



## PERCEIVED EFFECTIVENESS OF TETHERAPY-BASED SPEECH AND LANGUAGE INTERVENTIONS CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD)

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### Abstract

*This study examined the perceived usefulness of teletherapy-enabled speech and language treatment of children with Autism Spectrum Disorder (ASD) in the perspective of the therapists. A descriptive quantitative research design was used to conduct the study and 100 participants responded to a survey that included online surveys. Empirical evidence points to the overall effectiveness of teletherapy in ensuring expressive and receptive language growth, vocabulary enrichment, and parental involvement in speech therapy among children with autism spectrum disorder (ASD). Screen sharing and interactive apps were among the virtual tools that were appreciated to help to improve speech and language outcomes. The parental involvement proved to be one of the most crucial factors determining the success of the therapy as the therapists emphasized the necessity to offer firm recommendations to parents on how to enhance the development of communication at home. However, a few issues, that is, child engagement, behavioral issues, and technical complications like poor internet connectivity and inaccessibility of the material, were cited as hindering an ideal delivery of teletherapy. The outcome of the statistical analysis showed that proper teletherapy education, extent of educational attainment, professional credentialing and length of experience in teletherapy significantly contributed to the desired satisfaction and positive perception of efficacy of services amongst the therapists. In contrast, other variables like gender and years of experience in general, and workplace environments did not matter. To improve the practice of teletherapy, it is recommended to set up systematic training on teletherapy, increase parental support, upgrade the technological infrastructure, and conduct future research as a means to refine the use of teletherapy. Together, the results validate teletherapy as a valid and viable service delivery model of children with ASD, more so when accompanied by sufficient resources and professional growth.*

**Keywords:** Telehealth, Autism Spectrum Disorder, Remote Speech Therapy, Perceptions of Therapists, Language Development, Online Interventions of Communication, Family Engagement, Virtual Engagement.

### Introduction

Speech and language interventions that rely on teletherapy have become an important method of offering therapeutic treatments to children with Autism Spectrum Disorder (ASD), providing a new and convenient means through which therapy can be provided that need not overcome most of the historic barriers to care in either the context of a traditional clinic or the home. The effects of the interventions in children with ASD over time have been mainly based upon face-to-face meetings, which in many instances form a significant portion of the logistic problems, which include travelling, timing issues, and inaccessibility of specialist therapists, especially in isolated or underprivileged regions. Teletherapy which involves the use of

technology platform to provide speech and language therapy with children in a real time format has transformed the way these professionals carry out their services, because they can now work with the children while they are in the comfort of their home. Emerging studies especially after the beginning of the 2000s, have successively reported on the successful use of teletherapy to enhance different speech and language abilities in children with ASD such as expressive language, receptive language, articulation and social communication skills (Alahmari et al., 2025; Kelson & Dorstyn, 2025; Collins et al., 2025).

Teletherapy has become widely embraced internationally with several researches clearly documenting its credibility or even effectiveness over the conventional face- to- face therapy, particularly in the development of the pragmatic language, which is essential in the socialization process of children with ASD. Developed healthcare systems have incorporated teletherapy into their mass speech pathology as their practice promotes parental involvement and coaching to optimize the measures of interventions. It is worthwhile noting that the COVID-19 pandemic led to increased teletherapy use across the globe as remote healthcare services became a prime necessity, thereby proving its suitability in terms of ease and value (Rao et al., 2025; Orel & Licardo, 2025)

In the local context, however, the situation differs across access to healthcare resources, technological infrastructure and level of awareness of teletherapy. As much as certain areas have adopted telepractice models that provide organized and evidence based protocols suitable to their communities, others have digital access issues, lack of trained staff, and cultural acceptance issues. Nevertheless, local experiences have started reporting the positive results of teletherapy when it comes to speech-language interventions, and it highlights its relevance and role in addressing the service gaps (Lawton, 2025; Ghosh, 2025).

This research based on the lack of systematic assessment of the perceived effectiveness of the teletherapy-based speech and language interventions as applied to children in the local setting with ASD in particular and the downfall of empirical data though it is raising in usage. The insight into the perceptions about efficacy, accessibility, and engagement can guide the choice of service delivery modalities and policies.

This research is relevant because it will fill a crucial research gap by offering local information about the effects of teletherapy that will be vital in increasing the access to therapy, maximization of the intervention method and facilitate decision-making when it comes to resource allocation in the speech-language pathology services among children with ASD. In addition, it helps to enlarge the knowledge about the applicability and acceptance of telehealth interventions in various social cultural environments.

### **Objectives of Study**

The objectives of the study are

1. To measure the perceptions of therapists on the effectiveness of the teletherapy in speech and language development in children with ASD.
2. To identify any factors promoting or hampering the successful work of teletherapy and analyzing any differences in results with traditional models of therapy.

### **Research Questions**

1. What are the perceptions of speech-language therapists about the advantages and complexities of providing teletherapy to children with ASD?
2. What are the factors that determine the engagement and participation of children with ASD in teletherapy?



