	Bachelor Degree in Psychology	11
S.W.2	F	Bachelor Degree in Social Work	2
S.W.3	M	Master Degree in Social Work	3
PSY.3	M	Bachelor Degree in Psychology	9
PSY.4	M	Bachelor Degree in Psychology	5
S.W.4	M	Master Degree in Social Work	1

2.2 Instrument

After the researchers reviewed the relevant literature (Andzik et al., 2019; Daoud, 2020; Simmons et al., 2019), a semi-structured individual interview was selected as the main instrument for further data collection due to its suitability in terms of meeting the study objectives and matching the nature of the work. Based on previous studies and the researchers' knowledge, a set of guiding interview questions was thus collated. Semi-structured individual interviews are considered to be an effective instrument for collecting sufficient data in a comprehensive manner for qualitative research (Ruslin et al., 2022). This type of interview is thus one of the most commonly used instruments in studies taking a qualitative approach (Bearman, 2019).

The interview included a simple introduction that allowed the researchers to clarify the title and purpose of the study, offered an approximate timescale for conducting the interviews (45 to 60 minutes), and reminded the participants of the importance of audio recording to enable researcher referencing and re-listening. The confidentiality of all data, in accordance with the ethics of scientific research, was also emphasised. The interview as prepared in its initial form was thus approved.

2.3 Pilot Interview

The tool was initially adopted to survey participants from within the study community who had not been selected as main participants in the study. This involved five specialists working with people with severe intellectual disabilities, who were asked for feedback to ensure the clarity of all items. The interview questions were then reviewed, modified, and revised after also being presented to 10 referees in the form of faculty members holding doctoral degrees in special education. The interviews were then prepared as the final form was approved.

2.4 Data Analysis

Qualitative data analysis aims to organise, arrange and examine data in order to identify main themes and to reveal relationships and links between factors related to the subject and objective of a study. Researchers must thus possess the skills and knowledge to analyse, understand, interpret and explain qualitative data, in addition to a certain creative ability regarding understanding critiques (Braun & Clarke, 2013). The current study adopted the thematic analysis method to analyse the qualitative data; thus, prior to such data analysis commencing, several other studies using this qualitative approach were reviewed, and training courses and discussion groups were attended by the researchers to allow them to analyse and interpret the data in the best possible way.

The most general steps in data analysis include organising, preparing, and reading the data; coding the data; and interpreting the results (Creswell & Poth, 2016). In this study, the data analysis phase involved several steps. The data from each interview was transcribed into Word, with each participant's name immediately replaced with an appropriate code, as in Table 1. During the data transcription process, multiple notes were recorded, based on the belief by Huebner et al. (2018) that the beginning initial analysis early supports more

effective interpretation of the results. This was followed by the data classification phase, completed using open coding; in this phase, the data is classified, examined, and formulated into concepts, before being placed in categories, each with a specific title. Initial coding was done with notes developed from all interview transcripts and coded line by line. This created broad themes for the important data. The main themes were then identified by determining links between the coded phrases and identifying their relationships to the main theme.

The data were then re-read four times at spaced intervals, with further notes recorded to accurately identify the main and sub-themes and all data related to them. In the final stage, the results were reviewed and interpreted in a manner hoped to convince the reader of the validity of the analyses based on the inclusion of direct quotes from the participants in the study linked to the results of previous studies related to the subject. Figure 1 illustrates the procedures followed in analysing the qualitative data.
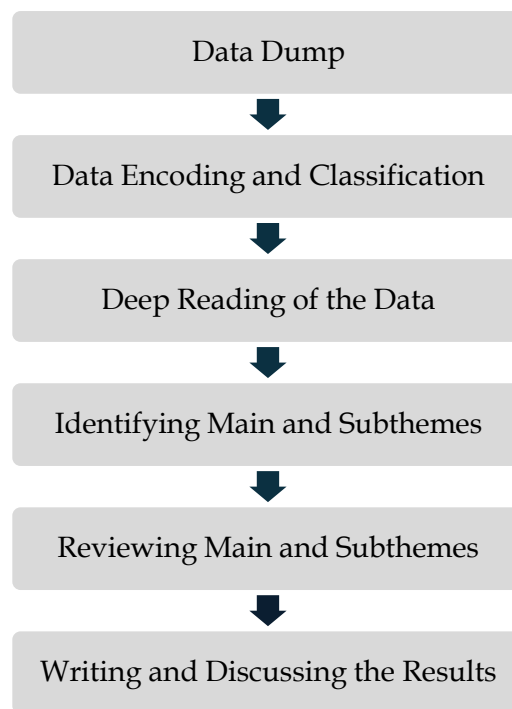
Data Dump

