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PERCEIVED ACCESSIBILITY, ACCEPTABILITY, AND EFFECTIVENESS OF COMMUNICATION INTERVENTIONS FOR CHILDREN WITH AUTISM SPECTRUM DISORDER: EVIDENCE FROM A PARENT-REPORTED QUANTITATIVE STUDY

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ABSTRACT

Communication difficulties are a central concern for children with autism spectrum disorder (ASD), but the usefulness of communication-focused interventions depends on more than their clinical availability. This study examined parents' perceptions of the accessibility, acceptability, and perceived effectiveness of communication interventions for children with ASD in Punjab, Pakistan. A quantitative cross-sectional survey design was used, and data were collected from 200 parents of children with ASD receiving speech therapy, occupational therapy, Applied Behavior Analysis, or other communication-related services in selected autism centers across Punjab. The questionnaire measured six domains: access and awareness, early experiences and initial services, observed progress and intervention effectiveness, family involvement and home strategies, barriers and cultural context, and recommendations for service improvement. Descriptive statistics, independent-samples t-test, and one-way ANOVA were used for analysis. The findings showed a moderate pattern of parental perceptions across most domains, indicating that services were available to some extent but remained inconsistent in quality, coordination, and outcome focus. The lowest mean was reported for observed progress and intervention effectiveness, suggesting limited and uneven improvement in children's functional communication. Urban and rural parents differed significantly only in family involvement and home strategies, with urban parents reporting stronger support. Annual household income did not significantly influence any domain, indicating that barriers were not only financial but also structural and systemic. However, the study was limited by its cross-sectional design, reliance on parent-reported data, and inclusion of only parents connected with selected autism centers. The study concludes that ASD communication intervention services in Punjab require stronger referral pathways, trained professionals, parent coaching, rural outreach, individualized planning, and government-supported service models.

Keywords: *Autism Spectrum Disorder, communication intervention, parents' perceptions, accessibility, acceptability, Punjab, ASD services.*

Introduction

Autism Spectrum Disorder (ASD) is a neurodevelopmental condition marked by persistent difficulties in social communication and interaction, along with restricted and repetitive behaviors (Lord et al., 2018). For many children

with ASD, communication difficulties extend beyond delayed speech and may affect requesting, understanding instructions, eye contact, joint attention, social interaction, and regulation of frustration. These impairments often become the main reason parents seek therapeutic support and are central to children's participation in family, school, and community life (Lord et al., 2018; Zwaigenbaum et al., 2020).

International evidence supports the use of structured and early communication-focused interventions, including speech and language therapy, behavioral interventions, naturalistic developmental behavioral interventions, parent-mediated programs, visual supports, and augmentative and alternative communication strategies (Schreibman et al., 2015; Wong et al., 2015). However, evidence-based interventions are meaningful only when families can access, afford, understand, accept, and continue them. Therefore, evaluating ASD services requires attention not only to what is clinically effective, but also to whether interventions are practically reachable and contextually suitable for families.

Accessibility is a key concern in ASD service provision. Levesque et al. (2013) emphasize that access involves awareness of services, ability to reach providers, affordability, and continued engagement with care. In the context of Punjab, parents may face delayed service entry, high therapy costs, travel difficulties, shortage of trained professionals, and limited awareness of available intervention options. These barriers may reduce the continuity and effectiveness of communication-focused services, even where such services exist.

Acceptability is equally important because communication intervention depends heavily on family participation. Proctor et al. (2011) describe acceptability as the perceived suitability and satisfaction with an intervention. For parents of children with ASD, acceptability may depend on whether therapy goals are clearly explained, whether home-based strategies are practical, whether professionals respect family language and culture, and whether parents feel actively involved in the intervention process. Parent-mediated approaches can strengthen communication development when caregivers are guided to use strategies in natural daily routines (Oono et al., 2013). Parents' perceptions of effectiveness provide valuable evidence because parents observe whether therapeutic gains appear in everyday life. Improvements in requesting, eye contact, shared attention, understanding verbal instructions, social interaction, and reduced communication-related frustration are meaningful indicators of functional progress. Although research shows that ASD interventions can improve communication outcomes, effectiveness varies according to intervention type, implementation quality, family involvement, and child characteristics (Sandbank et al., 2020; Schreibman et al., 2015). Accordingly, this article examines the accessibility, acceptability, and perceived effectiveness of communication interventions for children with ASD from parents' perspectives in Punjab, Pakistan. Using a parent-based quantitative approach, it aims to generate evidence on service access, early post-diagnosis experiences, perceived child progress, family involvement, cultural suitability, and systemic barriers. Such evidence is important for developing ASD services that are not only evidence-based, but also affordable, family-centered, culturally responsive, and sustainable within the Punjabi context.