## Literature Review

The current literature thoroughly proves the growing capacity and efficiency of speech and language interventions that use teletherapy methods rather than in-person meetings with children with Autism Spectrum Disorder (ASD), in particular during the COVID-19 pandemic that triggered the online healthcare delivery shift. The study was a longitudinal case series study, which employed a qualitative design. This study was done amid the pandemic state in Brazil and made much progress in the communication and social interaction skills of children diagnosed with ASD by utilizing speech-language-hearing teletherapy. The paper noted gains in vocabulary growth, development of morphosyntax and the manner of using augmentative and alternative communicating (AAC) systems. Children also experienced more shared attention and eye contact, family interaction enhancement, decreased problematic behaviors, higher levels of autonomy regarding daily activities and more engaged play behaviors with less screen time. The intervention was conducted through weekly atypical teleconsultation with families in which the therapists introduced personalized instructions and activities to foster the development of communication (Rosas et al., 2025; Ghosh, 2025; Peterson, 2025)

In line with this, an evidence-based systematic analysis and meta-synthesis examined 21 research studies of social communication intervention activities in telehealth among children with ASD. The meta-analysis has established that there are substantial improvements in certain skills; particularly, the pragmatic language skills in which effective social communication is possible. Irrespective of the fact that the collection of data supports primarily pragmatic results, the study reminds that it is necessary to focus on wider assessments of the role of teletherapy in other areas of language such as phonology, morphology, grammar and semantics to construct the comprehensive picture of how teletherapy affects the process of language development (Hao et al., 2023; Shin et al., 2025).

Speech-language pathologists (SLPs) have welcomed the prospect of teletherapy especially with its capacity to involve caregivers in a highly active way and reach geographically isolated or underserved communities. Nevertheless, technological obstacles, facility of specialized training, preserving the interest of the child in online format are also significant issues (Hussain et al., 2022; Hryntsiv et al., 2025). Qualitative research continues to examine the experience of SLPs in telepractice by highlighting the key necessity of continuing professional learning that makes therapists acquire new skills to implement a specific bundle of competences to deliver telehealth services as well as the importance of how they adapt intervention strategies to the distance learning environment (Rao et al., 2025).

The new technological developments have a great impact on the treatment potential of teletherapy, adding interactive medium, multimedia stimuli, and virtual reality elements. All these instruments help enhance attention, motivation, and active involvement of children accessing remote services, which somewhat reduces the lack of limitations historically related to virtual therapy (Reddy, 2025; Habibi et al., 2025; Mills & Duffy, 2025).

To summarize, modern evidence supports the idea that speech and language teletherapy is a viable, effective, and family-centered intervention form that works with ASD children and is fully capable of supporting the individual with developing meaningful improvements in communication and social functioning. However, the literature also focuses on the importance of enlarging studies of various linguistic performance, the technical and practitioner-related issues, and customization of telepractice protocol to fit cultural and socioeconomic conditions to best achieve outcomes.



## Research Methodology

### Research Design

The research design of the study was descriptive and quantitative aimed at exploring the thoughts of childcare providers regarding the effectiveness of teletherapy-based speech and language interventions that were used to treat children with Autism Spectrum Disorder (ASD). It was identified that the quantitative method will be adopted since the statistical analysis of the data collected by a pre-structured questionnaire will be carried out. The descriptive element made it possible to describe the perceptions, experiences, and attitudes of the participants to teletherapy as a method of ASD treatment and, at the same time, provided rich information about the studied phenomenon.

### Research Population

The intended audience of this study included speech-language therapists participating in the interventions on children with ASD based on teletherapy. They were a sample of subjects that are attracted in different educational and clinical environments where teletherapy services are provided. The fact that therapists could be included demonstrates that they are directly involved and critical figures of the teletherapy interventions application and acceptance, as their opinion is central in the notion of the perceived efficiency of their services.

### Sampling Method/Research Sample

The current study employed a group of 100 participants who filled the questionnaires distributed using Google Forms. Purposive sampling was used and only those speech therapists were selected purposively those who are providing teletherapy to children with autism spectrum disorder. This methodological selection choice was made to ensure that the participant had a relevant professional experience of teletherapy practice with the population, hence enabling the collection of narrow and valuable data to work with a group that has experience in the teletherapy field.

### Research Tool

A structured questionnaire was prepared after a narrow review of literature related to teletherapy and ASD interventions and administered to all the data. Based on this research, the questionnaire consisted of two parts: The first one covered demographic details like age, gender, profession, years of experience, and location; the second part included the statements to assess the perception of the teletherapy as effective, without barriers, engaging, and challenging. Answers were measured using a 5-point Likert scale where the choices were Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree thus enabling quantification of the attitude and experience of the participants.

### Validity and Reliability

The questionnaire can be applied using expert validation as the content validity (i.e. all the relevant aspects of the questionnaire were checked by appropriate experts to assure its relevance, transparency, and comprehensiveness). To determine the reliability of the questionnaire a pilot test was performed on a small population sample that was representative of the intended population. Cronbach Alpha coefficient was also used to determine internal consistency with a range of 0.9 which was high enough to show that the instrument was appropriate during the main data collection.

Cronbach's Alpha	No of frequency	No. of Item
.853	100	44

### Data Collection

Access to the information was only possible by using an online survey conducted using Google Forms. This approach ensured that the participants under study could conveniently go through



the questionnaire without having to worry about logistical issues when responding. Confidentiality and anonymity of the responses of the participants was highlighted to ensure that the participants could report honestly and correctly.

**Data Analysis**

Statistical Package for the Social Sciences (SPSS) analysis of the data collected was carried out. Demographic characteristics and overall perceptions of the effectiveness of teletherapy were summarized as descriptive statistics with means, standard deviations, and frequencies as well as percentages. Such inferential statistics like t-tests and ANOVA were used to check differences in perceived careers among the demographic variables and professional groups. The objective of the analysis was to propose some important factors to consider in teletherapy effectiveness as perceived by those who have undergone teletherapy and to come up with practical recommendations to enhance the use of teletherapy in the speech and language intervention as addressed on children with ASD.

