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Sign Language as an Alternative Communication Modality for Children with Autism Spectrum Disorder: A Qualitative Exploration

Ruksana Baset*

Abstract: *This study explores the effectiveness of sign language as an alternative communication method for children with autism spectrum disorder (ASD), focusing on nonverbal and minimally verbal participants. Conducted at Proyash Institute of Special Education in Dhaka, Bangladesh, the qualitative study involved eight boys aged 8-14 who received sign language instruction over eight sessions. The intervention emphasized six functional signs using visual aids and reinforcement techniques. Results showed that half the participants acquired all or some of the signs, particularly those with stronger cognitive and attentional skills. However, parental misconceptions-such as fears that sign language might hinder speech development-emerged as a key barrier to implementation. Despite limitations related to sample size and scope, the study supports sign language as a viable augmentative communication strategy for children with ASD and highlights the need to engage parents through awareness-building and support.*

Keywords: *Autism Spectrum Disorder, sign language, alternative communication, parental perception, nonverbal children.*

1.1 Introduction

Autism Spectrum Disorder (ASD) encompasses a range of complex neurodevelopmental disorders characterized primarily by significant impairments in social interaction, communication, and behavior. According to Greenspan and Wieder (2006), autism involves profound difficulties in social engagement, language abilities, and a broad spectrum of emotional, cognitive, motor, and sensory processing challenges. Typically, symptoms of autism become evident by the age of three years. Despite extensive research, the exact causes of autism remain largely unknown, with ongoing scientific inquiries continuing to explore potential underlying factors. Communication impairment is a core feature of ASD, significantly impacting the affected child's ability to engage effectively with others. According to the American Psychiatric Association (1994), language deficits are integral to the diagnosis of autism.

These deficits are partly attributable to impaired imitation skills, which are essential for language development through conventional means. Communication, fundamentally defined as the process by which information is exchanged to foster mutual understanding (Velentzas & Broni, 2014), is essential for learning, social connection, and emotional expression. While typically developing individuals employ both verbal and nonverbal

* **Senior Teacher,** Proyash Institute of Special Education

modes of communication, children with autism often struggle to effectively utilize language for social interactions, even when they possess an adequate vocabulary.

Given the substantial communication challenges faced by children with ASD, alternative methods of communication are often necessary to enhance their daily functioning and social interactions. Sign language, an unaided form of augmentative and alternative communication (AAC), has emerged as a valuable strategy to support children with autism. Previous literature indicates that children with autism may benefit significantly from visual and manual communication methods, as these approaches often align better with their cognitive strengths and sensory processing patterns. Sign language, therefore, may facilitate improved functional communication, allowing children to express their daily needs more effectively and interact more meaningfully with their environment.

1.2 Objectives of the Study

The primary objective of this study was to examine the effectiveness of sign language in enhancing the functional communication abilities of children with autism spectrum disorder, focusing specifically on children who are nonverbal or exhibit limited verbal capabilities.

1.3 Statement of the Problem

Communication difficulties represent a significant barrier for children with autism, frequently manifesting as delayed or absent achievement of age-appropriate linguistic milestones. Additionally, these children often experience challenges related to auditory and sensory integration, further complicating their ability to express needs, emotions, and desires effectively. Consequently, children with ASD frequently engage in socially inappropriate behaviors, such as tantrums or withdrawal, due to their inability to communicate effectively. Ogilvie (2011) identified specific impairments commonly observed among children with ASD, including difficulties interpreting social cues, limited or absent verbal communication, and reduced or absent eye contact. These communication deficits not only lead to frustration and diminished motivation for social interaction but also contribute to isolation from peers and family, thereby negatively affecting their overall quality of life.

1.4 Purpose of the Study

The purpose of this study was to investigate sign language as a potential alternative communication strategy to promote functional communication skills among children with autism spectrum disorder, specifically those who are nonverbal or possess limited speech abilities. Furthermore, the research examined effective instructional methods for teaching sign language to children with ASD, taking into consideration the diversity of their individual characteristics, including limited eye contact, disruptive behaviors, and varying motor skills. Additionally, this study aimed to explore parental perceptions and attitudes toward adopting sign language for their children, recognizing the critical role families play in successful communication interventions.

1.5 Research Questions

The study was guided by the following research questions:

a. Is sign language effective in improving the functional communication skills of children with autism spectrum disorder?
b. What are parental perceptions and attitudes regarding the use of sign language as an alternative communication method for their children with autism?