Objectives of the Study

1. To assess parents' perceptions of the accessibility and awareness of communication-focused interventions for children with ASD in Punjab.
2. To examine parents' experiences of accessing initial therapeutic services after ASD diagnosis.
3. To evaluate parents perceived effectiveness of communication-focused interventions in improving children's communication and social interaction.
4. To identify key family, cultural, and systemic factors influencing the acceptability and continuation of communication-focused interventions.

Questions of the study

1. What are parents' perceptions of the accessibility and awareness of communication-focused interventions for children with ASD in Punjab?
2. What are parents' experiences of accessing initial therapeutic services after their child's ASD diagnosis?
3. How do parents perceive the effectiveness of communication-focused interventions in improving their children's communication and social interaction?
4. What family, cultural, and systemic factors influence the acceptability and continuation of communication-focused interventions for children with ASD in Punjab?

Conceptual Framework of the Study

The conceptual framework assumes that parents perceived effectiveness of ASD communication interventions in Punjab is shaped not only by service availability but also by access, affordability, professional guidance, parental involvement, cultural acceptability, and continuity of care. It is guided by Levesque, Harris, and Russell's healthcare access model, which views access as the ability to identify, seek, reach, afford, and engage with services; this supports the study's focus on awareness, referral, affordability, trained professionals, travel feasibility, and service continuity (Levesque et al., 2013). It also draws on Proctor et al.'s implementation outcomes framework, particularly acceptability, which explains whether families perceive an intervention as suitable, practical, relevant, and sustainable (Proctor et al., 2011). The framework is further supported by family-centered and parent-mediated ASD intervention literature, which shows that communication outcomes improve when parents receive coaching, modelling, feedback, and follow-up instead of being left to manage intervention independently (Oono et al., 2013; Schreibman et al., 2015). Therefore, access and awareness, early service experiences, family involvement, and cultural/contextual barriers are treated as factors influencing intervention acceptability, continuation, and parents perceived effectiveness. Since the study uses a cross-sectional design, these relationships are understood as theoretically informed associations rather than direct causal effects.