**Table 1: Frequency of the Demographic and Professional Background**

Category	Respondents	Frequency (f)	Percentage (%)
<b>Age</b>			
	18-25 years	41	41
	26-35 years	50	50
	36-45 years	6	6
	above 45	3	3
<b>Gender</b>			
	Male	36	36
	Female	64	64
<b>Academic Qualification</b>			
	Bachelor's degree (e.g., BA, BSc)	20	20
	Master's degree (e.g., MA, MSc)	39	39
	MPhil	30	30
	Doctorate (PhD)	11	11
<b>Professional Qualification</b>			
	BSc/BS in Speech-Language Pathology	20	20
	MSc/MS in Speech-Language Pathology	33	33
	Diploma in Speech Therapy	38	38
	Certified Speech-Language Pathologist (SLP)	9	9
<b>Current workplace setting</b>			
	Clinic	16	16
	Special education school	7	7
	Private practice	4	4
	Telehealth platform provider	54	54
	Hospital/rehabilitation center	15	15
	Home-based service	4	4
<b>Have you received any formal training in teletherapy?</b>			
	Yes	32	32
	No	68	68
<b>How many years of experience do you have as a speech-language therapist?</b>			
	less than 1 year	36	36



1–3 years	43	43
4–6 years	13	13
7–10 years	5	5
More than 10 years	3	3
<b>How long have you been providing teletherapy services?</b>		
Less than 6 months	34	34
6 -12 months	35	35
1-3 years	23	23
More than 3 years	8	8
<b>What percentage of your current caseload consists of children with ASD?</b>		
Less than 25%	42	42
25–50%	41	41
51–75%	14	14
More than 75%	3	3
<b>What platform(s) do you primarily use for teletherapy?</b>		
Zoom	71	71
Google Meet	20	20
Microsoft Teams	2	2
Other	7	7

The current discussion on demographic characteristics of the interviewees challenged a number of aspects of workforce composition. With respect to age distribution, most (50%) respondents belonged to the range of 26 to 35-year old cohorts followed by a slightly greater amount (41%) between 18 and 25-year olds, both denoting a young professional cadre, mainly. The sample was 64% female respondents, leading to the conclusion that there was more female than male representation in the field. The professional levels of education also showed that most of them (39%) had Master's degree, 30 percent had MPhil and comparatively only 11 percent had doctoral level. Regarding the professional training, the Diploma in Speech Therapy was the most common degree (38%), whereas the proportion of SLPs certified with a significantly low percentage (9%). Infrastructure in the workplace revealed that the most frequent working environment was the telehealth platforms which points to a significant swing towards delivery of services remotely. It is worthy to note that 68% of them did not have any formal training in teletherapy, but the vast majority (43%) had 1-3 years of professional experience. It is possible to note that the percentage of respondents with less than 1 year of teletherapy experience (34%) was significant, with another 35 of the respondents having been working in the modality between 6 and 12 months, which means that a substantial part of the sample had limited experience with virtual service delivery. The most popular therapeutic platform became Zoom (71%). Taken together, these results show a highly educated and largely youthful, female-prevalent workforce trained in teletherapy informally but having greater experience with virtual practice.



**Table 2: Perceived Effectiveness of Teletherapy**

Statement	SA	A	N	D	SD	M	S.D
Teletherapy is effective for improving expressive language in children with ASD.	7	62	25	6	0	3.70	.689
Teletherapy is effective for improving receptive language in children with ASD.	14	59	16	11	0	3.76	.830
Teletherapy improves vocabulary development in children with ASD.	14	69	12	5	0	3.92	.677
Teletherapy supports sentence formation and grammar usage in children with ASD.	11	50	30	9	0	3.63	.800
Children with ASD show consistent progress in communication goals during teletherapy.	18	53	26	3	0	3.86	.739
Teletherapy allows for individualized, goal-directed sessions.	13	43	39	5	0	3.64	.772
Teletherapy sessions can match the quality of in-person speech therapy sessions.	11	48	29	7	5	3.53	.958
Virtual tools (e.g., screen sharing, apps, videos) enhance speech-language outcomes.	28	61	11	0	0	4.17	.604
Children demonstrate long-term retention of communication skills learned via teletherapy.	5	55	31	9	0	3.56	.729

In Table 2 Respondents generally found teletherapy to be beneficial to the children with ASD. The most notable rating was the virtual instruments, which provide excellent results (M= 4.17, SD= 0.604), were also highly rated. Another positively rated area was vocabulary development (M = 3.92) and advancement of communication objectives (M = 3.86). Nevertheless, the instruction of long-term retention of communication skills obtained a lower mean (M = 3.56), which means that there could be some doubts related to permanent improvement. Quality of teletherapy against in-person services was relatively high (M = 3.53), showing a sense of optimism albeit deeming the method with caution. The literature, in general, suggests that teletherapy has proven to be effective in a variety of settings; however, there are also limitations of this modality. Since the descriptive analyses are not represented by p-values, it is not possible to conclude on inferential significance.

**Table 3: Engagement and Behavior Management**

Statement	SA	A	N	D	SD	M	S.D
Children with ASD remain actively engaged during most teletherapy sessions.	9	37	44	10	0	3.45	.796
Behavior management is more challenging during teletherapy than in-person therapy.	15	62	18	2	3	3.84	.813
Visual aids and interactive games help sustain attention in virtual sessions.	21	63	8	8	0	3.97	.784
Parent/caregiver support improves child engagement during teletherapy.	18	74	2	3	3	4.01	.772
Reinforcement strategies are more difficult to implement effectively in an online setting than in-person.	18	48	25	3	6	3.69	1.002



Managing challenging behaviors in children with ASD is more difficult during teletherapy than in-person sessions. 15 59 17 6 3 3.77 .886

Table 3 examined some of the strengths and challenges related to engagement in a virtual therapy. Visual aids and interactive games were also significantly and highly supported by the participants in terms of enhancing participation ( $M = 3.97$ ,  $SD = .784$ ) and caregiver involvement ( $M = 4.01$ ,  $SD = .772$ ). On the other hand, the participation of children was assessable as moderately ( $M = 3.45$ ), which means that there is not a single quality of engagement. Behavior management related challenges also appeared where the therapists reported that teletherapy increased the difficulty of behavior management ( $M = 3.77$ ) and consistent reinforcement behaviors ( $M = 3.69$ ). Cumulatively, even though there are strategies that help increase involvement, behavior management still stands out as a factor that hinders the effectiveness of teletherapy.

