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BRIDGING THE TRANSITION GAP: SUPPORT SYSTEMS, SELF-DETERMINATION, AND ADULT PARTICIPATION AMONG INDIVIDUALS WITH AUTISM AND INTELLECTUAL DISABILITIES IN PUNJAB, PAKISTAN

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KEYWORDS

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ABSTRACT

Transition to adulthood is a critical developmental stage for individuals with Autism Spectrum Disorder (ASD) and Intellectual Disabilities (ID), involving changes in education, employment, independent living, social participation, and access to adult support systems. However, evidence regarding transition outcomes and support needs among individuals with ASD and ID remains limited in Pakistan. This study examined functional outcomes, transition readiness, support needs, and contextual factors influencing adulthood transition among individuals with ASD and ID in Punjab, Pakistan. A sequential explanatory mixed-methods design was employed. The quantitative phase included 150 individuals with ASD and/or ID aged 16–40 years recruited from special education institutions and rehabilitation settings across Punjab. Data were collected using the researcher-developed Transition Outcomes and Support Needs Questionnaire (TOSNQ), which demonstrated excellent internal consistency reliability (Cronbach's α = .932). Quantitative data were analyzed using descriptive statistics, ANOVA, and multiple linear regression, followed by qualitative exploration through focus group discussions with parents/caregivers and disability professionals. Qualitative data were analyzed using reflexive thematic analysis. Findings indicated moderate transition readiness, self-determination, and ongoing support requirements, with strong family support but limited access to formal adult services. Transition readiness differed significantly across disability severity levels, and regression analysis showed that service access, family support, educational status, age, and disability severity significantly predicted transition readiness, explaining 55.1% of variance. Qualitative findings identified four themes: gaps in transition planning, family as primary support, barriers to adult participation, and emerging self-determination. The findings highlight that transition outcomes are shaped by interactions between individual abilities and environmental conditions. Coordinated, person-centered transition frameworks integrating education, rehabilitation, employment services, family empowerment, and community-based supports are needed to promote meaningful adult participation among individuals with ASD and ID in Pakistan.

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Introduction

Transition to adulthood is a critical developmental period involving substantial changes in education, employment, independent living, social participation, and access to adult support systems (World Health [WHO], 2022). For individuals with Autism Spectrum Disorder (ASD) and Intellectual Disabilities (ID), this transition is often more complex because difficulties related to adaptive functioning, communication, self-determination, and participation may continue across the lifespan (American Psychiatric Association [APA], 2022; Schalock et al., 2021). Research indicates that individuals with developmental disabilities require structured transition planning that addresses personal abilities, environmental supports, and opportunities for meaningful participation in adult roles (Šiška et al., 2025; Shogren et al., 2017). Effective transition planning is therefore considered a critical component of lifelong disability support rather than a short-term educational activity (WHO, 2022; United Nations, 2021).

The transition process for individuals with ASD and IDD involves movement from child-centered services toward adult-oriented systems that emphasize autonomy, employment, community inclusion, and quality of life (White et al., 2025). However, many young adults with developmental disabilities experience reduced access to formal services after completing secondary education, resulting in discontinuity between childhood intervention and adult support systems (Roux et al., 2021; Šiška et al., 2025). Reviews of transition research have identified persistent gaps in coordinated planning, particularly related to employment preparation, independent living skills, and involvement of individuals with disabilities in decision-making processes (Mazzotti et al., 2021; White et al., 2025). These challenges highlight the importance of examining transition outcomes from a multidimensional perspective that includes individual functioning, social participation, and environmental support requirements (WHO, 2022; Schalock et al., 2021).

Functional outcomes represent a central indicator of successful transition because they reflect an individual's ability to participate in everyday activities, manage personal needs, communicate effectively, and engage within community environments (Tassé et al., 2016). Adaptive functioning, which includes conceptual, social, and practical skills, is considered a key determinant of adult independence among individuals with intellectual and developmental disabilities (Tassé et al., 2016; Sparrow et al., 2016). Research demonstrates that adaptive functioning is strongly associated with adult participation outcomes and may provide more meaningful information regarding support requirements than diagnostic classification alone (Bal et al., 2019; Schalock et al., 2021). Therefore, assessment of functional outcomes is essential for identifying strengths, limitations, and individualized supports required during transition to adulthood (WHO, 2022).