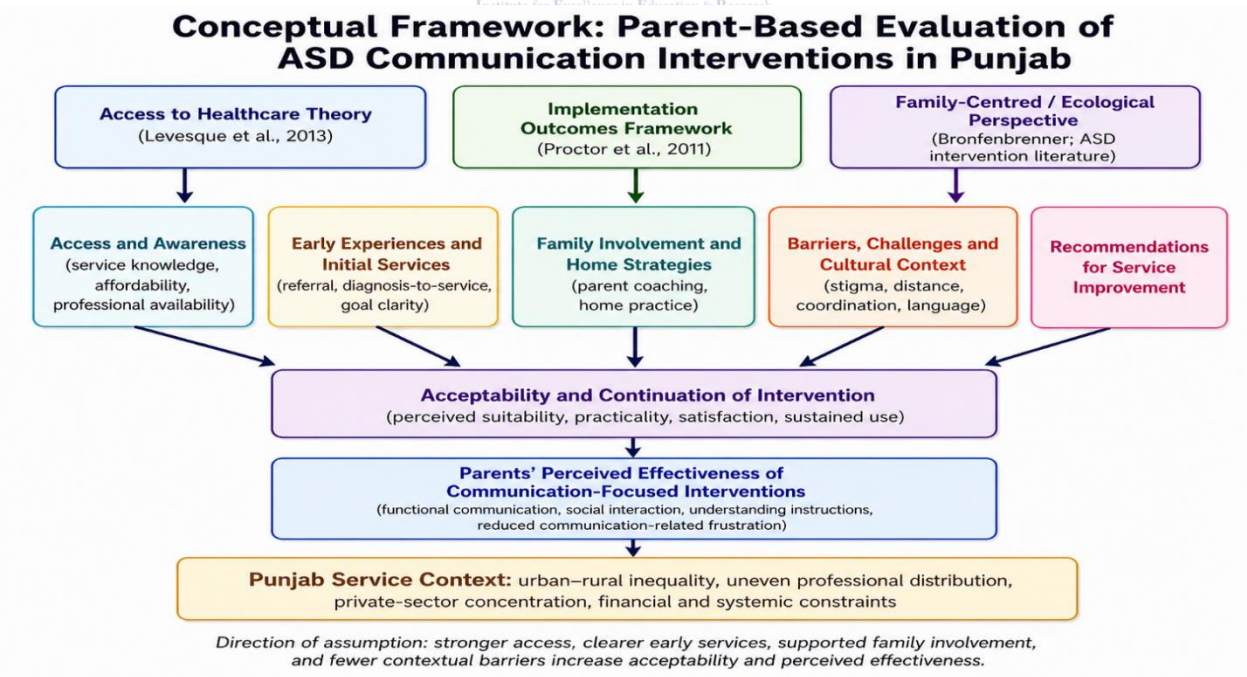

Figure 1: Conceptual Framework

Statement of the Problem

Communication difficulties are a core feature of Autism Spectrum Disorder (ASD), affecting children's ability to request, understand instructions, share attention, interact socially, and participate in daily life (Lord et al., 2018; Zwaigenbaum et al., 2020). Although evidence-based communication interventions such as speech-language therapy, behavioral intervention, parent-mediated programs, visual supports, and AAC are internationally recommended, their effectiveness in practice depends on whether families can access, afford, understand, and continue these services (Schreibman et al., 2015; Wong et al., 2015). In Pakistan, families of children with ASD often encounter delayed identification, limited awareness, shortage of trained professionals, high therapy costs, travel difficulties, and social stigma. South Asian evidence also highlights the need for parent-mediated and culturally responsive intervention models, particularly in settings where specialist services are limited (Rahman et al., 2016). In Punjab, many services are concentrated in private or urban settings, making regular therapy difficult for low-income and rural families. Despite growing recognition of ASD, limited quantitative evidence exists on how parents perceive the accessibility, acceptability, and effectiveness of communication-focused interventions. This lack of evidence restricts the development of affordable, family-centered, and contextually appropriate ASD services in Punjab.

Justification / Rationale of the Study

A parent-based quantitative investigation is important because parents are central to the intervention pathway of children with ASD. They are usually responsible for recognizing early communication concerns, seeking diagnosis, selecting therapy services, bearing financial and travel costs, implementing home-based strategies, and observing whether intervention leads to meaningful changes in everyday communication. Their perspectives can therefore provide practical evidence about whether available services are timely, understandable, culturally suitable, and useful in real family contexts. This study is also justified because communication intervention models developed in high-income countries may not fully match the family, cultural, and resource conditions of South Asian settings. Evidence from Pakistan indicates gaps in professional awareness and service systems, while regional research emphasizes the need to adapt ASD interventions to local realities rather than applying external models without contextual modification (Imran et al., 2011; Divan et al., 2015). By examining parents' views on accessibility, acceptability, and perceived effectiveness, this study can support the planning of affordable, family-centered, culturally responsive, and sustainable communication services for children with ASD in Punjab.

Literature Review

Communication development in children with Autism Spectrum Disorder (ASD) is highly variable, ranging from delayed speech to limited functional communication, weak social reciprocity, poor joint attention, and difficulty using language meaningfully. This shows that ASD-related communication difficulties are not limited to speech delay but also affect children's ability to express needs, interact socially, learn, and regulate frustration. Eigsti et al. (2011) explain that language development in ASD follows uneven pathways, with vocabulary, grammar, pragmatics, and social language developing at different rates. Therefore, intervention should focus not only on spoken language but also on functional and social communication in daily contexts.

A key concern is that some children with ASD remain minimally verbal despite receiving services. Tager-Flusberg and Kasari (2013) note that minimally verbal children have received limited research attention, although their communication needs are often substantial. This is important because parents may judge therapy effectiveness through practical gains such as requesting, following instructions, using gestures, reducing frustration, and engaging with family members. Evidence also shows that early social-communication skills can improve when interventions target joint attention, imitation, play, and shared engagement. Kasari, Freeman, and Paparella (2006) found that joint attention

and symbolic play interventions support early communication development, but such approaches require trained professionals, structured delivery, and continuity of care.

Parent-mediated interventions are also important because they extend communication support into natural home routines. Wetherby et al. (2014) found that parent-implemented social intervention improved communication and social outcomes in toddlers with ASD. Similarly, Pickles et al. (2016) reported sustained benefits of parent-mediated social communication therapy, especially in parent-child interaction and reduced autism-related symptom severity. However, these models should not place the full burden on families. They require professional coaching, follow-up, culturally understandable guidance, and realistic expectations, particularly in contexts where parents face financial, emotional, and social pressures.

For children with limited speech, visual and augmentative communication systems are essential. Howlin et al. (2007) found that the Picture Exchange Communication System (PECS) increased child-initiated communication, particularly requesting. Yoder and Stone (2006) also showed that child characteristics influence which communication intervention works best. These findings support individualized intervention rather than a single fixed model. Behavioral interventions have also shown benefits. Reichow, Hume, Barton, and Boyd (2018) reported that early intensive behavioral intervention can improve adaptive behavior, intelligence, and communication in some children. However, outcomes depend on intervention quality, intensity, therapist competence, family involvement, and child-specific needs. Fuller and Kaiser (2020) similarly found that early intervention can improve social communication, although outcomes vary across approaches and implementation conditions.