2. Literature Review

Miranda-Linné and Melin (2002) reported that although children with autism typically receive aided communication systems ranging from low-tech to high-tech options based on cognitive abilities, unaided communication systems, including gestural communication and sign language, have also been highly recommended. The potential for autistic children to successfully acquire sign language was first noted in research dating back to the late 1960s, particularly among those who remained nonverbal despite receiving intensive speech therapy. Webster et al. (1973) found that nonverbal children with autism responded immediately and effectively when gestures or demonstrations were employed to communicate requests. Similarly, Stull et al. (1979) reported notable difficulties teaching speech to some children with autism; however, these children frequently succeeded in rapidly learning to express their feelings through manual gestures or signs.

The collective findings from early research (Bonvillian et al., 1981; Carr, 1979) indicate that sign language can be effectively utilized as an alternative mode of communication for autistic children who have not achieved spoken language skills, even after prolonged speech interventions. Seal and Bonvillian (1997) reinforced this perspective, noting that approximately 30% of autistic children do not achieve functional verbal communication after years of intensive speech therapy, and only about half of these children eventually acquire meaningful speech skills. Thus, sign language serves as a valuable alternative communication strategy for this population.

The rationale for employing sign language as an alternative communication method has been consistently supported by the argument that manual signs, due to their iconic nature, are relatively easier to learn and generalize into functional communication than symbolic spoken language (Bonvillian, Nelson, & Rhyne, 1981; Mirenda, 2001). Research indicates that individuals with autism typically exhibit greater receptive and expressive responses when utilizing non-transient communication systems, such as picture-based systems or manual signs (Seal & Bonvillian, 1997). While some scholars have found picture-based methods effective, others have highlighted superior outcomes when employing sign language, even among children with motor imitation difficulties (Carr et al., 1987; Walker et al., 1982).

In a notable survey of 100 autistic children, Bonvillian et al. (1981) demonstrated that some children successfully acquired signs despite repeated unsuccessful attempts to learn spoken words. These finding underscores sign language's potential as a practical and effective means to improve communication abilities, especially in lower-functioning

children with ASD. Seal and Bonvillian's (1997) study further examined the sign production capabilities of 14 low-functioning autistic children with normal hearing, aged between 9 years, 2 months and 20 years, 4 months (mean age of 13 years, 8 months), identifying both successful and unsuccessful outcomes in sign formation.

Further, Schaeffer (1978) observed that non-speaking autistic children can effectively acquire receptive and expressive manual signs, with many eventually learning to combine these signs into functional communication. Schaeffer's training procedure, comprising techniques such as prompting, fading, and stimulus rotation, demonstrated substantial effectiveness in teaching autistic children expressive sign labels for common objects.

Konstantareas (1985) highlighted the benefits of integrating sign language training with simultaneous speech therapy, suggesting that combined approaches can effectively address communication needs, especially in children with auditory processing challenges. Konstantareas emphasized individual differences among autistic children, noting that tailored multimodal communication training (combining speech therapy and sign language) can significantly enhance functional communication, particularly when introduced early in intervention.

Overall, previous studies clearly support sign language as an effective alternative and augmentative communication method, especially for children with autism who struggle to develop verbal communication skills. Existing research consistently advocates for early intervention using sign language, either as a standalone communication method or integrated with traditional speech therapies, to optimize communicative outcomes for children with ASD.

3. Methodology

The study adopted a qualitative, exploratory framework to investigate the effectiveness of sign language instruction for children with autism spectrum disorder (ASD). Ethical considerations, including informed consent and participant privacy, were strictly maintained throughout the research process.

A qualitative methodology was employed to explore the lived experiences and communicative improvements of children with ASD following exposure to basic sign language. Data were collected through direct observation of sign language learning sessions and semi-structured interviews with parents. Face-to-face interviews were selected for their ability to foster deeper engagement, allow clarification of misunderstood questions, and accommodate non-verbal cues and rapport-building-essential when discussing nuanced behavioral outcomes.

The study was conducted at Proyash Institute of Special Education in Dhaka, Bangladesh. This institution was chosen due to its established infrastructure for supporting children with special needs and the researcher's existing affiliation as a special educator. This familiar environment enhanced the children's comfort and minimized disruption during the intervention sessions and interviews.