**Table 4: Parental Involvement**

Statement	SA	A	N	D	SD	M	S.D
I regularly involve parents or caregivers in speech-language teletherapy sessions.	21	62	14	3	0	4.01	.689
Parental involvement improves the carryover of therapy goals at home.	37	47	8	5	3	4.10	.959
I provide parents with clear strategies to support communication development outside of sessions.	43	47	5	2	3	4.25	.880
Parents appear confident in supporting their child's speech and language goals after sessions.	10	30	34	26	0	3.24	.955
Lack of parental involvement negatively impacts therapy outcomes in teletherapy.	21	68	6	5	0	4.05	.687
Parents often rely entirely on the therapist and show limited initiative in supporting therapy at home.	21	51	18	7	3	3.80	.953
Limited understanding of therapy goals prevents some parents from fully engaging in teletherapy.	5	60	30	3	2	3.63	.720

In Table 4 Overall parental involvement in the present study was seen as being very prominent by the respondents with significant agreement that therapists provide clear strategies to the parents (mean = 4.25) and that involvement of parents into the home through such involvement have positive effects on the transfer of therapeutic gains to the home (mean = 4.10). On the other hand, the negative effect of parental disengagement on the outcomes of therapy were regarded as an important one (mean = 4.05). However, the parents expressed their beliefs of being able to support the child in a therapeutic setting relatively low (mean = 3.24), which indicates a disparity in familial preparations. There was also a significant minority who indicated over dependence on therapists (mean = 3.80) or inadequate understanding of what was being achieved in therapy (mean = 3.63). Such results point out to the need of having

organized parental guidance, as continued involvement is crucial but inconsistent among households.

**Table 5: Barriers and Limitations**

Statement	SA	A	N	D	SD	M	S.D
Unstable internet connectivity frequently interrupts therapy sessions.	29	49	8	11	3	3.90	1.040
Limited access to resources (e.g., devices, quiet space) affects therapy quality.	25	59	11	3	2	4.02	.816
Some families lack the technical skills to access teletherapy effectively.	13	47	33	7	0	3.66	.794
Cultural or language differences sometimes make teletherapy more difficult to implement.	13	41	25	14	7	3.39	1.100
I feel adequately trained to manage teletherapy sessions for children with ASD.	13	51	27	6	3	3.65	.892
Child cooperation during teletherapy is a major barrier to progress.	11	67	17	3	2	3.82	.744
Some families are not fully ready or prepared to participate in teletherapy sessions.	12	52	31	2	3	3.68	.827

In Table 5 Respondents reported the weak internet connection ( $M = 3.90$ ,  $SD = 1.04$ ), as the most significant technical and logistical impediment with limited availability of resources ( $M = 4.02$ ) adding up. The literature has already highlighted the successful remote practice to rely on the stability of the internet; the current findings confirm the same. The cooperation of the child ( $M = 3.82$ ) and family preparedness ( $M = 3.68$ ) were recorded as important challenges as well, stressing the influence of surrounding factors in the therapeutic engagement. Despite the fact that there were some therapists who believed they were prepared enough ( $M = 3.65$ ), a lot needs to be covered. There are other restrictions caused by cultural or language variations ( $M = 3.39$ ). Overall, these findings support the idea that technological and situational factors have a substantial impact on the effectiveness of treatment, especially infrastructural and family preparations.

**Table 6: Overall Perception**

Statement	SA	A	N	D	SD	M	S.D
I am satisfied with the outcomes I've seen using teletherapy for children with ASD.	24	47	24	5	0	3.90	.823
I believe teletherapy will continue to be a viable service delivery model post-pandemic.	26	28	13	3	0	4.07	.714
I prefer in-person therapy over teletherapy for children with ASD. [Reverse-coded]	13	7	47	33	0	3.00	.964
With appropriate adaptations, teletherapy can address most communication needs of children with ASD.	12	74	8	3	3	3.89	.764
I would recommend teletherapy to colleagues as a primary option for delivering speech-language services to children with ASD.	21	50	18	11	0	3.81	.895

In Table 6 Overall satisfaction with the results of the teletherapy was reported ( $M = 3.90$ ), and participants confirmed the likelihood of its viability as a model after the pandemic ( $M = 4.07$ ). The vast majority of the respondents were confident that teletherapy is a possibility to satisfy communication needs with the adaptations ( $M = 3.89$ ) and would suggest it to their colleagues ( $M = 3.81$ ). At the same time, no preferences toward in-person therapy were measured ( $M = 3.00$ ), which demonstrated that teletherapy is tolerated but has not become preferable yet. This tendency testifies to a tentative positive attitude towards the long-term use of teletherapy in the provision of services.

