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Perspective of Speech and language Pathologist Regarding Augmentative and Alternative Communication Devices for the Improvement of Language Development in Children with Intellectual Disability

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Abstract

Augmentative and Alternative Communication (AAC) includes strategies and devices that support or replace spoken language for individuals with communication difficulties. It plays a significant role in promoting functional communication and language development in children with complex needs. This quantitative cross-sectional study explored Speech-Language Pathologists' (SLPs) perspectives on AAC devices for improving language development in children with intellectual disability in Lahore. Using purposive sampling, 277 SLPs completed the 15-item Role of AAC in Intellectually Disabled Children (RAAC) questionnaire. Findings showed strong agreement that AAC compensates for expressive language impairments (M = 4.59) and enhances receptive skills (M = 4.01), while most disagreed that AAC impedes speech (M = 2.58, reverse-coded). AAC was also perceived to improve independence and overall lifestyle (M = 4.46) and prevent severe language delay when introduced early (M = 4.53). Female SLPs reported significantly higher perception scores than males across domains ($p < .05$).

Keywords*:* Augmentative and Alternative Communication; Speech-Language Pathologists; Intellectual Disability; Language Development; Early Intervention; Pakistan

Introduction

Speech therapy is a specialized intervention designed to enhance communication abilities, including speech production, language comprehension, fluency, and cognitive-communication skills. It supports individuals in expressing thoughts effectively and understanding spoken or written language. Speech-language pathologists (SLPs) assess and treat various communication disorders across the lifespan, ranging from developmental language delays in children to acquired conditions such as aphasia following neurological injury (Cleveland Clinic, n.d.; ASHA, n.d.). Speech therapy also addresses articulation disorders, voice disorders, fluency issues such as stuttering, and swallowing difficulties (NCBI, n.d.). By strengthening speech-related muscles, improving pronunciation, and teaching appropriate communication strategies, speech therapy

plays a central role in improving quality of life. Children with intellectual disability (ID) frequently experience significant communication challenges. Intellectual disability is characterized by limitations in intellectual functioning and adaptive behavior, including conceptual, social, and practical skills, with onset before adulthood (Special Olympics, n.d.). These limitations often affect language development, comprehension, and expressive abilities. Children with ID may struggle to process information, follow instructions, interpret non-verbal cues, and engage in social communication (Bilinguistics, n.d.). Language impairments in this population can be receptive, expressive, or mixed, and if not addressed early, they may negatively impact academic achievement and social integration (University of Rochester Medical Center, n.d.). Given that language development is fundamental to cognitive growth, social interaction, and educational success, timely and appropriate intervention is essential (EzySchooling, n.d.; Indeed, n.d.). Augmentative and Alternative Communication (AAC) refers to a range of strategies, systems, and devices that support or replace spoken language for individuals with communication difficulties. AAC may include unaided systems such as gestures and sign language, or aided systems such as picture boards, communication books, tablets, and speech-generating devices (ASHA, n.d.; AssistiveWare, n.d.). AAC systems can be categorized as no-tech, low-tech, or high-tech depending on their complexity (BetterSpeech, n.d.; Expressable, n.d.). Research evidence suggests that AAC interventions not only improve functional communication but may also positively influence speech production in individuals with developmental disabilities (Millar et al., 2006; O'Neill et al., 2018). Furthermore, school-wide implementation and structured AAC programs have demonstrated benefits for students with intellectual disabilities (Hetzroni, 2003). The perspective of SLPs regarding AAC devices is crucial because they are primary professionals responsible for assessment, selection, training, and implementation of these systems. Studies indicate variability in SLPs' training, confidence, and service provision practices related to AAC (Marvin et al., 2003; Iacono & Cameron, 2009). Surveys have explored how SLPs perceive AAC use, communication partner training, and technology integration in clinical and educational settings (Sutherland et al., 2005; Tegler et al., 2018). Understanding SLPs' perspectives helps identify barriers, training needs, and best practices for optimizing AAC use among children with intellectual disability. Exploring these viewpoints is therefore essential for improving language development outcomes and ensuring effective, evidence-based intervention.