The participant cohort consisted of eight Bengali-speaking boys diagnosed with ASD, aged between 8 and 14 years. Among them, five were nonverbal and three had limited verbal ability. Children diagnosed with high-functioning autism or hearing impairments were excluded to maintain focus on low-functioning autism and to control for external communication challenges. Table 1 presents the demographic characteristics of the sample.

Table 1: Demographic Characteristics of the Children

Diagnostic group	N	Sex (boy/girl)	Mean	Median	Standard Deviation
Autism verbal (limited speech)	03	3:0	11.33	12	9.33
Autism (nonverbal)	05	5:0	9.6	10	2.3

The intervention involved eight 30-minute sessions, delivered over four weeks (two sessions per week). Instruction focused on six essential functional signs in Bengali Sign Language: "Greetings (Salam)," "I (Ami)," "My (Amar)," "Eat (Khoa)," "Time (Shomoy)," and "Silent (Cup)." The teaching methodology incorporated multimodal reinforcement strategies, including flashcards, physical demonstration, repetition, and positive behavioral reinforcement (e.g., chocolates, drawings, music). The reinforcements were selected based on each child's motivational preferences, as summarized in Table 2.

Table 2: Reinforcement Strategy by Case

Case	Participant Reason for using Rein forcers such as chocolate, drawing, music
Case 1	Intervene with disruptive behaviours using chocolate, drawing
Case 2	Intervene with disruptive behaviours using chocolate, drawing
Case 3	Intervene with disruptive behaviours using chocolate
Case 4	Intervene with disruptive behaviours using drawing
Case 5	Intervene with disruptive behaviours using chocolate, music
Case 6	Intervene with disruptive behaviours using chocolate
Case 7	Intervene with disruptive behaviours using chocolate, drawing
Case 8	Intervene with disruptive behaviours using chocolate, music

Parent interviews were conducted using a semi-structured guide comprising ten open-ended questions. Each interview lasted approximately 30 minutes and was held either in a

classroom or at the participant's home, depending on convenience. Sessions were audio recorded, and field notes were maintained to assist with subsequent thematic coding and follow-up probes.

Data collected from the interviews and observation checklists were compiled in a logbook and transcribed verbatim for analysis. Thematic analysis was used to identify key patterns related to sign acquisition and parental attitudes toward alternative communication. This method facilitated the synthesis of qualitative findings into broader categories aligned with the study's research objectives. Comparative analysis was also performed between verbal and nonverbal participants to highlight variance in sign language acquisition.

The intervention and data collection spanned a three-month period from October to December 2018.

The stimuli comprised six functional signs relevant to the children's daily routines. These were pre-selected by the researcher based on observed needs within the classroom setting. Visual flashcards and gestural prompts were developed accordingly and are detailed in Annex II of the thesis.

To ensure methodological rigor, the researcher employed multiple strategies to enhance both validity and reliability. Triangulation was achieved through the integration of three data sources: session observations, interview transcripts, and field notes. Reflexivity was maintained by documenting researcher biases and maintaining transparency in data interpretation. Consistency was upheld by using the same set of interview questions across all participants. According to Noble and Smith (2015), such practices help establish the "true value" in qualitative inquiry by acknowledging multiple realities and promoting trustworthiness in data interpretation.

4. Results and Analysis

Data analysis in this study was conducted through careful review of audio-recorded interviews and observational descriptions. A general orientation approach was employed to summarize preliminary qualitative data and systematically align them with the established research objectives. This analytical approach facilitated the identification and organization of major thematic categories arising from the textual data collected.

Case 1: An eight-year-old boy enrolled in pre-primary level 2 at Proyash Institute of Special Education. Although he is nonverbal, he demonstrated relatively strong comprehension skills and consistently followed teacher instructions. He successfully acquired all six signs presented during the intervention. According to his parents, he primarily expresses himself through drawings, and physically engages (dragging) when ignored. He understands common environmental signs, such as road and restroom signs in shopping malls. However, professionals had not previously recommended alternative communication methods, such as sign language or PECS, as it was presumed suitable only for individuals with hearing impairments *(Refer to Figure 1.)*.