Individuals with ASD and IDD frequently experience challenges in independent living skills, including self-care, decision-making, community mobility, and social participation (Krauss et al., 2018; Bal et al., 2019). Difficulties in these areas may restrict opportunities for employment, social relationships, and community inclusion, particularly when appropriate environmental

accommodations are unavailable (WHO, 2022; Shogren et al., 2020). Evidence suggests that independence among individuals with developmental disabilities is influenced not only by individual abilities but also by access to skill-building opportunities, family expectations, educational preparation, and availability of community-based supports (Shogren et al., 2017; Schalock et al., 2021). Consequently, transition research increasingly emphasizes the interaction between functional abilities and contextual factors rather than focusing exclusively on disability-related limitations (WHO, 2022).

Employment and vocational participation represent another major dimension of adulthood transition because meaningful work contributes to economic participation, social identity, self-determination, and quality of life (Fong et al., 2021). However, young adults with ASD and IDD experience substantially lower employment participation compared with their non-disabled peers due to multiple individual and systemic barriers (Roux et al., 2013; Fong et al., 2021). Studies have identified barriers including limited vocational preparation, insufficient workplace accommodations, employer misconceptions, and inadequate transition-to-work programs (Ghanouni et al., 2022; Traina et al., 2023). Evidence from systematic reviews indicates that individualized vocational interventions, supported employment, workplace training, and collaboration between rehabilitation providers and employers can improve employment outcomes for individuals with ASD and IDD (Fong et al., 2021; Traina et al., 2023).

Despite evidence supporting vocational interventions, most transition research has been conducted in high-income countries where structured disability services and employment support systems are more established (Šiška et al., 2025). In low- and middle-income countries, including Pakistan, limited research has examined how individuals with ASD and IDD experience the transition from education to adulthood within different cultural, economic, and service contexts (WHO, 2022; United Nations, 2021). The absence of evidence from these settings limits understanding of culturally appropriate transition models and creates challenges for developing effective disability policies and services (Šiška et al., 2025).

Family support is a significant determinant of transition outcomes for individuals with ASD and IDD because families frequently provide assistance with daily living, decision-making, healthcare management, and social participation (Marsack & Perry, 2018). Parents and caregivers often remain the primary source of support during adulthood, particularly in contexts where formal disability services and community-based support systems are limited (WHO, 2022). Research indicates that families experience uncertainty regarding their child's future independence, employment opportunities, financial security, and availability of adult services during the transition period (Taylor et al., 2021; Nicholas et al., 2019). These concerns may be intensified in cultures where lifelong family caregiving is the predominant support model and where independent living options for individuals with disabilities are limited (Marsack & Perry, 2018; United Nations, 2021).

The perspectives of individuals with ASD and IDD themselves are increasingly recognized as essential in transition research because self-determination and participation in decision-making are associated with improved adult outcomes (Shogren et al., 2017\). Self-determination includes the ability to make choices, set goals, advocate for personal needs, and participate actively in decisions affecting one's life (Wehmeyer et al., 2019). However, many transition programs continue to rely primarily on professional and caregiver perspectives, with limited inclusion of individuals with disabilities in research and planning processes (White et al., 2025). Including the voices of individuals with ASD and IDD alongside families and professionals provides a more comprehensive understanding of transition experiences and support requirements (Crompton & Bond, 2022).

The ecological context surrounding individuals with ASD and IDD significantly influences their transition outcomes. The International Classification of Functioning, Disability and Health (ICF) emphasizes that disability outcomes result from interactions between individual functioning and environmental factors, including social attitudes, institutional systems, accessibility, and available support services (WHO, 2022). Environmental barriers such as limited vocational programs, inadequate professional training, lack of inclusive employment opportunities, and insufficient community-based services may restrict participation regardless of individual abilities (United Nations, 2021). Therefore, examining contextual barriers and facilitators is essential for understanding why some individuals achieve successful transitions while others experience restricted participation in adulthood (Schalock et al., 2021).