International literature shows that early identification, parent-mediated intervention, naturalistic developmental behavioral interventions, and other evidence-based practices can improve ASD social communication outcomes, but much of this evidence comes from high-income countries or controlled settings (Hyman et al., 2020; Sandbank et al., 2020; Steinbrenner et al., 2020). In Pakistan and the wider South Asian context, studies have mainly highlighted delayed diagnosis, stigma, low awareness, shortage of trained professionals, parental burden, and general service barriers (Khowaja et al., 2015; Minhas et al., 2015; Rahman et al., 2016). However, limited quantitative evidence exists on parents' perceptions of the accessibility, acceptability, and perceived effectiveness of communication-focused ASD interventions in Punjab.

This study addresses that gap by providing parent-based quantitative evidence from Punjab. It shifts attention from whether ASD interventions are evidence-based in theory to whether they are reachable, affordable, culturally acceptable, family-supported, and useful in children's everyday communication. In this way, the study contributes locally relevant evidence for developing more accessible, family-centered, and sustainable ASD communication intervention services in Punjab.

Methodology

Research Design

This study used a quantitative cross-sectional survey design to examine parents' perceptions of the accessibility, acceptability, and perceived effectiveness of communication-focused interventions for children with Autism Spectrum Disorder (ASD) in Punjab. The design was appropriate because the study aimed to collect measurable data from parents regarding service access, early intervention experiences, family involvement, contextual barriers, and perceived communication progress.

Population and Sample

The target population included parents of children with ASD receiving early intervention services, such as speech therapy, occupational therapy, ABA, or other communication-focused interventions, in selected autism centers across Punjab. A total of 200 parents were recruited. Multi-stage cluster sampling was used: first, four divisions, Lahore, Gujranwala, Faisalabad, and Multan, were selected for geographical

representation; second, eight districts were selected, including Lahore, Sheikhupura, Gujranwala, Sialkot, Faisalabad, Sargodha, Multan, and Bahawalpur; third, nine autism centers were selected from an estimated 43 accessible centers using official records. Finally, parents were recruited through availability sampling, provided their child had ASD and was receiving intervention services at the selected center.

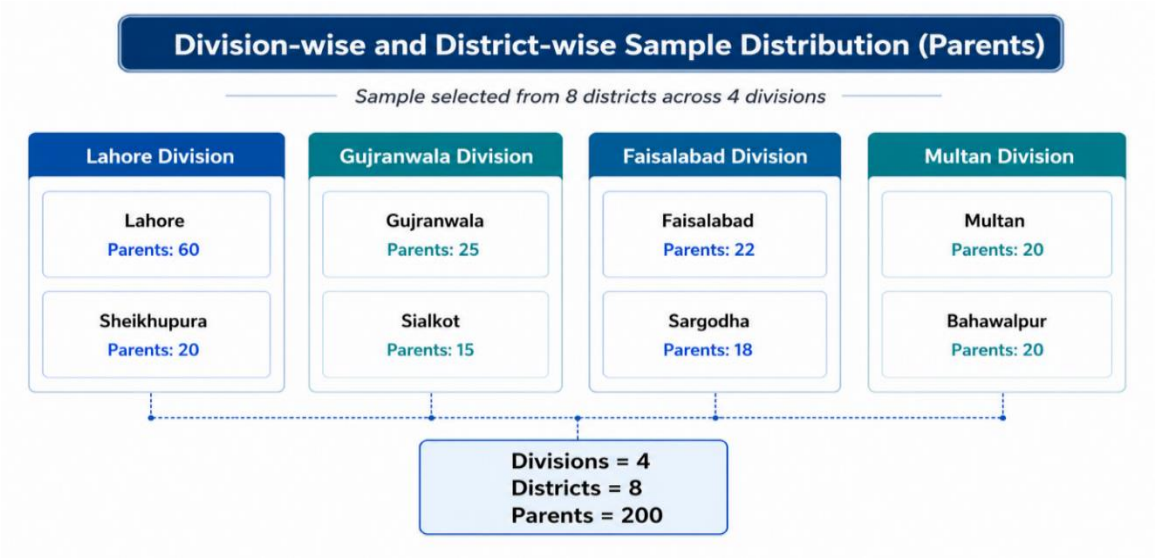

Figure 2: Distribution of sample across Divisions and Districts

Research Instrument

Data were collected through a structured parent questionnaire developed according to the study objectives. The questionnaire had two sections: demographic information and 21 Likert-scale items rated from 1 = Strongly Disagree to 5 = Strongly Agree. The demographic section included the child's age, age at diagnosis, primary mode of communication, parental education, household income, and area of residence. The Likert-scale section covered six domains: access and awareness, early experiences and initial services, perceived progress and service effectiveness, family involvement and home strategies, barriers and cultural context, and recommendations for service improvement. Before final analysis, experts in ASD intervention, speech-language therapy, special education, and research methodology reviewed the questionnaire for relevance, clarity, cultural appropriateness, and alignment with the study objectives. Based on their feedback, unclear and overlapping items were revised.