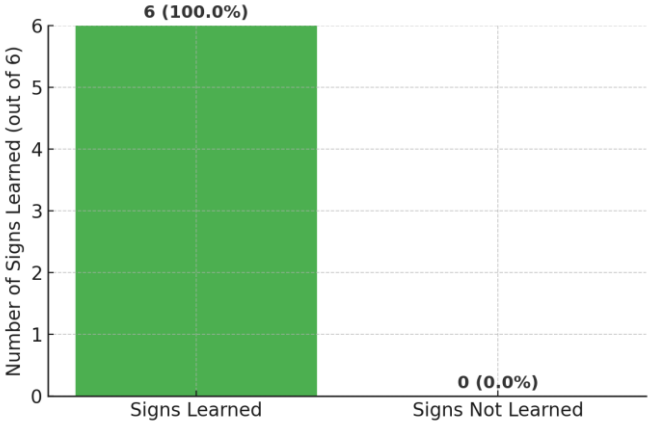

Figure 1: Chart of Success for case 1

Case 2: Another eight-year-old boy attending pre-primary level 2, also nonverbal, with good comprehension abilities. He effectively followed classroom instructions and mastered all six signs. His parents reported he typically expressed his needs by pointing, and resorted to hand flapping when seeking attention. He understood standard environmental signage and previously had experience with the Picture Exchange Communication System (PECS) *(Refer to Figure 2.).*

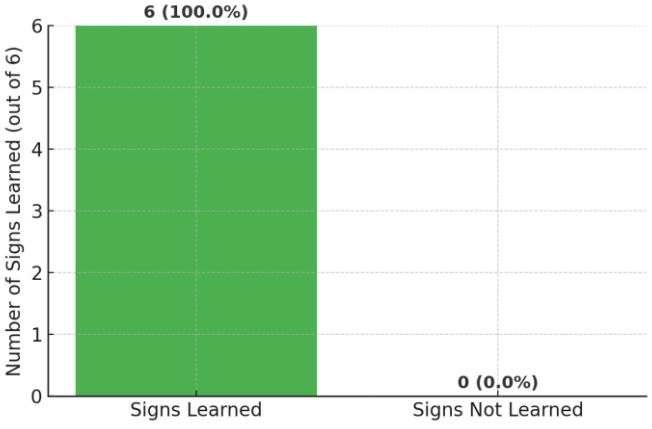

Figure 2: Chart of Success for case 2

Case 3: A ten-year-old boy studying in class one, identified as nonverbal with relatively good comprehension skills but exhibiting hyperactive behavior. He struggled to consistently follow instructions and did not cooperate well during teaching sessions, resulting in no sign acquisition. According to his parents, he communicated through single-word utterances and pictures and engaged in dragging behavior when not attended

to. He lacked understanding of common environmental signs. While advised previously by a speech therapist to use visual aids for communication, his family held the belief that sign language was exclusively for hearing-impaired individuals *(Refer to Figure 3.).*

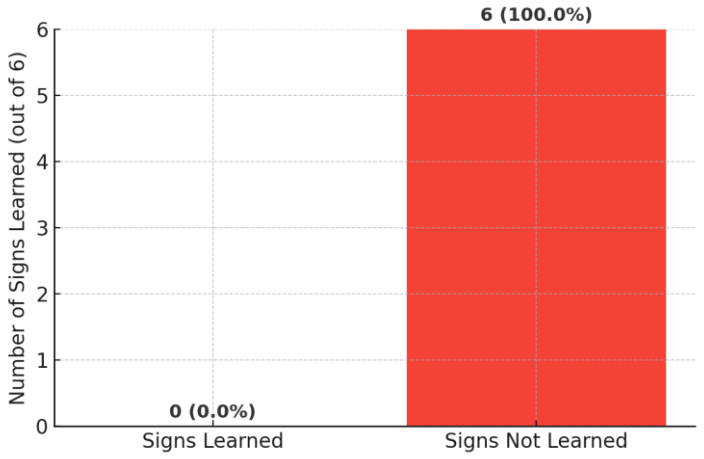

Figure 3: Chart of Success for case 3

Case 4: An eleven-year-old boy with limited verbal communication studying in class three, exhibiting good comprehension but inconsistent instruction-following abilities and poor eye contact. He did not successfully acquire any signs. Parental reports indicated he communicated using single words and visual aids and would physically distance himself when ignored. He understood typical environmental signage. His parents received professional advice to use visual communication aids rather than sign language, believing sign language could hinder speech development *(Refer to Figure 4.).*