Data Encoding and Classification

Deep Reading of the Data

Identifying Main and Subthemes

Reviewing Main and Subthemes

Writing and Discussing the Results

Figure 1: Procedures followed for qualitative data analysis

2.5 Ethical Considerations

During the planning and design of the qualitative study, a range of ethical considerations and issues were taken into account. The researchers offered participants support, established respectful relationships, respected the privacy of participants, and ensured that their participation would not expose them to any danger, as well as respecting the nature and culture of all participants. The researchers also took the necessary measures to conduct interviews and store related material in a safe place, to ensure that no information was disclosed to the public, and that only individuals involved in the research would have access to it. The measures taken to ensure that confidentiality of all information was maintained included removing all participants' names and replacing these with

codes and destroying all records of interviews after the study analysis was completed.

2.6 Reliability and Credibility

To achieve a high degree of probity and reliability, the researchers used multiple diverse strategies and methods, thus ensuring production of a high study quality. To achieve a sound credibility, the researchers used the audit trail strategy, planning and arranging interviews, scheduling them, and organising them in a way that facilitated the implementation of predetermined study procedures (Creswell & Poth, 2016). The researchers were keen to schedule all the interviews in advance so that after completing one interview, they could move on to the next. This procedure helped them organise the interview dates to ensure that no participants were missed or forgotten. The researchers also used an audio-recording method to collect data during the semi-structured interviews to ensure that precise information, without addition or subtraction due to researcher transcription issues, was captured: Creswell and Poth (2016) indicated that using high-quality audio recordings and copying digital files to obtain detailed field notes enhances the validity and reliability of a study. The researchers later transcribed, coded, and wrote about the data in a Word document, which they provided to participants to allow them to examine their own statements for accuracy and to discuss the interpretations offered. The participants thus confirmed the validity of the researchers' conclusions, utilising the member checks strategy (Brantlinger et al., 2005). Williams and Morrow (2009) also confirmed that participants' input plays an important role in achieving study credibility.

Among the procedures that the researchers used to meet the required quality standards was the peer debriefing strategy. Peers specialising in qualitative studies were consulted throughout the implementation of study procedures, from analysis to the interpretation of the results. These peers provided the researchers with valuable notes that were then taken into account, modified, and implemented to shape the study in the required form. The investigator triangulation strategy was also used to ensure the credibility of the participants' interpretations (Korstjens & Moser, 2018).

As part of enhancing transferability, the researchers selected the study participants from among specialists working with people with severe intellectual disabilities at comprehensive rehabilitation centres and specified the implementation of the study in several cities of the Kingdom of Saudi Arabia. The cultural and theoretical backgrounds of the participants thus varied, which enhanced diversity regarding not only access to information but also in terms of obtaining a sufficient amount to enrich the study and answer the research questions. This helped address the identified study gap by increasing the validity of the results and enhancing the possibility of generalizing them to other environments.

Among the procedures used to achieve dependability was a focus by the researchers on using the most accurate means to describe their procedures, the stages of constructing the relevant tool, and the method of selecting the sample.

This included the process of determining the number of participants and the procedures for implementing the tool as well as the development of methods for collecting, interpreting, and analysing data and linking the results of the study to previous literature to allow the study to be repeated with similar results. Thick descriptions of the research context were thus developed to offer accuracy and comprehensiveness in terms of describing the methods that contributed to the achievement of the results (Younas et al., 2023).

In terms of confirmability, the researchers were keen to avoid bias regarding participants and to disclose all results, both positive and negative, when writing the final report. A negative case sampling strategy was thus adopted. The researchers also ensured that they strove to write in clear, direct, and correct language; that no evidence, data, results, or conclusions were added to fill any gaps; and that the results were presented in a basic form, supported by direct quotes from the participants' statements. The researchers implemented this approach by using a strategy that included reflecting on their own areas of bias (research reflexivity).

3. Results and Discussion

In terms of the specialists' perspectives, two main themes emerged: The first was the specialists' knowledge of augmentative and alternative communication methods, and the second was the use of common and effective augmentative and alternative communication methods by those specialists to support their communication with people with severe intellectual disabilities.