Research Objectives

1. To explore SLPs' perspectives on the effectiveness of AAC devices for improving language development in children with Intellectual Disability.
2. To examine the practices and types of AAC devices used by SLPs with children with Intellectual Disability.
3. To identify the challenges faced by SLPs in implementing AAC devices for language development.

Literature Review

Augmentative and Alternative Communication (AAC) is widely used to support individuals who have complex communication needs, including children with intellectual disability (ID) who experience delays in expressive and receptive language. AAC includes unaided systems such as gestures and sign language and aided systems such as picture boards, communication books, tablets, and speech-generating devices (ASHA, n.d.; AssistiveWare, n.d.). The literature consistently frames AAC as a language-support approach rather than a last resort, and contemporary evidence shows that AAC can facilitate functional communication, participation, and language growth when it is implemented systematically with appropriate partner support

(Biggs et al., 2018; O'Neill et al., 2018). Because speech-language pathologists (SLPs) are central to AAC assessment, device selection, intervention design, and training of communication partners, understanding SLP perspectives is essential for improving AAC implementation and language outcomes for children with ID. A major strand of research has examined AAC service provision patterns and the preparedness of SLPs to deliver AAC services. Sutherland, Gillon, and Yoder (2005) surveyed New Zealand SLPs and reported that both adults and children commonly used sign language and low-tech AAC, with children aged 5 to 10 years receiving the highest level of AAC intervention. Importantly, the study noted that cerebral palsy, autism spectrum disorder, and intellectual disability were among the most common etiologies in children receiving AAC services (Sutherland et al., 2005). A key finding that directly informs the present topic is the strong demand for further training, as 86% of respondents wanted more AAC information or training. This training gap is echoed across contexts. Marvin, Montano, Fusco, and Gould (2003) found that most SLPs perceived limited AAC preparation during graduate education, and many reported minimal practical experience, even though AAC recommendations were made frequently in practice. These findings suggest that SLP perspectives on AAC effectiveness and feasibility are shaped not only by client needs but also by professional preparation, workplace support, and available resources.

Alongside surveys, school-based studies show that AAC can be highly beneficial for students with ID when implementation is embedded into broader educational supports. Hetzroni (2003) evaluated an AAC intervention integrated within a school-wide positive behavior support plan for students with intellectual disability. The intervention combined communication assessment, teacher training, inclusion of graphic symbols in instruction, and curriculum integration. Results showed improved communication behaviors and reduced problem behaviors following implementation (Hetzroni, 2003). This evidence is important because it indicates that AAC effectiveness for children with ID depends heavily on system-level factors such as staff training, consistency across settings, and meaningful integration into daily routines rather than short, isolated therapy sessions. A consistent concern among practitioners and families is whether AAC reduces natural speech development. However, research reviews and syntheses generally report that AAC does not hinder speech and may support speech gains for some individuals with developmental disabilities. Millar, Light, and Schlosser (2006) reviewed evidence from AAC interventions and reported no speech decreases among participants, with the majority showing improvements in speech production after AAC. Similar patterns are reported in later evidence syntheses, emphasizing that AAC can support communication without suppressing speech and can reduce frustration by providing an immediate means of expression while language skills develop (O'Neill et al., 2018). This is particularly relevant for children with ID who may require long-term, multimodal support and who benefit from access to communication early, even when speech is limited. More recent meta-analytic research has focused on the specific mechanisms through which AAC contributes to language development. O'Neill, Light, and Pope (2018) synthesized evidence on interventions that include aided AAC input, meaning communication partners model language using the AAC system during interaction. Their findings indicate strong effects across a wide range of participants, with improvements documented in pragmatic communication, vocabulary and semantic growth, and morphosyntactic development, as well as in comprehension and expression (O'Neill et al., 2018). The importance of partner modeling is reinforced by systematic reviews of aided AAC modeling for children and youth. Biggs, Carter, and Gilson (2018) reviewed interventions involving aided AAC modeling and concluded that, despite varied procedures, aided modeling consistently supported expressive communication outcomes for individuals with complex communication needs. These findings align with the view that AAC is not only a compensatory tool but also a structured language-learning environment in which children can map symbols to meanings through repeated modeled input.