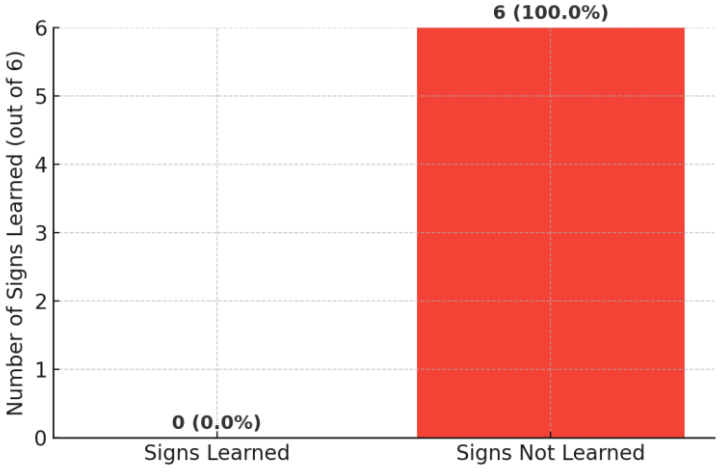

Figure 4: Chart of Success for case 4

Case 5: A twelve-year-old boy in class five, nonverbal with strong comprehension and high curiosity, showed moderate success, acquiring three out of six signs taught. He expressed his needs through screaming when unable to communicate effectively. According to parental accounts, he resisted verbal interaction and often cried when ignored. He did not recognize standard environmental signs and received no prior professional recommendations regarding sign language, which his parents believed was exclusively suitable for hearing-impaired children *(Refer to Figure 5.)*.

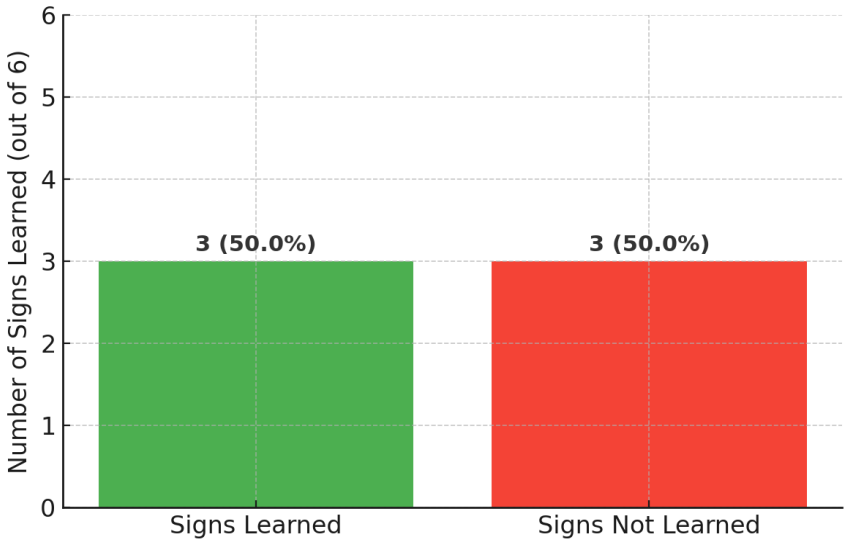

Figure 5: Chart of Success for case 5

Case 6: An eleven-year-old nonverbal boy enrolled in class four, who displayed adequate comprehension yet struggled significantly with instruction adherence due to poor eye contact. He was unable to learn any signs. His communication was limited to a few verbal words, and he physically engaged parents (dragging) when his needs were unmet. He demonstrated understanding of common environmental signage, though professionals had never recommended sign language or alternative communication methods, reinforcing parental beliefs regarding the suitability of sign language only for hearing-impaired individuals *(Refer to Figure 6.)*.