In South Asian countries, including Pakistan, disability research has historically focused more on childhood identification, educational access, and family experiences rather than adulthood outcomes (WHO, 2022). Research from Pakistan indicates that families of children with ASD often encounter delayed diagnosis, limited professional resources, stigma, and difficulties accessing appropriate intervention services (Haq et al., 2012; Imran et al., 2011). Studies examining disability services in Pakistan have highlighted challenges related to limited rehabilitation infrastructure, shortage of trained professionals, and unequal access between urban and rural populations (United Nations, 2021; WHO, 2022). However, empirical evidence regarding transition outcomes, adult participation, employment readiness, and long-term support needs among individuals with ASD and IDD remains scarce.

Punjab provides an important context for examining transition outcomes among individuals with Autism Spectrum Disorder (ASD) and Intellectual Disabilities (ID) because it has one of the most developed special education systems in Pakistan. The Special Education Department, Government of Punjab, has established a network of special education institutions and has

identified priorities including educational access, skill development, vocational training, and rehabilitation services for individuals with disabilities (Government of Punjab, Special Education Department, 2024). The Punjab Empowerment of Persons with Disabilities Act and related institutional mechanisms further emphasize rehabilitation, inclusion, accessibility, and participation of persons with disabilities within social and economic domains (Government of Punjab, 2022).

Despite these policy developments, evidence regarding the effectiveness of existing services in supporting the transition from education to adulthood remains limited. National and provincial disability frameworks emphasize education, rehabilitation, and employment inclusion; however, systematic evidence regarding transition planning, vocational preparation, independent living skills, and adult participation outcomes among individuals with ASD and IDD is scarce in Pakistan (Government of Pakistan, 2021; WHO, 2022).Existing disability programs provide important educational and rehabilitation foundations, but the extent to which these systems prepare individuals for adult roles, including employment, self-determination, and community participation, requires further empirical investigation (United Nations, 2021; WHO, 2022).

The absence of evidence on adulthood transition outcomes represents a critical gap for policymakers, educators, and rehabilitation professionals in Punjab. Without systematic information regarding functional abilities, support requirements, and contextual barriers, it remains difficult to develop targeted transition pathways that address the diverse needs of individuals with ASD and IDD. Therefore, investigating transition outcomes within the Punjab context is essential for generating evidence-based recommendations to strengthen disability support systems and promote meaningful participation in adulthood.

A mixed-methods approach is particularly appropriate for examining transition outcomes among individuals with ASD and IDD because quantitative measures alone may not capture the complexity of personal experiences, environmental barriers, and culturally influenced support systems. Quantitative assessment can identify patterns in functional outcomes, adaptive abilities, and transition readiness, while qualitative exploration can explain how individuals, families, and professionals perceive challenges and available supports (Creswell & Plano Clark, 2018). Recent transition research emphasizes the importance of integrating multiple perspectives to develop comprehensive and contextually relevant support models for individuals with developmental disabilities (Šiška et al., 2025; White et al., 2025). Therefore, combining quantitative and qualitative evidence can provide a deeper understanding of transition needs within the Pakistani context.

Despite increasing international attention toward lifelong disability support, limited research has examined transition outcomes among individuals with ASD and IDD in

Pakistan. Specifically, there is insufficient evidence regarding functional outcomes, support needs, and contextual barriers associated with adulthood transition in Punjab. Addressing this gap is necessary for developing culturally appropriate transition practices that promote independence, participation, and quality of life among individuals with developmental disabilities. Therefore, the present study aims to examine transition outcomes and support needs among individuals with ASD and IDD in Punjab, Pakistan, using a mixed-methods approach that integrates functional assessment with stakeholder perspectives.

Research Objectives

1. Toassess functional outcomes related to adaptive functioning, independence, and transition readiness among individuals with Autism Spectrum Disorder and Intellectual Disabilities in Punjab, Pakistan.
2. To examine the perceived support needs and service requirements of individuals with Autism Spectrum Disorder and Intellectual Disabilities during the transition to adulthood.
3. To explore the contextual barriers and facilitators influencing transition experiences among individuals with ASD/IDD, their families, and disability professionals.
4. To develop recommendations for strengthening transition support practices and services for individuals with Autism Spectrum Disorder and Intellectual Disabilities in Punjab, Pakistan.