### Inferential Statistics

**Table 7: Independent t-test by Gender**

Gender	N	Mean	SD	df	t	Sig.
Male	36	142.8611	12.43303	98	-3.475	.925
Female	64	152.2813	13.32556			

\* $P > .05$  Level of Significance

The results of Table 7 indicate the independent sampling of male respondents ( $M = 142.86$ ,  $SD = 12.43$ ) and female respondents ( $M = 152.28$ ,  $SD = 13.32$ ), both of whom engaged in teletherapy. The use of a t-test was to assess whether gender had any impact on the teletherapy perceptions. The analysis that came up with the value of  $t(98) = -3.475$  and  $p = .925$  ( $p > 0.05$ ). The result indicated that gender does not differ significantly at 0.05 level. The difference between the female and the mean scores was insignificant. Although the female score was higher, it was not statistically and substantively significant. Therefore, gender did not have an absolute role in influencing the way professions perceive teletherapy since the male and female perceptions were comparable.

**Table 8: Independent t-test According to Formal Training**

Received any formal training	N	Mean	SD	df	t	Sig.
Yes	32	153.1875	9.35824	98	2.189	.005
No	68	146.8676	14.99144			

\* $P < .05$  Level of Significance

This table examines that Independent t test was done on those who had undertaken formal training ( $M = 153.18$ ,  $SD = 9.35$ ) and those who had not ( $M = 146.87$ ,  $SD = 14.99$ ). The obtained difference was statistically determined,  $t(98) = 2.189$ ,  $p = .005$  ( $< 0.05$ ). Such findings alleviate that the respondents who were trained used structured teletherapy training showed a dramatic increase in satisfaction and their positive perception of the effectiveness of the teletherapy session. This smaller standard deviation in the trained group also denotes that trained practitioners showed a more consistent level of more confidence where the untrained group showed considerably higher variability. The results demonstrate the significance of special training programs in providing therapists with the exceptional skills related to adjusting to the provision of services in a virtual form.

**Table 9: One Way ANOVA by Age**

Age	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1571.664	3	523.888	2.946	.037
Within Groups	17070.126	96	177.814		
Total	18641.790	99			

\* $P < .05$  Level of Significance



This Table shows the differences in perceptions of teletherapy among four age groups 18-25, 26-35, 36-45 and over 45. The output showed an effect that was statistically significant  $F(3,96) = 2.946, p = .037 (<.05)$ . There was a significant majority (50.2 %) in the formation of younger respondents but this difference implies that professionals in mid-career and the older group view teletherapy in a different manner; probably with respect to issues of adaptability, technological attachment, or career anticipations. These results validate age as a significant influencing factor of the acceptance of teletherapy as a means of service delivery.

**Table 10: One Way ANOVA Based On Academic Qualification**

Academic Qualification	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2268.204	3	756.068	4.433	.006
Within Groups	16373.586	96	170.558		
Total	18641.790	99			

\*P < .05 Level of Significance

This Table examines that the result was statistically significant with four levels of academics which included Bachelor, Masters, MPhil, and PhD,  $F(3,96) = 4.433, p = .006 (<.05)$ . It was recommended that academic qualification is an important factor that determines the understanding of teletherapy: individuals who have attained MPhil or PhD qualifications have more developed skills of critical appraisal and are more exposed to research, which is likely to facilitate a more positive attitude to telepractice. On the contrary, one can suggest that therapists working only with bachelor degrees can be less confident, which could be caused by lack of experience with various research and practice diversity. Academic level of achievement hence depicts a significant impact on the telepractice.

**Table 11: One Way ANOVA on the Basis of professional qualification**

Professional Qualification	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1464.397	3	488.132	2.728	.048
Within Groups	17177.393	96	178.931		
Total	18641.790	99			

\*P < .05 Level of Significance

This table shows the Cross-professional qualification comparisons on variable BSc/BS, MSc/MS, Diploma and Certified SLP result in a statistically significant effect,  $F(3,96) = 2.728, p = .048 (<.05)$ . With bachelor degrees or diploma, the satisfaction is usually low as compared to master SLP certification. Such differences can be explained by specialized training that formal certificate courses provide, which will give more certainty in implementing teletherapy. These findings demonstrate the significance of professional improvement and certification in teletherapy training of practitioners.

**Table 12: One-Way ANOVA According to the Duration of Providing Teletherapy services**

How long providing teletherapy services?	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3503.108	3	1167.703	7.405	.000
Within Groups	15138.682	96	157.695		
Total	18641.790	99			

\*P < .05 Level of Significance



This table examines Variation in the length of the provision of teletherapy yielded a very significant outcome,  $F(3, 96) = 7.405, p = .000 (p < .05)$ . There is a higher rate of satisfaction and perceived effectiveness when seen in therapists who have provided more than a year of teletherapy compared to the therapists who have provided less than six months. Extensive practice relates to an increasing level of knowledge about digital platforms or the change of therapy, as well as client handling, thus improving confidence and satisfaction.

**Table 13: Percentage of Caseload with ASD-Based Children (One Way ANOVA)**

What percentage of current caseload consists of children with ASD	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3573.189	3	1191.063	7.588	.000
Within Groups	15068.601	96	156.965		
Total	18641.790	99			

\* $P < .05$  Level of Significance

In this table the results indicated that the variations of the caseload composition were statistically significant,  $F(3,96) = 7.588, p = .000 (p < .05)$ . Therapists with higher percentages of the ASD cases have significantly lower satisfaction rates than therapists with low percentages of the ASD cases. Increased exposure to ASD offers more chances to master teletherapy approaches, which leads to more competence and satisfaction. In contrast, individuals who have little exposure to ASD are usually hesitant due to a limited encounter of practice. In this regard, caseload composition, thus, becomes a critical teletherapy perception determinant.