3.1 Specialists' Knowledge of Augmentative and Alternative Communication Methods

At the beginning of any scientific study of an issue or other phenomenon, it is important to identify the underlying concept (van de Ven, 2016). In this case, the researchers tried to identify the concept of augmentative and alternative communication from the perspective of specialists, as this could reflect the extent of not only familiarity with this issue but also their ability to perform their work. The participants' responses were varied. Participant PSY.1 stated, *"There are many and varied communication methods, including smiling, simulation, modelling (imitation), direct command, and non-verbal reinforcement with gifts,"* while Participant S.ED.1 said, *"Augmentative and alternative communication methods […] depend on alternative methods and approaches to the language we speak."* Participant S.W.1 agreed, stating, *"It is the use of alternative methods to language, which could be signs, pictures, videos, or guidance with hand signals."* Participant PSY.2 further supported these views, stating, *"Augmentative and alternative communication methods may depend on signs, or they may us[e] the sense of touch, or they may be through physical guidance."* Participant S.W.4 added:

> *"Alternative communication methods are divided into two sections. They may be modern and depend on technology and modern devices, such as programmes dedicated to alternative communication and which are available on smart devices, or they may be traditional methods, such as signs and gestures."*

Participant S.W.2 also offered their own definition:

> *"This term is divided into two parts. Augmentative is used with speech to make it clear, while alternative means a complete substitute for spoken language. These methods can [involve] using facial expressions, pictures, gestures, observation, sign language, communication boards, and modelling."*

Based on these quotes, specialists tend to have comprehensive knowledge regarding the concept of augmentative and alternative communication, with good awareness of its meaning as a scientific term. This contradicts Malekian et al. (2020) and Subihi (2013), who suggested that that specialists have only limited and inadequate knowledge of augmentative and alternative communication. Hanley et al. (2023) suggested that augmentative and alternative communication offers an effective means to meet the communication needs of people with sever intellectual disability, while Orthophonie DZ (2020) stated that augmentative communication occurs when a person adds an element to their speech to enhance it, and that alternative communication is, instead, used when a person is unable to speak or when others do not understand their speech. Communication is thus used to refer to the development of understanding between two or more people.

3.2 Common Effective Augmentative and Alternative Communication Methods Used for People with Severe Intellectual Disabilities

3.2.1 Visual method

Most specialists agreed that they use visual methods in their communication with people with severe intellectual disabilities. They indicated that they increasingly use pictures and cards to support augmentative and alternative communication. Participant S.ED.1 stated: *"I used the picture exchange communication system (pecs) and communication boards, and I received more responses and interaction than [with] the verbal method."* Participant PSY.2 agreed, stating, *"I communicate with them using pictures, and I also try to get down to their mental level, and there must be respect and appreciation for them because they feel this."*

Most specialists appear to believe that using visual communication has a significant impact in terms of improving communication with people with severe intellectual disabilities. This result is consistent with Danker et al. (2023) and Priana et al. (2018), who indicated that the most effective communication methods for students with intellectual disabilities included pictures, posters, and communication boards. Using visual communication methods appears to increase the motivation of people with severe intellectual disabilities to communicate, and this is thus considered an effective alternative to verbal language. It is also considered to be a significant method through which people with severe intellectual disabilities can express their own needs and desires, as images can help them clarify their messages in this regard. These visual communication tools are also commonly easy for people with severe intellectual disabilities to carry and thus to have with them at all times; they can also choose the images they prefer and need in their daily communication to be included in their tools.

3.2.2 Technological methods
Despite the importance of modern methods, technological methods were the least commonly used by specialists. Nevertheless, participant PSY.3 stated, *"I use visual methods such as projectors, animation, video, and iPads,"* and Participant S.ED.1 similarly stated that they used *"iPads and Tablet"*.

Overall, few specialists are aware of the importance of using technological methods. Specialists did perceive the use of technological methods as being effective, flexible, and attractive, with such methods reducing boredom and routine, facilitating communication with people with severe intellectual disabilities. They also explained that using technological methods facilitated the integration of people with severe intellectual disabilities with other people. This result is consistent with those found by Conte et al. (2020), which indicated that the use of mobile implementation to support augmentative and alternative communication by students with intellectual disabilities improves both their communication and integration with others. However, specialists do not use these methods extensively owing to the need for training on these technologies, which is not always available. Training courses for specialists in using these technological methods are thus important and necessary, as these could benefit both the specialists themselves and the people with severe intellectual disabilities with whom they work (Fernández-Batanero et al., 2022).