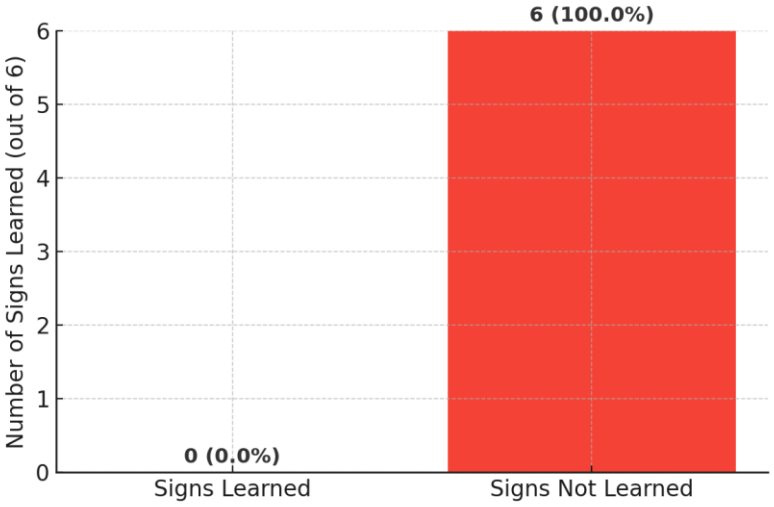

Figure 6: Chart of Success for case 6

Case 7: An eight-year-old boy enrolled in pre-primary level 2, verbal but with limited vocabulary and adequate comprehension. Poor eye contact and difficulty following instructions prevented him from acquiring any signs. He communicated verbally with a limited vocabulary and engaged physically (dragging) when ignored. Although capable of understanding common environmental signs, no professional had advised his parents on alternative methods such as sign language or PECS, reinforcing the assumption that sign language was intended only for individuals with hearing impairments *(Refer to Figure 7.).*

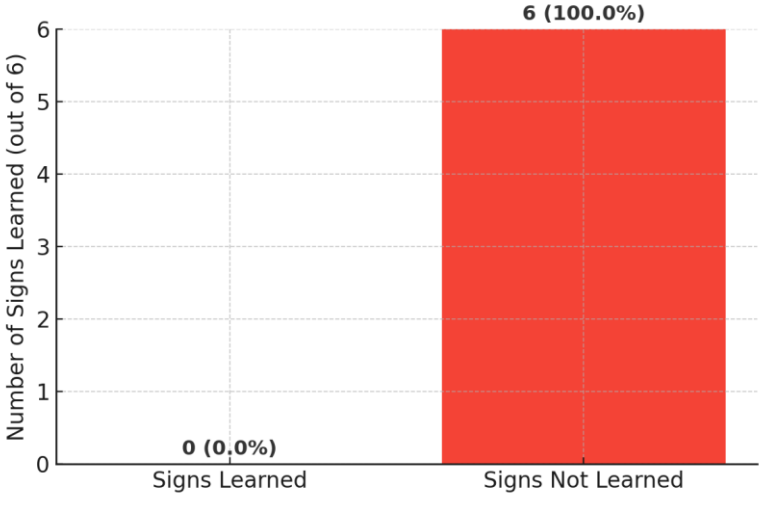

Figure 7: Chart of Success for case 7

Case 8: A fourteen-year-old boy in class five, verbal with limited speech (around five to six words), and relatively strong comprehension skills. He consistently followed instructions and successfully learned three out of six signs taught. His parents reported his limited verbal communication, accompanied by physical engagement (dragging) when seeking attention. He demonstrated good understanding of common environmental signage. Professionals had not recommended alternative communication methods such as sign language or PECS, and the parents maintained the belief that sign language is primarily suited to those with hearing impairments *(Refer to Figure 8.)*.

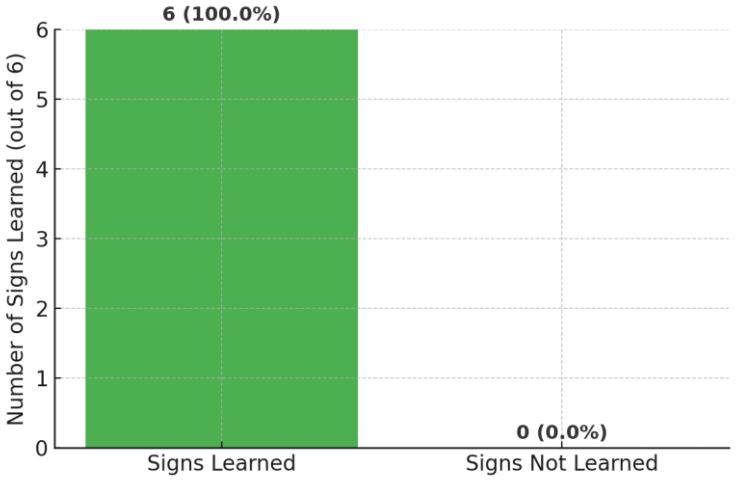

Figure 8: Chart of Success for case 8

Four primary questions were posed during the interviews to gather detailed insights from parents regarding their children's communication patterns and their perspectives on sign language as an alternative communication method.