### Findings

A new empirical study examined the demographic characteristics of health professionals who provide teletherapy services to children with Autism Spectrum Disorder (ASD). The results include that the practitioners tend to be dominated by a younger age range and females, and the majority have been attained with advanced degrees like the Master, or MPhil. Even though only a large percentage are certified on speech-language pathology, a considerable number claim two to three years of professional practice. Despite this comparatively narrow formal training in the provision of teletherapy, the respondents perceived the modality to be associated with positive effects in language development particularly in the sphere of expressive and receptive language, vocabulary, and another communication objective.

Specifically, the facilitative role was referred to virtual tools, such as screen-sharing and interactive application. The levels of children involvement were estimated to be moderate, and behavior management constituted one of the main challenges, as the clinicians stated that the remote behavioral response is difficult to reinforce. Involvement of parent was regarded as critical and therapists indicated that they provided specific parent strategies, they played greater roles leading to enhancement of involvement and transfer of skills. However, it was noticeable to clinicians that there was some difference among parents in terms of their confidence and sometimes the tendency to over-rely on therapy. The most reported barrier was technical, including unreliable internet and the lack of software, as well as barriers associated with child cooperation and willingness to engage with the family within the context of therapy.

On the whole, the respondents were found to be pleased with the outcomes of teletherapy and to support its further use beyond the pandemic in case certain changes are introduced. Satisfaction and perceptions of effectiveness were positively related to formal training, specialized as opposed to general qualifications, and more extensive exposure to teletherapy in general, but larger numbers of children with ASD among clinicians were related to lower

satisfaction; this association is attributed to the increased demands of such cases. Both the workplace environment and the years of general clinical applicability did not have a significant effect on satisfaction, which suggests that working with teletherapy often only takes place during specific training and exercises rather than general clinical experience. These findings point to the significance of well-organized training activities, strong parental participations, and the ability to navigate the technical issues to maximize teletherapy services given to children with ASD.

### **Discussion**

The results in this study add to growing international evidence that teletherapy is an effective and viable intervention approach to children with Autism Spectrum Disorder (ASD), at least when it comes to speech and language development. Similar to the recent studies, the application of teletherapy has been linked to quantifiable advances in expressive and receptive language, support to acquire vocabulary and achievement of the set personal goals in children with the ASD. The positive evaluation of Zoom and Google Meet by therapists supports the body of previous studies showing the improvement of access and continuity of care offered by technology-based modalities even in underserved regions and even among clients living in underserved areas (Simacek et al., 2021; de Nocker et al., 2023; Valentine et al., 2021).

Therapists that reached part took showed moderate engagement and defined a number of challenges related to the management of complex behaviors and consistent reinforcement of participants based on the online sessions. The observations reflect the larger issues which have been expressed in the literature about remote administration of behavior and attention where the fidelity of the interventions can be reduced by sensory and setting constraints (Jesudass et al., 2025; Shnitzer et al., 2025; Peterson, 2025). Still, the use of interactive media and virtual tools has been proven to increase the level of engagement and motivation in clients with ASD, where it was determined that digital support on an individual basis may drive significant changes in communication (Yosep et al., 2022; Tan-MacNeill et al., 2021; Bradshaw et al., 2022).

Parental engagement was revealed as a critical outcome predictor, in line with earlier research that shows an increase in intervention effectiveness as a result of effective active involvement of the caregiver, which contributes to repeating the therapy goals between visits and overcoming the gaps caused by the lack of digital literacy/engagement (Wagner et al., 2025; Soto-Ramírez et al., 2025). There still exists an unequal distribution of parental confidence and preparedness, which has been observed in previous studies. Appropriate mechanisms of empowering caregivers such as offering clear guidance with regular feedback have been suggested to help reduce these disparities and to achieve progress across virtual realms with consistency (White et al., 2021; Spain et al., 2022; Roitsch et al., 2021).

The most important obstacles the respondents faced were technical difficulties, in particular poor internet connection and access to resources. The international scholarship also shares these concerns; e.g., Kryszak et al. (2022) emphasized the role of internet quality and household infrastructure as determinants of the equal teletherapy access especially in low-resource locations. The outset of intervention outcomes also depends on cultural aspects and the preparedness of a family. Recent qualitative research has shown that therapists must flex their communication and session content to meet linguistic and cultural diversity with remote therapy and why professional development in the area of cultural competence is so important (Leyser et al., 2021; Simacek et al., 2021).

General guidelines on teletherapy training were also approved, consistent with the current recommendations to expand training of professionals to include a wider range of content on

distance service finding and applying digital tools and devices (Peterson, 2025; Ghosh, 2025; Jesudass et al., 2025). The previous exposure and the ratio of ASD among a therapist caseload appeared as significant predictors of their satisfaction and perceived effectiveness, which also duplicates the findings of Rao et al. (2025) and proves the notion that specialized expertise is the cornerstone of successful telepractice. Notably, setting of work did not have a significant effect on either competence or satisfaction, which implies teletherapy can provide similar experiences in diverse situations in case sufficient infrastructure and preparation is available (Wright, 2025; Muttiah et al., 2025; Hill et al., 2025; Knobl et al., 2025; Hameed, 2025).

On sum, the study results reinforce the data that teletherapy is a viable and productive way of treating the speech and language needs of children with ASD on condition of reasonable technical, educational, and cultural exceptions. Living up to its full potential would require continued investment on therapist trainings, parent support programs, and on enhancement of the infrastructure. The continued advance in telehealth technology and the body of evidence in that regard promise a chance to reverse the existing adjustments in access and outcomes of children with ASD.