3.3 Challenges Facing Specialists in Implementing Augmentative and Alternative Communication
Three subthemes emerged around the most significant challenges facing specialists with respect to implementing augmentative and alternative communication. These were challenges associated with people with severe intellectual disabilities, challenges associated with specialists, and challenges associated with centres.

3.3.1 Challenges associated with people with severe intellectual disabilities
Most of the specialists perceived people with severe intellectual disabilities as having an inability to express their psychological and physical needs. This is particularly evident in the response of Participant PSY.4:
> *"They cannot express their needs and desires neither linguistically, physically, nor visually, so the specialist must enter his world and check his basic needs and choose the means of communication that is appropriate for him and train him on it continuously. This certainly takes a lot of time and effort."*

A few specialists also suggested that multiple disabilities among people with intellectual disabilities are a problem that limits effective communication. Participant PSY.1 stated, *"Another challenge is the multiple disabilities among people with severe intellectual disabilities,"* while Participant PSY.4 added,
> *"Methods differ from one person to another. I might have used a method that worked for someone with severe intellectual disabilities, and then I use it with another person with severe intellectual disabilities and I am shocked that it [does] not work for him."*

It seems that most specialists believe that the characteristics of people with severe intellectual disabilities constitute a challenge and obstacle to the implementation of augmentative and alternative communication. The limitations encountered by people with severe intellectual disabilities with regard to articulating their needs and expressing their desires make communication with them challenging, while various physical characteristics and difficulty controlling their bodies may also constitute an additional challenge in terms of implementing communication with them. Additionally, the presence of more than one disability can reduce the number of available alternatives and appropriate methods of designing and implementing programmes for augmentative and alternative communication. This result is consistent with those of the Andzik et al. (2019), who indicated that communication problems among students with intellectual disabilities limit their teachers' implementation of augmentative and alternative communication.

3.3.2 Challenges associated with specialists

Some specialists have limited knowledge of appropriate methods of communication for people with intellectual disabilities. Participant PSY.2 stated,

> *"The specialist lacks alternative communication skills and is ignorant of the use of some of its methods, so there is no clear language between the specialist and people with severe intellectual disabilities, and this results in misunderstanding because there is no language for communication between them."*

Participant S.W.3 added, *"There is no knowledge of the appropriate method of communication due to the lack of the correct method of communication, and this is due to the lack of training, which leads to inefficiency in communicating with this group."* It appears that specialists believe that their low level of knowledge of augmentative and alternative communication and their lack of adequate training in the implementation of these can limit their use of augmentative and alternative communication methods. They also believe that their lack of knowledge and training in implementation may create misunderstandings between them. This result is consistent with Andzik et al. (2019), who indicated that teachers' lack of training and insufficient preparation time limit their implementation of augmentative and alternative communication with students with intellectual disabilities. Other research indicates that attending scientific courses and seminars may contribute to developing knowledge and professional skills regarding the use of augmentative and alternative communication methods, however (Light et al., 2019; Ratcliff et al., 2008; Wilkinson & Hennig, 2007).

3.3.3 Challenges associated with the centres

Some specialists noted that the lack of alternative communication tools at the centre at which they work offers a major challenge. This in turn is affected by financial support, resources and equipment at the centre. Participant S.W.4, for example, stated that *"the centre faces financial difficulties, lacks some capabilities"*.

The specialists thus face various challenges within centres regarding the implementation of augmentative and alternative communication, and many of them believe that these challenges result from the failure of the centre's management to provide tools and implementations to facilitate augmentative and

alternative communication with people with severe intellectual disabilities or to follow up on activating communication with such people. Several specialists also believe that some challenges are a result of their centre's failure to (a) evaluate the performance of specialists implementing augmentative and alternative communication, (b) motivate specialists to implement such communication, and (c) to encourage specialists to cooperate with one another in implementing such communication. This result is consistent with those of Andzik et al. (2019), who indicated that there no comprehensive evaluation of teachers of people with intellectual disabilities has been undertaken, but that team members are not encouraged to cooperate in using augmentative and alternative communication methods. The management of the centres must thus work to bear full responsibility for monitoring the effective implementation of augmentative and alternative communication methods (Bosse & Wilkens, 2016).

3.4 Proposed Solutions to Overcome the Challenges Faced by Specialists
The specialists interviewed for this work suggested various solutions for overcoming the challenges they faced in implementing augmentative and alternative communication for people with severe intellectual disabilities.