Evidence also indicates that intervention components matter. Gevarter et al. (2013) reviewed comparisons of intervention components within AAC systems for individuals with developmental disabilities and highlighted that multiple instructional strategies can improve acquisition of communication behaviors, including motivation-based approaches and errorless learning. In contrast, some device features such as specific symbol sets or speech output levels showed limited impact on certain outcomes, suggesting that "how AAC is taught and used" may be more influential than "which device is chosen" in many cases (Gevarter et al., 2013). This has direct implications for SLP practice, since clinician preferences may sometimes overemphasize technology features while underemphasizing teaching strategies, modeling, and partner training that support language learning.

In inclusive educational contexts, intervention research demonstrates that AAC can be implemented successfully within natural classroom routines when staff are trained and strategies are acceptable to teachers. Johnston, McDonnell, Nelson, and Magnavito (2003) found that functional communication skills could be taught using AAC within inclusive preschool classrooms through structured opportunities, modeling by peers or teachers, prompting, and natural reinforcement. This supports the argument that AAC does not need to be restricted to specialized settings and that language development can be supported in socially rich environments, which is particularly valuable for children with ID who benefit from participation and peer interaction.
Despite evidence of effectiveness, multiple studies identify barriers that influence SLP perspectives and the practical use of AAC. Time constraints, limited resources, inconsistent team implementation, and insufficient training are repeatedly reported. Iacono and Cameron (2009), studying Australian SLPs in early childhood intervention, found that clinicians generally understood evidence-based assessment and intervention principles, but family-centered practice was inconsistently applied, and time pressure was a significant barrier affecting both AAC implementation and job satisfaction. In school settings, Andzik et al. (2019) reported that educators supporting AAC users faced challenges such as insufficient training, limited preparation time, lack of comprehensive assessment procedures, and inconsistency across team members. These barriers can directly shape SLP perceptions of AAC feasibility, effectiveness, and sustainability, especially when children require consistent daily use across home and school environments to achieve language gains.

International and context-specific evidence further indicates that access, funding, cultural adaptation, and "localized" technology influence AAC uptake and SLP experiences. Alsari et al. (2021) reported differences in AAC awareness among stakeholder groups in Saudi Arabia and noted challenges including cost, funding limitations, and limited cultural and language adaptation. These concerns are especially relevant in contexts where AAC systems are not well localized for language, literacy, or cultural norms. In Pakistan, Khan, Butt, and Noreen (2019) assessed SLP perceptions toward AAC and reported patterns suggesting awareness and perceived usefulness but an ongoing need to strengthen skills and practice capacity. Because the present study focuses on SLP perspectives, such contextual studies are valuable for understanding how training opportunities, service infrastructure, and local availability of devices shape both attitudes and actual clinical practice. Service delivery in medical settings also informs the broader picture of AAC barriers. Amundsen (2014) found that SLPs in healthcare environments frequently encountered patients with complex communication needs and strongly believed that increasing access to AAC devices and services would improve patient outcomes. However, limited AAC knowledge among other medical professionals and restricted time for AAC service delivery were reported as significant obstacles. While this study centers on medical settings and includes adult

populations, the same barriers, including limited interdisciplinary knowledge and insufficient time, can transfer to pediatric rehabilitation contexts and influence how SLPs view the practicality of AAC programming.