The first question sought to understand how children typically expressed their daily needs. This question aimed to capture a clear picture of the children's existing communication behaviors. Parents indicated that their children primarily communicated their needs by pointing, using drawings, or employing isolated keywords.

The second question aimed to determine if children employed any specific signs or gestures to express their needs. Responses revealed that children frequently relied on pointing gestures, drawings, and specific keywords to convey their basic requirements.

The third question addressed whether the children could understand instructions given without accompanying verbal prompts. Findings indicated that the participants had the capacity to comprehend basic gestures and certain iconic signs, though their comprehension was generally limited and varied among individuals.

The fourth question examined the parents' prior knowledge and awareness regarding sign language as a form of communication. Results revealed that parents generally lacked

sufficient information about sign language. A prevailing belief emerged among parents that sign language was exclusively designed for individuals with hearing impairments. Furthermore, many parents expressed concerns that adopting sign language might impede the development or retention of their children's verbal communication abilities.

Overall, analysis of interview transcripts highlighted significant parental apprehension about employing sign language as an alternative means of communication for their children. This hesitation primarily stemmed from misconceptions about sign language applicability and fears regarding potential negative impacts on speech development.

During the intervention sessions, flashcards were utilized to facilitate the learning of sign language among the participants, as visual aids are known to effectively support imitation skills and visual cue recognition in children with Autism Spectrum Disorder (ASD). Additionally, selected reinforcers, such as chocolates, drawings, and music, were introduced to enhance motivation and engagement.

The intervention comprised eight sessions, each lasting 30 minutes, conducted twice weekly over four weeks. Results indicated variability in the participants' sign language acquisition: three out of the eight children successfully mastered all six targeted signs, one child partially acquired three signs, and the remaining four children were unable to learn any of the signs during the allotted time. Overall, approximately 50% of the participants demonstrated measurable success in acquiring sign language.

These findings suggest that children with ASD who possess comparatively stronger cognitive abilities and who effectively follow instructional prompts are more likely to benefit from sign language interventions. Conversely, children exhibiting limited attention or engagement struggled significantly in acquiring the targeted communication skills.

Table 3: Percentage of the participants' learning outcome

Name of the experiment	Stimuli (Sign language)	Autism verbal (limited speech)		Autism (nonverbal)	
		Able (%)	Unable (%)	Able (%)	Unable (%)
Stimuli (Sign Language)	Greetings (Salam)	33.33	66.67	60	40
	I (ami)	33.33	66.67	40	60
	My (amar)	33.33	66.67	40	60
	Eat (khoa)	33.33	66.67	60	40
	Time (shomoy)	33.33	66.67	40	60
	Silent (cup)	33.33	66.67	60	40

Parental responses indicated prevailing misconceptions and significant concerns regarding the use of sign language for their children. Parents tended to associate sign language exclusively with individuals who have hearing impairments or speech disabilities, resulting in stigma toward its adoption. Given that their children exhibited limited verbal abilities, parents expressed anxiety that the introduction of sign language could further hinder or entirely prevent speech development. These perceptions remained largely unchanged even at the conclusion of the study period.

These parental concerns, although widespread, are not supported by existing evidence. The primary apprehension among parents was the belief that utilizing sign language could either limit or altogether eliminate their children's potential for developing spoken language. Moreover, given the novelty of employing sign language as an alternative communication method within the context of this study, many parents lacked awareness regarding its substantial benefits. Consequently, they showed limited commitment and openness towards adopting this approach. Overall, parents appeared to underestimate the positive impact that sign language could have in enhancing their children's communication skills and broader developmental outcomes.

5. Discussion

The findings of the current study align closely with previous literature regarding the effectiveness of sign language as an alternative communication system for children with Autism Spectrum Disorder (ASD). Miranda-Linné and Melin (2002) highlighted the potential benefits of unaided communication methods, including sign language, as practical alternatives for autistic children who have difficulty with speech. Similarly, Webster et al. (1973) reported that nonverbal children with autism demonstrated an immediate and positive response to the introduction of gestures and manual signs, enabling them to communicate emotions and needs more spontaneously.