Research Questions

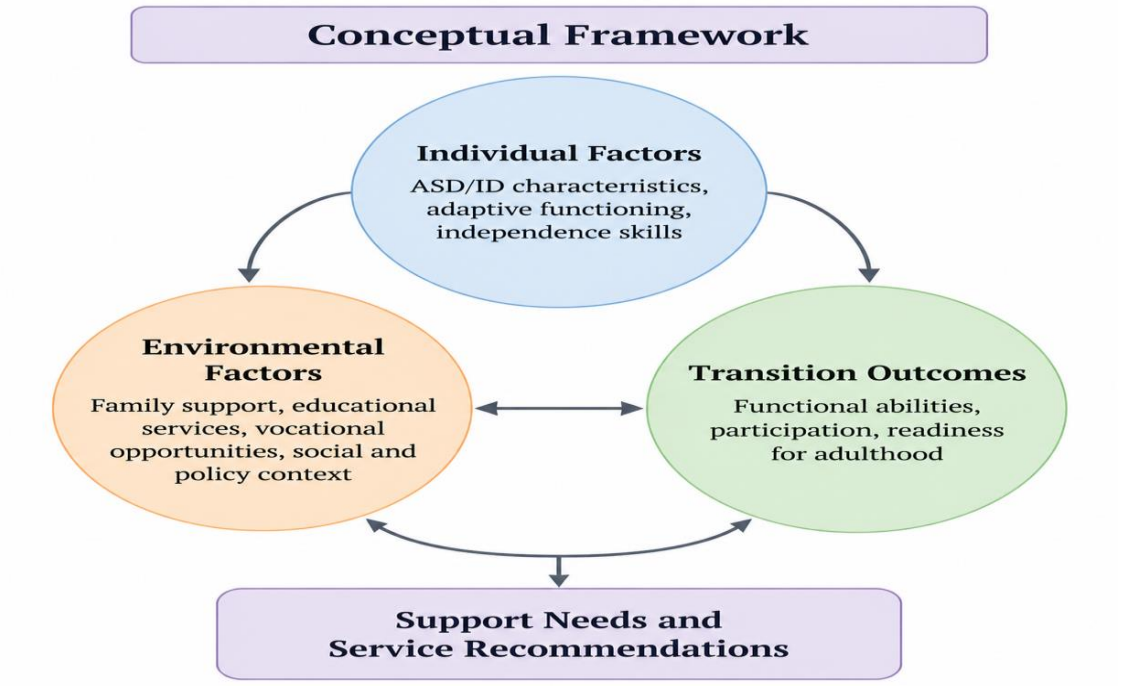
1. What are the functional outcomes, adaptive abilities, and transition readiness levels among individuals with Autism Spectrum Disorder and Intellectual Disabilities in Punjab, Pakistan?
2. What support needs and service requirements are identified by individuals with ASD/IDD during the transition to adulthood?
3. What contextual barriers and facilitators shape transition experiences among individuals with ASD/IDD, their families, and professionals?
4. What strategies can improve transition support services for individuals with ASD and IDD in Punjab, Pakistan?

Theoretical Framework

This study is guided by the International Classification of Functioning, Disability and Health (ICF) Framework developed by the World Health Organization (WHO) and the Ecological Systems Theory proposed by Bronfenbrenner. These frameworks provide a comprehensive understanding of transition outcomes among individuals with Autism Spectrum Disorder (ASD) and Intellectual Disabilities (ID) by considering the interaction between individual abilities and environmental influences.

The ICF Framework conceptualizes disability as an interaction between body functions and structures, activities, participation, and contextual factors (WHO, 2022). In this study, functional outcomes such as adaptive functioning, independence, and transition readiness represent the activity and participation domains, while support needs and contextual barriers represent environmental factors associated with adulthood transition. The framework emphasizes that successful transition is not determined solely by diagnostic characteristics but also by the availability of appropriate supports, services, and opportunities for participation. The Ecological Systems Theory explains how individual development is influenced by multiple interconnected environmental systems, including family, educational institutions, rehabilitation services, community structures, and broader social policies (Bronfenbrenner, 1979). Within this study, family support, educational preparation, vocational opportunities, and disability service systems are considered important contextual factors shaping transition experiences.

Together, these frameworks guide the investigation of how individual functioning and environmental conditions interact to influence transition outcomes and support requirements among individuals with ASD and ID in Punjab, Pakistan. The combined framework supports the use of a mixed-methods approach by integrating measurable functional outcomes with lived experiences of individuals, families, and professionals.