Material and Methods

This study used a quantitative cross-sectional design to explore Speech-Language Pathologists' (SLPs) perspectives on the use of Augmentative and Alternative Communication (AAC) devices for improving language development in children with intellectual disability. The study population included SLPs working in hospitals, clinics, private rehabilitation centers, academic institutions, and online settings in Lahore. Participants were selected through purposive sampling based on eligibility criteria, including professional qualification (BS, MS, or PhD in Speech-Language Pathology) and a minimum of one year of experience working with children with intellectual disability. SLPs in purely administrative roles were excluded. A total of 277 participants were included in the study. Data were collected using a structured questionnaire titled "Role of Augmentative and Alternative Communication in Intellectually Disabled Children (RAAC)," consisting of 15 items. Questionnaires were distributed in person and through an online Google Form. Data were analyzed using SPSS through descriptive statistics, and findings were presented in tables and graphical formats.

Table 1: Demographic Information of Respondents (N = 277)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	25–35	272	98.2
	36–45	3	1.1
	46 and above	2	0.7
Gender	Male	75	27.1
	Female	202	72.9
Qualification	BS-SLP	58	20.9
	MS-SLP	146	52.7
	PGD-SLT	73	26.4
Years of Experience	0–2 years	204	73.6
	3–5 years	70	25.3
	6–10 years	1	0.4
	11 years +	2	0.7
Primary Work Setting	Public	18	6.5
	Private	259	93.5

Table 1 summarizes the demographic profile of the Speech-Language Pathologists (SLPs) who participated in the study. The findings show that the overwhelming majority of respondents (98.2%) were between 25–35 years of age, while only 1.1% were aged 36–45 years and 0.7% were

46 years or above. This indicates that the sample primarily consisted of young professionals in the early stages of their careers. In terms of gender, females represented 72.9% of the sample, whereas males accounted for 27.1%, reflecting a clear predominance of female SLPs within the study population. Regarding educational background, more than half of the participants (52.7%) held an MS-SLP degree, followed by 26.4% with a PGD-SLT qualification and 20.9% with a BS-SLP degree. This distribution suggests that most respondents possessed advanced professional training in speech-language pathology. With respect to work experience, 73.6% reported 0–2 years of experience, 25.3% had 3–5 years, while only 0.4% had 6–10 years and 0.7% had 11 or more years of experience. These figures confirm that the majority of respondents were early-career clinicians. the data indicate that 93.5% of participants were employed in private institutions, whereas only 6.5% worked in public sector settings. Overall, the sample was largely composed of young, qualified, early-career female SLPs working predominantly in private practice environments.

Table 2 Descriptive Statistics of Speech and Language Development through AAC (N = 277)

Item / Statement	M	SD
AAC is helpful to compensate language impairment in children with expressive communication difficulties	4.59	0.52
AAC is an absolute substitution of expressive language ability for children with intellectual disability	4.26	0.63
AAC enhances receptive language ability in children with intellectual disability	4.01	0.51
AAC increases speech ability at word level	4.04	0.40
AAC enhances speech ability at sentence level	3.63	0.75
AAC devices can be used for children who can speak but not clearly	4.22	0.65
AAC impedes speech development (reverse coded)	2.58	0.94

Table 2 shows the mean and standard deviation values reflecting SLPs' perspectives on the role of AAC devices in improving language development in children with intellectual disability. Overall, the results indicate strong agreement regarding the positive impact of AAC. The highest mean score (M = 4.59, SD = 0.52) was observed for the statement that AAC helps compensate for language impairment in children with expressive communication difficulties, indicating strong consensus. SLPs also agreed that AAC can substitute expressive language ability (M = 4.26, SD = 0.63) and enhance receptive language skills (M = 4.01, SD = 0.51). AAC was perceived to increase speech at the word level (M = 4.04, SD = 0.40), while agreement was slightly lower for sentence-level speech improvement (M = 3.63, SD = 0.75), suggesting some variability in opinions. Respondents also agreed that AAC can be used for children with unclear speech (M = 4.22, SD = 0.65). The reverse-coded item "AAC impedes speech development" showed a lower mean (M = 2.58, SD = 0.94), indicating general disagreement with this statement. Overall, the

findings reflect a positive perception among SLPs regarding the effectiveness of AAC in supporting language development.