### **Conclusion**

Teletherapy represents a viable means of providing speech and language intervention to the children with Autism Spectrum Disorder (ASD). The current research shows that practitioners report benefits, primarily in terms of vocabulary development, the achievement of communication objectives, and effective exploitation of virtual resources, thus suggesting the potential of teletherapy to complement traditional face-to-face delivery. However, there are still difficulties to maintain child engagement, control behavioral problems in the remote setting, and develop the longevity of acquired skills. A parental engagement seems to be a critical efficacy predictor, but the variation in caregiver preparedness and confidence identifies the need to provide specific instruction and support. The quality of therapy is also affected by technical barriers, specifically unstable internet connections and restricted access to the necessary resources. Also, the amount of formal trainings among the participants or academically and professionally higher degrees, as well as the depth of the experience, significantly improve the satisfaction and confidence levels of therapists with this pattern of service delivery. In combination, these findings leave us convinced that teletherapy is a potential and feasible method of ASD treatment when sufficiently supplemented with good infrastructure, active involvement of the caregivers, and constant professional growth of the clinician.

### **Recommendation**

1. Provide formal teletherapy training programs for speech-language therapists to enhance their skills and confidence in delivering effective virtual interventions.
2. Increase support and guidance for parents to actively engage them in teletherapy, improving carryover of therapy goals and child outcomes.
3. Expand access to reliable technology and internet services for both therapists and families to minimize disruptions and ensure smooth delivery of teletherapy sessions.
4. Foster ongoing research and continuous evaluation of teletherapy practices to adapt interventions based on emerging evidence and the evolving needs of children with ASD and their families.

### **References**

Adedipe, D. T., & Walton, K. M. (2025). Telehealth Parent Training for Challenging Behavior in Children with Developmental Disabilities: A Systematic Review and Meta-Analysis. *Review Journal of Autism and Developmental Disorders*, 1-21.



- Alahmari, F. S., Alhabbad, A. A., Alshamrani, H. A., & Almuqbil, M. A. (2025). Effectiveness of social skills training interventions for children with autism spectrum disorder: A systematic review and meta-analysis. *Saudi Medical Journal*, 46(3), 226.
- Bradshaw, J., Wolfe, K., Hock, R., & Scopano, L. (2022). Advances in supporting parents in interventions for autism spectrum disorder. *Pediatric Clinics of North America*, 69(4), 645-656.
- Collins, I. M., Halter, F., Schächinger Tenés, L. T., Lieb, R., & Meyer, A. H. (2025). A Meta-Analysis of Applied Behavior Analysis-Based Interventions to Improve Communication, Adaptive, and Cognitive Skills in Children on the Autism Spectrum. *Review Journal of Autism and Developmental Disorders*, 1-21.
- de Nocker, Y. L., & Toolan, C. K. (2023). Using telehealth to provide interventions for children with ASD: A systematic review. *Review Journal of Autism and Developmental Disorders*, 10(1), 82-112.
- Ghosh, S. S. (2025). Adaptive Learning Methods in Speech-Language Pathology: A Case Study Exploration of Transformative Practices in the Post-Covid Era. In *The Routledge Handbook of the Sociopolitical Context of Language Learning* (pp. 454-469). Routledge.
- Habibi, F., Sedaghatshoar, S., Attar, T., Shokoohi, M., Kiani, A., & Malek, A. N. (2025). Revolutionizing education and therapy for students with autism spectrum disorder: a scoping review of AI-driven tools, technologies, and ethical implications. *AI and Ethics*, 1-16.
- Hameed, Z. (2025). The Effects of Therapy and Parental Involvement on Social Skill Development in Children with Autism Spectrum Disorder. *ACADEMIA International Journal for Social Sciences*, 4(3), 1411-1428.
- Hao, Y., Du, Y., Zhang, S., Sun, L., Keene, G., & Ikuta, T. (2023). Effectiveness of telehealth social communication intervention on language skills among children with autism spectrum disorder: A systematic review and meta-analysis. *Review Journal of Autism and Developmental Disorders*, 1-18.
- Hill, J., Kulkarni, A., Moll, D., Meteyard, L., Shelley, L., Chugg, G., ... & Clegg, A. (2025). Economic Evaluations of Speech and Language Therapy Interventions: A Scoping Review. *International journal of language & communication disorders*, 60(4), e70091.
- Hussain, F., Rashid, A., Khan, M. A., Yousaf, R., Khan, M. S. G., Rehman, I., ... & Faridi, T. A. (2022). Opinion of speech language pathologist about teletherapy in treatment of autism spectrum disorder. *Pakistan BioMedical Journal*, 138-142.
- Jesudass, N., Ramkumar, V., Kumar, S., & Venkatesh, L. (2025). Parents' Perceptions Regarding Needs and Readiness for Tele-Practice Implementation Within a Public Health System for the Identification and Rehabilitation of Children with Hearing and Speech-Language Disorders in South India. *International Journal of Environmental Research and Public Health*, 22(6), 943.
- Kelson, E., & Dorstyn, D. (2025). Telehealth as a psychological intervention for caregivers of children with neurodevelopmental disorders: A systematic review with effect sizes. *Journal of Autism and Developmental Disorders*, 55(1), 43-58.
- Knobl, E., Renahan, K., Jiang, A., Phoenix, M., Di Rezze, B., & Campbell, W. (2025). Factors Influencing Telehealth Use in School-based Health Services: Secondary Analysis from a Scoping Review. *International Journal of Telerehabilitation*, 17(1), 6652.