Construct validity and reliability were also examined. Exploratory Factor Analysis was applied after confirming the suitability of the data through the Kaiser–Meyer–Olkin measure and Bartlett's test of sphericity. The KMO value was .84, indicating good sampling adequacy, while Bartlett's test was significant, $\chi^2(210) = 8450.12$, $p < .001$, confirming that the data were appropriate for factor analysis. The factor loadings ranged from .655 to .884, supporting the six-domain structure of the questionnaire. Internal consistency reliability was tested on a pilot sample of 50 parents of children with ASD using Cronbach's alpha. The overall reliability coefficient was $\alpha = .862$, indicating high internal consistency among the 21 items. The mean response score was $M = 78.45$, with $SD = 10.59$ and variance of 112.34. Since alpha values above .70 are generally considered acceptable, the obtained value shows that the questionnaire was reliable for measuring the intended constructs (Cronbach, 1951; Tavakol & Dennick, 2011). Overall, the expert review, EFA results, KMO value, Bartlett's test, and Cronbach's alpha provide adequate evidence that the instrument was valid and reliable for assessing parents'

perceptions of ASD communication intervention services in Punjab.

Data Collection Procedure

Before data collection, formal permission was obtained from relevant authorities and selected centers. Parents were informed about the purpose of the study, voluntary participation, confidentiality, and academic use of the data. Questionnaires were administered directly in accessible centers, while Google Forms and facilitator-supported distribution were used in remote or less accessible areas. This multimodal approach improved participation and allowed parents from different geographical locations to be included.

Data Analysis

Quantitative data were analyzed using descriptive and inferential statistical techniques. Frequencies, percentages, means, and standard deviations were used to summarize demographic characteristics and parental responses. Reliability analysis was conducted to assess the internal consistency of the questionnaire domains. Exploratory Factor Analysis was used to examine the underlying factor structure of the instrument. Inferential statistics, including independent-samples t-tests and one-way ANOVA, were applied to identify differences in parents' responses across demographic variables such as residence, income level, parental education, child age, and age at diagnosis.

Limitations of the Study

This study acknowledges several limitations that should be considered when interpreting the findings. The cross-sectional survey design captured parents' perceptions at one point in time; therefore, causal relationships could not be established. The data were based on parent-reported responses, which may be influenced by recall bias, personal expectations, or satisfaction with services. The sample included only parents connected with selected autism centers in Punjab, so families without access to formal services may be underrepresented. Moreover, the study measured perceived effectiveness rather than direct clinical assessment of children's communication progress. Although the questionnaire showed good overall reliability, future research should report subscale reliability and include larger, more diverse samples.

Ethical Considerations

Ethical principles were strictly followed throughout the study. Participation was voluntary, and informed consent was obtained from all respondents. Parents were assured that their identities and responses would remain confidential and anonymous. The collected data were used only for academic and research purposes.

Results

The demographic profile shows that the sample mainly represents parents of younger children with ASD, especially those aged 3–5 years, which is a critical stage for early communication intervention. Many children were diagnosed between 2 and 3 years of age, suggesting some early identification; however, diagnosis at 6 years or later remains a concern because delayed diagnosis may limit timely therapeutic support.

Mothers formed the largest respondent group, reflecting their central role in caregiving and therapy-related decisions. However, this also indicates that the responsibility for managing intervention may fall more heavily on mothers. Although many parents were highly educated, most families belonged to lower- and middle-income groups, showing that awareness of ASD may not always lead to service access when affordability, travel costs, and long-term therapy expenses remain barriers. Urban and semi-urban families were more represented than rural families, suggesting that the findings may reflect families with relatively better access to ASD services. This also points to the possible underrepresentation of rural families due to limited diagnostic and therapeutic facilities. Since most children were minimally verbal or non-verbal, the sample clearly included children with significant communication support needs. Overall, the demographic pattern supports the relevance of the study while highlighting delayed diagnosis, financial constraints, unequal access, and serious communication challenges.

Factor-Wise Descriptive Findings

Parents' responses were organized under six broader survey factors in order to examine general patterns in their experiences rather than relying only on isolated item-level responses. This factor-wise approach provides a more meaningful understanding of how access, early service experiences, perceived child progress, family participation, contextual barriers, and future recommendations shape parental perceptions of ASD-related communication interventions in Punjab.