In the present study, of the eight participants, five were nonverbal and demonstrated varying levels of responsiveness to sign language instruction. Approximately 50% of the participants (four children) successfully acquired the targeted signs, with three children mastering all six signs and one child acquiring three signs. These results corroborate the findings of Miranda-Linné and Melin (2002), supporting the utility of sign language as an alternative communication method for children with ASD. The rapid acquisition observed among responsive participants further aligns with Webster et al. (1973), who emphasized that children with autism readily adopt gestures as an immediate communication tool.

Additionally, this study noted that the participants who successfully learned the signs exhibited stronger cognitive abilities, better eye contact, and superior instruction-following skills. Conversely, participants who struggled to acquire signs typically demonstrated poorer social interaction skills, hyperactivity, and limited eye contact. These findings underline the importance of baseline cognitive and social skills in determining the effectiveness of sign language interventions for children with autism.

A critical barrier identified in this research was parental resistance to sign language. Parents consistently expressed concerns that adopting sign language might negatively affect their children's verbal speech development. Many held the expectation that their children would eventually communicate effectively through speech, viewing sign language primarily as a hindrance rather than an aid. These perceptions underscore the necessity for raising parental awareness regarding the benefits and misconceptions associated with alternative communication methods.

Furthermore, the study found that children with autism appeared to learn sign language more readily because manual signs involve iconic and less abstract symbolic processing compared to spoken language. This observation is consistent with the findings of Miranda-Linné and Melin (2002), who suggested that sign language's iconic nature simplifies symbolic processing, making it particularly accessible to children with autism.

Finally, due to impairments in integrating visual, auditory, and sensorimotor systems, children with ASD often face significant challenges in verbal expression and interaction. Sign language provides an effective medium through which these children can overcome communication barriers, facilitating more frequent and meaningful interactions. As demonstrated by this study, sign language can effectively bridge communication gaps, enabling children with autism to express their needs, ideas, and emotions more clearly and efficiently.

6. Conclusion

The primary purpose of this study was to evaluate the effectiveness of sign language as an alternative communication method for children with Autism Spectrum Disorder (ASD), as well as to explore parental perceptions toward its adoption. Two core research questions guided this investigation: firstly, whether sign language could effectively enhance the communication skills of children with ASD, and secondly, how parents perceived the utility and appropriateness of sign language for their children.

The findings revealed that sign language is indeed effective in facilitating functional communication among children with autism. Despite its demonstrated potential, parental perceptions were largely negative, primarily due to misconceptions and limited awareness about sign language. While the outcomes of this study align well with prior research highlighted in the literature review, future investigations are necessary with larger sample sizes to improve generalizability. The current study emphasizes that sign language is a powerful tool for enhancing mutual understanding, improving social interactions, and supporting relationship-building among children with autism and their communities. A flexible and open approach to communication methods remains vital in achieving these goals.

7. Limitations

Several limitations impacted the generalizability and depth of this study. Firstly, the small sample size (eight participants) restricted the possibility of broadly generalizing the findings. A larger sample would have enabled more robust statistical analyses and

potentially strengthened qualitative observations through triangulation. Secondly, the relatively short duration of the intervention limited the assessment of long-term effectiveness and skill retention. Additionally, participants' unfamiliarity with sign language initially posed challenges to rapid skill acquisition, underscoring the importance of extended intervention periods. Finally, the study was conducted within a single specialized educational institution, limiting the generalizability of findings to broader populations.

8. Recommendations

Several recommendations can inform future research in this domain. First, expanding the intervention setting beyond school environments into home contexts would provide children additional practice opportunities and enhance their functional application of sign language in daily routines. Second, it is crucial to address parental misconceptions and actively involve parents by educating them on the evidence-based benefits of sign language. Early intervention is essential, as younger children typically demonstrate greater ease and speed in acquiring alternative communication methods.

Future studies should include larger sample sizes to meet assumptions required for statistical generalizability. Additionally, extending this research to include other populations of children with special needs, such as those diagnosed with Cerebral Palsy (CP), Intellectual Disabilities (ID), or broader ASD populations, could further validate sign language's applicability and effectiveness. Future research may also explore expanding sign language instruction to include a broader range of practical vocabulary, such as terms related to social contexts, nature, seasons, or everyday living, thus further enriching participants' functional communication capabilities.

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