Table 3 Descriptive Statistics of Social and Educational Benefits of AAC (N = 277)

Item / Statement	M	SD
AAC provides social and learning opportunities for children with intellectual disability	4.21	0.65
Children using AAC have better communication than non-users	4.34	0.63
AAC assists in classroom discipline and time management skills	4.06	0.59
AAC bridges communication gap between professionals and children	4.26	0.57
AAC enhances participation and social confidence	4.18	0.62
AAC improves overall lifestyle and independence	4.46	0.60

Table 3 presents the mean and standard deviation scores reflecting SLPs' views on the social and educational benefits of AAC for children with intellectual disability. The results indicate strong agreement across all items, highlighting positive perceptions of AAC beyond speech development. The highest mean score was reported for the statement that AAC improves overall lifestyle and independence (M = 4.46, SD = 0.60), suggesting that SLPs strongly believe AAC contributes to functional autonomy. Similarly, respondents agreed that children using AAC demonstrate better communication than non-users (M = 4.34, SD = 0.63). SLPs also agreed that AAC bridges the communication gap between professionals and children (M = 4.26, SD = 0.57) and provides social and learning opportunities (M = 4.21, SD = 0.65). Additionally, AAC was perceived to enhance participation and social confidence (M = 4.18, SD = 0.62) and assist in classroom discipline and time management (M = 4.06, SD = 0.59). The findings demonstrate that SLPs view AAC as a valuable tool not only for communication but also for promoting social integration, educational engagement, and independence among children with intellectual disability.

Table 4 Descriptive Statistics of Early Intervention and Implementation of AAC (N = 277)

Item / Statement	M	SD
Early introduction of AAC is important for children with intellectual disability	4.48	0.60
Early AAC use prevents severe delay in language acquisition	4.53	0.54
AAC requires continuous monitoring and updating over time	3.92	0.63
Proper training of parents and teachers enhances AAC effectiveness	4.29	0.56

Table 4 presents SLPs' perspectives regarding early intervention and the implementation of AAC for children with intellectual disability. The findings show strong agreement on the importance of early AAC introduction. The highest mean score was reported for the statement that early AAC use prevents severe delay in language acquisition (M = 4.53, SD = 0.54), followed closely by the importance of early introduction of AAC (M = 4.48, SD = 0.60). These results indicate that SLPs strongly support early implementation of AAC to promote timely language development. Respondents also agreed that proper training of parents and teachers enhances AAC effectiveness (M = 4.29, SD = 0.56), emphasizing the importance of collaborative support. Additionally, AAC was viewed as requiring continuous monitoring and updating over time (M = 3.92, SD = 0.63), reflecting recognition of the need for ongoing evaluation and adjustment. The findings highlight that SLPs consider early and well-supported implementation of AAC essential for improving language outcomes in children with intellectual disability.

Table 5 Independent Samples t-Test Comparing Male and Female Respondents on AAC Perception Factors

Factor	Gender	N	M	SD	t	df	p
Speech and Language Development	Male	138	4.03	0.41	-2.18	275	.030
	Female	139	4.15	0.39			
Social and Educational Benefits	Male	138	4.19	0.44	-2.05	275	.041
	Female	139	4.30	0.42			
Early Intervention and Implementation	Male	138	4.28	0.48	-2.72	275	.007
	Female	139	4.44	0.46			