Table 1: Factor-Wise Descriptive Statistics of Parents' Perceptions of ASD Communication Interventions

Factor / Theme	No. of Items	Mean Range	Average Mean
Access and Awareness	4	2.59–3.42	3.13
Early Experiences and Initial Services	3	3.16–3.64	3.32
Observed Progress and Intervention Effectiveness	5	1.93–3.60	3.07
Family Involvement and Home Strategies	3	3.15–3.54	3.38
Barriers, Challenges, and Cultural Context	3	2.98–3.44	3.24
Recommendations and Reflections	3	2.93–3.98	3.59

The descriptive findings show a moderately positive but cautious view of parents' experiences with ASD communication services. Most factor means were slightly above neutral, suggesting that parents recognized some benefits of intervention but did not report strong satisfaction or highly effective service delivery. The highest mean for Recommendations and Reflections indicates parents' clear concern about service gaps and the need for more structured, accessible, and professionally guided interventions. The higher score for Family Involvement and Home Strategies shows active parental participation, but it may also reflect the burden placed on families when professional support is limited or irregular. Moderate scores for Early Experiences, Access and Awareness, and Barriers indicate problems with referral pathways, affordability, travel, stigma, trained professional availability, and service distribution. The lowest mean for Observed Progress and Intervention Effectiveness suggests that child progress was perceived as limited and inconsistent, showing that current services need to become more coordinated, individualized, and outcome-focused.

Urban–Rural Comparison Using Independent-Samples t-Test

An independent-samples t-test was applied to examine whether parents' perceptions of ASD communication interventions differed significantly between urban and rural respondents. The semi-urban group was excluded from this analysis because an independent-samples t-test is appropriate only when comparing two independent groups. This comparison was important because geographical location may influence families' access to therapy centers, trained professionals, parent guidance, and continuity of intervention.

Table 2: Urban–Rural Comparison of Parents' Perceptions Using Independent-Samples *t*-Test

Factor / Theme	Urban M ± SD	Rural M ± SD	t(df)	p-value
Access and Awareness	3.20 ± 0.66	2.96 ± 0.57	1.94 (67.13)	.056
Early Experiences and Initial Services	3.38 ± 0.63	3.22 ± 0.76	1.06 (49.43)	.293
Observed Progress and Intervention Effectiveness	3.04 ± 0.53	3.20 ± 0.50	-1.54 (61.22)	.128
Family Involvement and Home Strategies	3.49 ± 0.65	3.15 ± 0.57	2.80 (62.05)	.007

Factor / Theme	Urban M ± SD	Rural M ± SD	t(df)	p-value
Barriers, Challenges, and Cultural Context	3.23 ± 0.64	3.31 ± 0.86	-0.52 (44.37)	.607
Recommendations and Reflections	2.56 ± 0.75	2.56 ± 0.78	-0.04 (53.29)	.966

The independent-samples *t*-test showed no significant urban–rural differences for most domains, including Access and Awareness, $t(67.13) = 1.94$, $p = .056$; Early Experiences and Initial Services, $t(49.43) = 1.06$, $p = .293$; Observed Progress and Intervention Effectiveness, $t(61.22) = -1.54$, $p = .128$; Barriers, Challenges, and Cultural Context, $t(44.37) = -0.52$, $p = .607$; and Recommendations and Reflections, $t(53.29) = -0.04$, $p = .966$. This suggests that many challenges in ASD communication intervention, such as inconsistent guidance, limited coordination, and uncertain child progress, were shared by both urban and rural parents. However, a significant difference was found for Family Involvement and Home Strategies, where urban parents scored higher ($M = 3.49$, $SD = 0.65$) than rural parents ($M = 3.15$, $SD = 0.57$), $t(62.05) = 2.80$, $p = .007$. This indicates that urban families may have better access to therapist guidance, parent training, and structured home plans, while rural families may face greater structural barriers to continuing communication strategies at home.

Annual Income Comparison Using One-Way ANOVA

One-way ANOVA was applied to examine whether parents' perceptions of ASD-related communication intervention differed across four annual household income groups. This test was appropriate because the independent variable, annual household income, consisted of more than two groups, while the dependent variables were continuous factor scores. The analysis helped determine whether income level significantly influenced access, early service experiences, perceived child progress, family involvement, barriers, and recommendations.