Conceptual Framework

Methodology

Research Design

A sequential explanatory mixed-methods design was employed to investigate transition outcomes and support needs among individuals with Autism Spectrum Disorder (ASD) and Intellectual Disabilities (ID) in Punjab, Pakistan. The study followed a two-phase design consisting of an initial quantitative phase followed by a qualitative phase. In the quantitative phase, data were collected to assess transition outcomes, functional abilities, support requirements, family support, service access, and self-determination-related factors. The qualitative phase was subsequently conducted to explain and contextualize the quantitative findings through the perspectives of parents/caregivers and disability professionals.

The sequential explanatory design was selected because transition to adulthood among individuals with ASD and ID represents a complex phenomenon influenced by both measurable individual outcomes and broader social, cultural, and environmental factors. Quantitative methods provide information regarding patterns of functioning, readiness, and support needs, whereas qualitative methods allow exploration of lived experiences, contextual barriers, and facilitators that cannot be fully captured through numerical assessment. According to Creswell and Plano Clark (2018), sequential explanatory mixed-methods designs are particularly appropriate when qualitative findings are required to provide explanations for quantitative results. Furthermore, disability transition outcomes are understood as the result of interactions between individual abilities and environmental factors, including family support, educational opportunities, rehabilitation services, and community participation (World Health Organization [WHO], 2022; Schalock et al., 2021).

Study Setting and Population

The study was conducted in Punjab, Pakistan, among individuals with ASD and ID receiving support through special education institutions, rehabilitation centers, and disability-related service settings. Punjab was selected as the study context because it has a relatively developed special education and rehabilitation infrastructure compared with other regions of Pakistan, including services related to education, skill development, vocational training, and rehabilitation for individuals with disabilities. However, despite these developments, evidence regarding transition outcomes, adult participation, employment readiness, and long-term support needs among individuals with ASD and ID remains limited in Pakistan (WHO, 2022; United Nations, 2021).

The target population consisted of individuals with ASD and/or ID aged 16–40 years who were experiencing or preparing for transition into adulthood. The study also included parents/caregivers and disability professionals during the qualitative phase to obtain broader perspectives regarding transition experiences and support requirements. The inclusion of multiple stakeholder groups was based on the understanding that successful transition is influenced not only by individual functioning but also by family involvement, educational preparation, service availability, and environmental opportunities (Schalock et al., 2021). Research has further highlighted the importance of considering self-determination and participation of individuals with disabilities in decisions affecting their lives because these factors contribute to improved adult outcomes (Shogren et al., 2017; Wehmeyer et al., 2019).

Participants and Sampling Procedure

A purposive sampling technique was used for participant recruitment. The quantitative phase included 150 individuals with ASD and/or ID aged between 16 and 40 years. Participants were recruited from selected special education institutions, rehabilitation centers, and disability support settings in Punjab, Pakistan. Purposive sampling was considered appropriate because the study focused on a specific population with defined diagnostic characteristics and transition-related experiences.

Participants included in the quantitative phase met the following inclusion criteria: (a) age between 16 and 40 years; (b) confirmed diagnosis of ASD and/or ID by a qualified professional; (c) current or previous involvement with special education, rehabilitation, or disability support services; and (d) willingness to participate with informed consent provided by the participant or legally authorized representative where required. Individuals without a confirmed diagnosis of ASD/ID or those unable to participate meaningfully in the assessment process were excluded.

For the qualitative phase, participants were selected through purposive sampling from relevant stakeholder groups. A total of 15 participants participated in a focus group discussion (FGD), including 8 parents/caregivers and 7 disability professionals. Parents/caregivers were included if they were primary caregivers of individuals with ASD/ID aged 16–40 years and had direct involvement in their educational, rehabilitation, or daily living support. Disability professionals were included if they had professional experience working with individuals with ASD and/or ID in areas including special education, rehabilitation, psychology, vocational services, or disability support. The use of purposive sampling for qualitative participant selection allowed the researchers to obtain rich and diverse information regarding transition experiences and support needs (Creswell & Plano Clark, 2018).

Instrumentation

A researcher-developed Transition Outcomes and Support Needs Questionnaire (TOSNQ) was used to assess transition outcomes and support requirements among individuals with Autism Spectrum Disorder (ASD) and Intellectual Disabilities (ID). The development of the questionnaire was guided by the study objectives, the International Classification of Functioning, Disability and Health (ICF) framework, and ecological perspectives of disability. These frameworks emphasize that disability outcomes are shaped by the interaction between individual functioning, participation, and environmental support factors (WHO, 2022).