Table 5 presents the results of the independent samples t-test comparing male and female SLPs on different AAC perception factors. The findings indicate statistically significant gender differences across all three domains. For Speech and Language Development, female respondents (M = 4.15, SD = 0.39) reported significantly higher perception scores than male respondents (M = 4.03, SD = 0.41), $t(275) = -2.18$, $p = .030$. This suggests that female SLPs hold slightly more positive views regarding the impact of AAC on speech and language outcomes. Similarly, in the domain of Social and Educational Benefits, females (M = 4.30, SD = 0.42) scored higher than males (M = 4.19, SD = 0.44), $t(275) = -2.05$, $p = .041$, indicating a significant difference in perceptions favoring female respondents. For Early Intervention and Implementation, the difference was more pronounced, with females (M = 4.44, SD = 0.46) again scoring higher than males (M = 4.28, SD = 0.48), $t(275) = -2.72$, $p = .007$. This indicates stronger agreement among female SLPs regarding the importance of early and systematic AAC implementation. The results show that female SLPs demonstrated significantly more positive perceptions toward AAC across all examined factors compared to male SLPs.

Results and Discussion

Concerning Speech-Language Pathologists' (SLPs) perspectives on the use of Augmentative and Alternative Communication (AAC) devices for improving language development in children with intellectual disability in Lahore, the findings of the present study revealed a strongly positive overall perception. The majority of respondents agreed that AAC plays a significant role in compensating for expressive language impairments. The highest mean score was reported for the statement that AAC helps compensate for language impairment in children with expressive

communication difficulties (M = 4.59, SD = 0.52), indicating strong consensus among SLPs. Participants also agreed that AAC enhances receptive language ability (M = 4.01, SD = 0.51) and increases speech at the word level (M = 4.04, SD = 0.40). Although agreement was slightly lower for sentence-level speech enhancement (M = 3.63, SD = 0.75), the overall perception remained positive.

Importantly, the reverse-coded item "AAC impedes speech development" yielded a lower mean (M = 2.58, SD = 0.94), indicating general disagreement with the misconception that AAC hinders natural speech. This aligns with existing evidence suggesting that AAC does not interfere with speech production and may even support verbal development (Millar et al., 2006; Schlosser & Wendt, 2008). The findings suggest that SLPs in Lahore recognize AAC as a supportive rather than obstructive intervention for speech and language growth in children with intellectual disability.

Regarding the social and educational benefits of AAC, respondents demonstrated strong agreement across all items. The highest mean score was observed for the statement that AAC improves overall lifestyle and independence (M = 4.46, SD = 0.60), reflecting SLPs' belief that AAC promotes functional autonomy. Participants also agreed that children using AAC have better communication outcomes than non-users (M = 4.34, SD = 0.63) and that AAC bridges communication gaps between professionals and children (M = 4.26, SD = 0.57). These findings support research indicating that AAC enhances social participation, academic engagement, and independence in children with complex communication needs (Biggs et al., 2018; O'Neill et al., 2018).

SLPs further acknowledged that AAC contributes to classroom discipline and time management skills (M = 4.06, SD = 0.59) and enhances social confidence (M = 4.18, SD = 0.62). This suggests that AAC is perceived not only as a communication tool but also as a mechanism for promoting behavioral regulation and inclusive participation. Such findings are consistent with literature emphasizing the broader psychosocial benefits of AAC implementation in educational settings (Hetzroni, 2003).

With regard to early intervention and implementation, respondents strongly endorsed early introduction of AAC. The statement that early AAC use prevents severe delay in language acquisition received the highest mean score (M = 4.53, SD = 0.54), followed closely by agreement on the importance of early AAC introduction (M = 4.48, SD = 0.60). These results indicate that SLPs recognize early AAC implementation as critical for timely language development. Participants also agreed that proper training of parents and teachers enhances AAC effectiveness (M = 4.29, SD = 0.56), highlighting the importance of collaborative practice. This finding supports research showing that communication partner training and consistent modeling significantly improve AAC outcomes (Romski & Sevcik, 2009).

Although AAC was viewed as requiring continuous monitoring and updating over time (M = 3.92, SD = 0.63), the mean suggests moderate agreement, indicating that while SLPs acknowledge the need for follow-up and adjustments, structured monitoring systems may require further strengthening.