Table 3: One-Way ANOVA of Survey Factors Across Annual Household Income Groups

Factors	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Access and Awareness	Between Groups	19.063	3	6.354	0.986	.400
	Within Groups	1262.892	196	6.443		
	Total	1281.955	199			
Early Experiences and Initial Services	Between Groups	16.302	3	5.434	1.370	.253
	Within Groups	777.518	196	3.967		
	Total	793.820	199			
Observed Progress and Intervention Effectiveness	Between Groups	2.460	3	0.820	0.130	.942
	Within Groups	1238.420	196	6.318		
	Total	1240.880	199			
Family Involvement and Home Strategies	Between Groups	2.852	3	0.951	0.228	.877
	Within Groups	816.648	196	4.167		
	Total	819.500	199			
Barriers, Challenges, and Cultural Context	Between Groups	11.969	3	3.990	0.857	.464
	Within Groups	912.031	196	4.653		
	Total	924.000	199			

Factors	Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Recommendations and Reflections	Between Groups	11.300	3	3.767	0.724	.539
	Within Groups	1019.295	196	5.200		
	Total	1030.595	199			

The one-way ANOVA showed that annual household income did not significantly differentiate parents' perceptions across any of the six ASD communication intervention factors. Access and Awareness was non-significant, $F(3,196) = 0.986$, $p = .400$, indicating that parents across income groups reported similar access to information, professionals, and therapy options. Early Experiences and Initial Services also did not differ significantly, $F(3,196) = 1.370$, $p = .253$, suggesting that post-diagnosis support, service availability, professional explanation, and clarity of therapy goals were broadly similar across income levels. This points to wider weaknesses in early intervention pathways rather than problems limited to lower-income families.

Observed Progress and Intervention Effectiveness was also non-significant, $F(3,196) = 0.130$, $p = .942$, showing that higher income did not necessarily lead to better perceived communication outcomes. This suggests that intervention quality, consistency, individualization, and professional expertise may matter more than affordability alone. Family Involvement and Home Strategies, $F(3,196) = 0.228$, $p = .877$, and Barriers, Challenges, and Cultural Context, $F(3,196) = 0.857$, $p = .464$, were also non-significant, indicating that parents across income groups carried similar home responsibilities and faced shared barriers such as stigma, weak coordination, cultural or linguistic mismatch, and limited continuity of care. Recommendations and Reflections likewise showed no significant income-based difference, $F(3,196) = 0.724$, $p = .539$, meaning that parents from all income groups expressed similar concerns about the need for better, affordable, coordinated, and government-supported ASD communication services.