3.4.1 Training courses
This was the most commonly mentioned solution among all interviewees. They asked the administration's centres to hold specialised training courses to benefit workers and develop and increase their capabilities and abilities. As Participant PSY.2 stated, "*If there were training courses, we would be encouraged to implement these methods with this group.*" Participant PSY.1 added that "*holding specialized training courses in alternative communication for the centre's specialist workers was essential*".

A lack of training courses is seen as one of the most important factors limiting specialists' effective implementation of augmentative and alternative communication. Many specialists thus stressed the need to hold training courses to improve and develop their knowledge and abilities Other research indicates that specialists working with those with severe intellectual disabilities need intensive, high-quality training to effectively and successfully implement augmentative and alternative communication methods (Aldabas, 2022; da Fonte & Boesch, 2016; Pampoulou et al., 2018).

3.4.2 Designing special programmes for persons with severe intellectual disabilities
The need to design a special and appropriate programme for each person with severe intellectual disability came up as a second subtheme. This indicates the importance of separate comprehensive assessments of each case of severe intellectual disability to determine the individual's strengths and weaknesses. Based on these identified strengths and weaknesses, appropriate communication method can be selected for the individual. Participant S.W.4 thus made the following suggestion:
> "*[Design] a special and appropriate programme for each person with severe intellectual disability that is available on a smart device to help him or her communicate or a device that he carries with him or her or any method or approach that is appropriate for him or her.*"

Some specialists also believe that designing a special programme using augmentative and alternative communication for each person with severe intellectual disability is an important means to improve, develop, and activate communication with such people. Characteristics, abilities, potential, needs, and desires differ from one person with severe intellectual disability to another, yet each one of them must have access to a special programme based on augmentative and alternative communication to thrive, hence the importance of this proposal. Designing a special programme utilising augmentative and alternative communication for each person with severe intellectual disability is thus important to support their development of communication skills and quality of life (Bircanin et al., 2020; Hanley et al., 2024; Uliano et al., 2010).

4. Limitations and Future Research Recommendations

Despite the significance of the results of the current study, it is important to highlight some of the challenges that emerged during the practical portion of this work. Attempts were made to increase the sample size to make the study more comprehensive; however, a major challenge emerged in terms of finding people within comprehensive rehabilitation centres who were willing to be interviewed. Due to various ethical, social, and environmental reasons, this was thus not possible.

In terms of methodology, there was reliance on only one tool for data collection, semi-structured interviews. In qualitative research, it is preferable to use more than one tool to obtain more comprehensive and in-depth data. The initial plan had been to use both interviews and observations; however, the management of the centres only allowed two observations to be conducted. This limitation thus affects the comprehensiveness of the data collected. Difficulties in finding sufficient references dealing with the issue of interest in the Arab environment also emerged, as most research and studies in this area have focused on mild or moderate intellectual disabilities. This limitation thus hindered this study's ability to fully benefit from the results of previous research.

To mitigate these limitations in future, researchers should expand the sample size and encourage diversity by encouraging rehabilitation centres under the various government ministries in the Kingdom of Saudi Arabia to cooperate. Furthermore, the employment of more than one research tool, such as interviews, observations, and questionnaires should be considered in future research. The efficiency of the use of qualitative methodology, particularly in the Arab environment, could also be enhanced through continuous training, the involvement of experts, and the exploration of global academic databases.

5. Conclusion

Communicating with people with severe intellectual disabilities can be a major challenge for specialists working with such people. Augmentative and alternative communication methods offer promising solutions in terms of improving communication and increasing participation among people with severe intellectual disabilities. The current study thus found that all participating specialists had positive perceptions regarding the use of augmentative and

alternative communication methods in their communication with people with severe intellectual disabilities, and visual and technological methods were the most common effective methods used by these specialists.

However, the study also found that the most important challenges facing specialists in the use of augmentative and alternative communication include the inability among individuals with severe intellectual disabilities to express their psychological and physical needs, as well as their multiple disabilities. Other challenges involve the specialists themselves, and these include unfamiliarity with appropriate alternative communication methods and a lack of training. Finally, several challenges related to the centres where specialists work, such as a lack of financial support, resources and equipment, were also identified.

The study indicated that the most important proposed solutions to overcome these challenges include the preparation of specialised training courses for specialists in these centres, the design of individualised programmes tailored to each person with severe intellectual disabilities, and the expansion of the use of augmentative and alternative communication across this group. The aim of these solutions is to contribute to improving communication practices involving people with severe intellectual disabilities, thereby both increasing their participation in society and improving their quality of life.

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