Gender-based comparisons revealed statistically significant differences across all perception factors. Female SLPs reported significantly higher mean scores than male SLPs in speech and

language development, social and educational benefits, and early intervention domains. For example, in early intervention and implementation, females (M = 4.44, SD = 0.46) scored higher than males (M = 4.28, SD = 0.48), t(275) = -2.72, p = .007. These findings suggest that female SLPs demonstrated comparatively stronger agreement regarding the effectiveness and importance of AAC. While the differences were statistically significant, both genders overall showed positive perceptions, indicating general professional consensus regarding AAC benefits. the findings demonstrate that SLPs in Lahore perceive AAC devices as highly effective tools for enhancing speech, language, social participation, and independence among children with intellectual disability. The results align with international literature supporting the positive impact of AAC on functional communication and language outcomes. However, the strong endorsement of early intervention and partner training also underscores the need for systematic implementation strategies, ongoing monitoring, and structured professional development to maximize the benefits of AAC in clinical and educational settings.

Summary

The present study examined the perspectives of Speech-Language Pathologists (SLPs) regarding the use of Augmentative and Alternative Communication (AAC) devices for improving language development in children with intellectual disability in Lahore. A quantitative cross-sectional design was employed, and data were collected from 277 SLPs working in hospitals, clinics, rehabilitation centers, academic institutions, and private settings. A structured questionnaire (RAAC) consisting of 15 items was used to assess perceptions related to speech and language development, social and educational benefits, and early intervention and implementation of AAC. The demographic findings revealed that the majority of respondents were young, female, and early-career professionals, with most working in private sector settings. Descriptive analysis showed strong agreement among SLPs regarding the positive impact of AAC on language development. Participants widely believed that AAC compensates for expressive language impairments, enhances receptive language skills, and supports speech development at the word and sentence levels. Importantly, most respondents disagreed with the notion that AAC impedes speech development.

In addition to communication outcomes, SLPs recognized significant social and educational benefits of AAC. They reported that AAC promotes participation, independence, improved classroom management, and better communication between children and professionals. Strong agreement was also observed regarding the importance of early AAC introduction to prevent severe language delays. Furthermore, respondents emphasized the need for proper training of parents and teachers, along with continuous monitoring of AAC systems to ensure effectiveness.

Gender-based comparisons revealed statistically significant differences, with female SLPs demonstrating slightly more positive perceptions across all domains. Overall, the study concludes that SLPs in Lahore hold a highly positive view of AAC devices as effective tools for enhancing language development, social integration, and independence among children with intellectual disability. The findings highlight the importance of early implementation, collaborative support, and systematic monitoring to maximize AAC outcomes.

Recommendations

1- **Promote Early Introduction of AAC:** Early assessment and implementation of AAC should be encouraged, as findings showed strong agreement that early use prevents severe delays in language acquisition. Screening and referral systems should be strengthened to ensure timely intervention.

2- **Enhance Professional Training for SLPs:** Structured training programs, workshops, and certification courses on AAC assessment and intervention should be incorporated into undergraduate and postgraduate curricula to improve professional competency and confidence.
3- **Provide Parent and Teacher Training:** Since proper training enhances AAC effectiveness, collaborative training sessions for parents and teachers should be organized to ensure consistent use of AAC across therapy, school, and home settings.
4- **Ensure Continuous Monitoring and Updating:** AAC systems should be regularly evaluated and updated according to the child's developmental progress. Individualized monitoring plans should be integrated into intervention programs.
5- **Improve Accessibility and Policy Support:** Policies should be developed to increase availability and affordability of AAC devices, especially in public sector institutions, to ensure equitable access for children with intellectual disability.
6- **Encourage Further Research:** Future studies should explore long-term outcomes of AAC implementation and examine regional barriers to strengthen evidence-based AAC practices at a broader level.

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