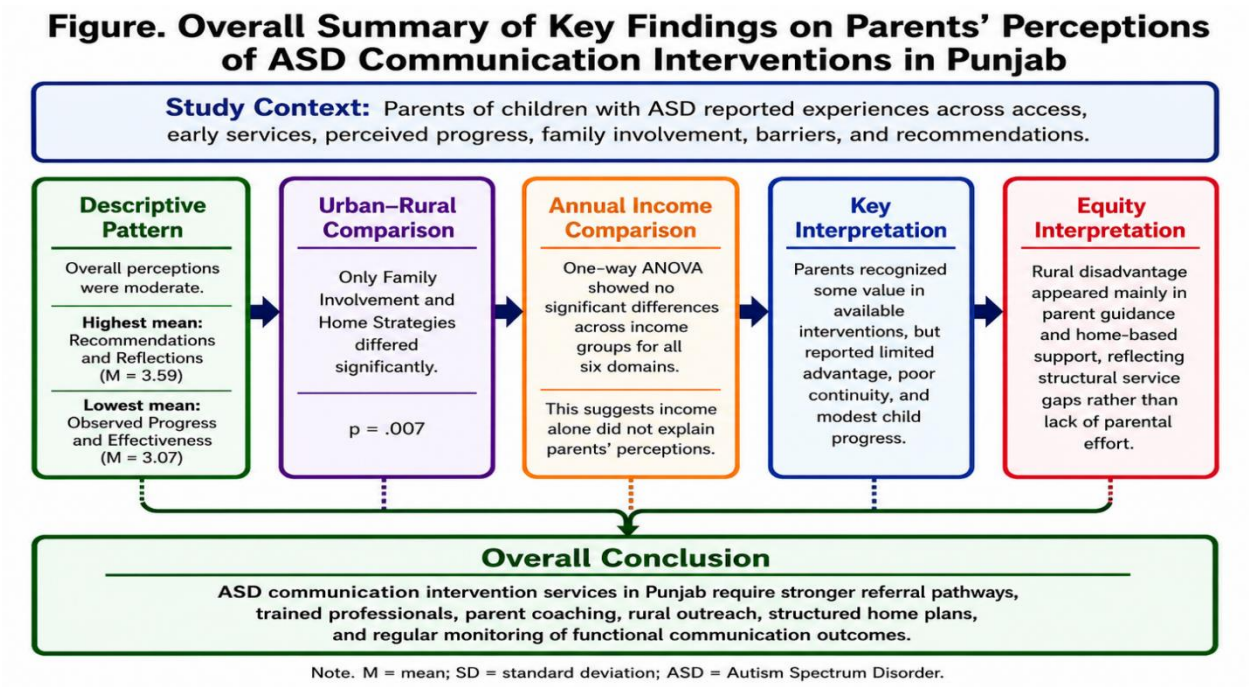

Figure 3: Summary of Key findings

Discussion

The findings show a cautious picture of parents' perceptions of ASD communication interventions in Punjab. Many children were young, minimally verbal, or non-verbal, confirming the need for early and structured support. However, delayed diagnosis indicates that some children still enter services late, although early recognition, developmental monitoring, and timely referral are essential for improving communication, social interaction, and adaptive functioning (Hyman et al., 2020). The factor-wise results showed moderate scores, meaning parents recognized some benefits but also reported gaps in access, continuity, coordination, and measurable progress. Evidence-based practices such as visual supports, functional communication training, naturalistic intervention, parent-implemented intervention, prompting, reinforcement, and social skills training are recommended for ASD (Steinbrenner et al., 2020). The findings suggest that these practices may not be consistently implemented through structured and outcome-focused plans.

Observed progress and intervention effectiveness showed the weakest pattern, indicating limited and uneven improvement. This supports Sandbank et al. (2020), who note that ASD outcomes depend on child characteristics, intervention quality, dosage, therapist competence, and outcome measurement. Therefore, interventions in Punjab should focus on functional goals such as requesting, understanding instructions, joint attention, social communication, visual supports, and reduced frustration. Parents, especially mothers, played a major role in home-based communication support. However, parent involvement should not replace professional services. Parent-mediated intervention requires coaching, modelling, feedback, and follow-up, while NICE (2021) emphasizes family-centered support adapted to the child's needs. Thus, high family involvement may reflect both parental commitment and pressure caused by limited professional support.

The urban–rural comparison showed that only family involvement and home strategies were significantly higher among urban parents. This suggests that rural families may have fewer opportunities for therapist guidance, parent training, structured home plans, and follow-up. This aligns with WHO and UNICEF (2023), which link developmental disability challenges with weak systems, inaccessible services, and inadequate family support. Income did not significantly affect perceptions across the six domains. This shows that affordability matters, but service problems are broader than income alone. Families across income groups may face similar barriers when services are fragmented, poorly coordinated, or lack trained professionals, supporting the health equity view that access depends on service organization, distribution, and delivery (WHO, 2022).

Conclusion

The findings of this study show that parents' experiences of communication-focused interventions for children with ASD in Punjab are neither wholly negative nor strongly satisfactory. Parents reported some level of access to services, early therapeutic support, family involvement, and observed child progress; however, the overall pattern remained moderate. This indicates that services are available to some extent, but they are not yet sufficiently consistent, coordinated, accessible, or outcome-focused. The relatively lower score for observed progress and intervention effectiveness is particularly important, as it suggests that many children may not be receiving the level of individualized and sustained communication support needed for meaningful improvement in everyday functioning.

The study also shows that barriers to ASD communication intervention are broader than income alone. The one-way ANOVA results indicated no significant differences across household income groups, suggesting that families from different financial backgrounds may face similar difficulties in accessing and sustaining effective services. However, the urban–rural comparison revealed a significant difference in family involvement and home strategies, with urban parents reporting stronger support than rural parents. This highlights a major service equity issue: rural families may be willing to

support their children but may lack structured professional guidance, parent training, and follow-up support. Overall, the study concludes that ASD communication services in Punjab require system-level improvement through early diagnosis, trained professionals, parent-centered intervention, rural outreach, culturally responsive practices, and stronger government support.

Recommendations

The study recommends a structured ASD screening and referral pathway across pediatric clinics, hospitals, schools, and community health centers, as some children were diagnosed late and many were minimally verbal or non-verbal. After diagnosis, families should be directly linked with speech-language therapy, behavioral intervention, occupational therapy, special education support, and parent counselling to avoid delays in communication intervention.

ASD communication services should be more affordable, coordinated, and publicly supported across Punjab. Since income-based differences were not significant, the problem appears to be broader than affordability alone and also relates to service availability, continuity, quality, and professional guidance. Parent coaching should be strengthened because family involvement was relatively high, indicating that parents, especially mothers, carry major responsibility at home. Therapists should clearly explain therapy goals, expected outcomes, and home-practice strategies such as requesting, shared attention, play-based communication, visual supports, AAC, and behavior regulation.

Rural families require targeted support because urban parents showed significantly better family involvement and home-strategy use. District-level ASD clinics, mobile therapy units, teletherapy, and community-based parent guidance can help reduce this gap. Interventions should be individualized and regularly monitored because parents reported the weakest scores for observed progress and intervention effectiveness. Progress should be assessed through measurable outcomes such as functional communication, understanding instructions, requesting, shared attention, social interaction, and reduced frustration.

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