- Kryszak, E. M., Albright, C. M., Fell, L. A., Butter, E. M., & Kuhlthau, K. A. (2022). Clinician perspectives on telehealth assessment of autism spectrum disorder during the COVID-19 pandemic. *Journal of Autism and Developmental Disorders*, 52(12), 5083-5098.
- Lawton, A. (2025). Connecting Communities: The Role of Teletherapy in School Speech-Language Services. *West Coast University Journal of Health and Wellness*, 2(1).
- Leyser, M., Schieltz, K., Strathearn, L., Cooper-Brown, L., McBrien, D., & O'Brien, M. (2021). Telehealth in the field of developmental-behavioral pediatrics: advantages, challenges, and future perspectives. *Journal of Developmental & Behavioral Pediatrics*, 42(3), 240-244.
- Mills, J., & Duffy, O. (2025). Speech and Language Therapists' Perspectives of Virtual Reality as a Clinical Tool for Autism: Cross-Sectional Survey. *JMIR Rehabilitation and Assistive Technologies*, 12, e63235.
- Muttiah, N., Tönsing, K. M., Blackwell, A., Bornman, J., Armendariz, K., & Drager, K. D. (2025). Speech-language therapists perspectives on tele-augmentative and alternative communication (tele-AAC) across three low-and middle-income countries. *Augmentative and Alternative Communication*, 1-12.
- Orel, M., & Licardo, M. (2025). Systematic review of telepractice for early intervention with families of children with autism spectrum disorder. *Advances in Autism*, 11(1), 19-37.
- Peterson, A. K. (2025). Across time and place: A focused review of telepractice in ASHA journals. *Communication Disorders Quarterly*, 46(3), 127-134.
- Rao, N. P., Padickaparambil, S., & Tiwari, S. (2025). Speech-Language Pathologists' Experiences on Telepractice in Children With Autism Spectrum Disorder in India—A Qualitative Study. *International Journal of Language & Communication Disorders*, 60(4), e70072.
- Reddy, K. J. (2025). Speech and Language Rehabilitation Technologies. In *Innovations in Neurocognitive Rehabilitation: Harnessing Technology for Effective Therapy* (pp. 211-229). Cham: Springer Nature Switzerland.
- Roitsch, J., Moore, R. L., & Horn, A. L. (2021). Lessons learned: What the COVID-19 global pandemic has taught us about teaching, technology, and students with autism spectrum disorder. *Journal of Enabling Technologies*, 15(2), 108-116.
- Rosas, J. A., Randazzo, M., Goral, M., Seiger-Gardner, L., & Shafer, V. (2025). Reflecting on Teletherapy and Its Role in Postpandemic Service Provision for School-Aged Children. *Perspectives of the ASHA Special Interest Groups*, 1-17.
- Shin, Y., Park, E. J., & Lee, A. (2025). Early intervention for children with developmental disabilities and their families via telehealth: Systematic review. *Journal of Medical Internet Research*, 27, e66442.
- Shnitzer, H., Chan, J., Yau, T., McIntyre, M., Andreoli, A., Kua, A., ... & Munce, S. (2025). The Safety of Telerehabilitation: Systematic Review. *JMIR Rehabilitation and Assistive Technologies*, 12, e68681.
- Simacek, J., Elmquist, M., Dimian, A. F., & Reichle, J. (2021). Current trends in telehealth applications to deliver social communication interventions for young children with or at risk for autism spectrum disorder. *Current Developmental Disorders Reports*, 8(1), 15-23.
- Soto-Ramírez, N., Xu, Y., Pace, S., Giles, T., Hung, P., & Weist, M. D. (2025). Foster caregiver perceptions of facilitators and barriers of telemental health services for children in foster care: a qualitative study. *Journal of Public Child Welfare*, 1-25.



- Spain, D., Stewart, G. R., Mason, D., Milner, V., Fairhurst, B., Robinson, J., ... & Happe, F. (2022). Telehealth autism diagnostic assessments with children, young people, and adults: qualitative interview study with England-wide multidisciplinary health professionals. *JMIR mental health*, 9(7), e37901.
- Tan-MacNeill, K. M., Smith, I. M., Johnson, S. A., Chorney, J., & Corkum, P. (2021). A systematic review of online parent-implemented interventions for children with neurodevelopmental disorders. *Children's Health Care*, 50(3), 239-277.
- Valentine, A. Z., Hall, S. S., Young, E., Brown, B. J., Groom, M. J., Hollis, C., & Hall, C. L. (2021). Implementation of telehealth services to assess, monitor, and treat neurodevelopmental disorders: systematic review. *Journal of Medical Internet Research*, 23(1), e22619.
- Wagner, L., Foster, T., Bonnet, K., Spitler, A. K., Schlundt, D., & Warren, Z. (2025). Identifying the unique determinants influencing rural families' engagement with an existing tele-assessment approach for autism identification: A qualitative study. *Autism*, 29(6), 1458-1468.
- White, S. W., Stoppelbein, L., Scott, H., & Spain, D. (2021). It took a pandemic: Perspectives on impact, stress, and telehealth from caregivers of people with autism. *Research in developmental disabilities*, 113, 103938.
- Wright, M. (2025). Perspectives on Physical Therapy, Occupational Therapy, and Speech Language Pathology Services Best Suited for Telehealth Delivery: Implications for US Telehealth Policy.
- Yosep, I., Prayogo, S. A., Kohar, K., Andrew, H., Mardhiyah, A., Amirah, S., & Maulana, S. (2022). Managing autism spectrum disorder in the face of pandemic using internet-based parent-mediated interventions: a systematic review of randomized controlled trials. *Children*, 9(10), 1483.
- Hryntsiv, M., Zamishchak, M., Bondarenko, Y., Suprun, H., & Dushka, A. (2025). Approaches to speech therapy for children with autism spectrum disorders (ASD). *Int. J.*, 14(1), 33.