The development of the TOSNQ was informed by established transition and disability assessment measures, including the Transition Planning Inventory (TPI) (Clark & Patton, 1997), Vineland Adaptive Behavior Scales–Third Edition (Vineland-3) (Sparrow et al., 2016), Supports Intensity Scale–Adult Version (SIS-A) (Thompson et al., 2016), and AIR Self-Determination Scale (Wolman et al., 1994). These measures guided the selection of domains related to transition planning, adaptive functioning, support requirements, and self-determination.

The final version of the TOSNQ consisted of five domains: (1) Family Support, (2) Service Access, (3) Transition Readiness, (4) Support Needs, and (5) Self-Determination. Items were adapted according to the cultural and service context of Punjab, Pakistan, while maintaining consistency with established transition assessment constructs. The inclusion of these domains reflected the multidimensional nature of adulthood transition, where successful outcomes depend on both individual abilities and availability of supportive environments (Schalock et al., 2021). Content validity of the TOSNQ was established through expert review by professionals in special education, rehabilitation, and disability studies. Experts evaluated items for relevance, clarity, and cultural appropriateness, and modifications were incorporated based on their recommendations.

A pilot assessment was conducted to evaluate the feasibility and comprehensibility of the instrument. The internal consistency reliability of the questionnaire was assessed using Cronbach's alpha, and the TOSNQ demonstrated excellent overall reliability (α = .932), indicating strong internal consistency among items.

Reliability Analysis of TOSNQ

The internal consistency reliability of the Transition Outcomes and Support Needs Questionnaire (TOSNQ) was assessed using Cronbach's alpha. The overall questionnaire demonstrated excellent reliability (α = .932). All domains showed acceptable to excellent internal consistency, supporting the suitability of the instrument for assessing transition outcomes and support requirements among individuals with ASD and ID.

Table 1. Internal Consistency Reliability of TOSNQ Domains

Domain	Items	Cronbach's α
Family Support	5	.884
Service Access	7	.861
Transition Readiness	9	.914
Support Needs	7	.876
Self-Determination	5	.892
Total TOSNQ	**33**	**.932**

In addition to the TOSNQ, a semi-structured Focus Group Discussion (FGD) guide was developed for the qualitative phase. The guide was informed by the study objectives, ICF framework, and ecological perspectives of disability. It explored key areas related to transition to adulthood, including transition planning, independent living skills, family support, service accessibility, vocational preparation, employment opportunities, community participation, and recommendations for improving transition support systems. The FGD guide was reviewed by experts in special education, rehabilitation, and disability studies to ensure relevance, clarity, and cultural appropriateness. The semi-structured format allowed systematic exploration of predetermined topics while providing flexibility for participants to share their experiences and perspectives regarding transition challenges and support needs (Creswell & Plano Clark, 2018; WHO, 2022).

Data Collection Procedure

Data collection was conducted after obtaining ethical approval and institutional permissions. The quantitative phase was conducted first, during which the TOSNQ was administered to 150 individuals with ASD and/or ID aged 16–40 years. Data were collected regarding demographic characteristics, diagnostic information, family support, service access, transition readiness, and support needs. Following preliminary analysis of quantitative findings, the qualitative phase was conducted through a focus group discussion involving 15 participants. The FGD included 8 parents/caregivers and 7 disability professionals. A semi-structured discussion guide was developed based on the study objectives and quantitative findings. The discussion explored participants' experiences regarding transition planning, independent living skills, employment preparation, community participation, family concerns, accessibility of disability services, and barriers and facilitators affecting transition into adulthood. The qualitative phase was conducted to provide contextual explanations for quantitative findings because transition experiences among individuals with ASD and ID are influenced by social, cultural, and environmental factors that cannot be

adequately assessed through quantitative measures alone (Creswell & Plano Clark, 2018; Crompton & Bond, 2022).

Quantitative Data Analysis

Quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize participant characteristics and transition outcomes. Reliability analysis was performed using Cronbach's alpha to assess the internal consistency of the TOSNQ. The analysis focused on identifying patterns in adaptive functioning, independence, service access, and support requirements among individuals with ASD and ID. Adaptive functioning was considered an important outcome indicator because it reflects conceptual, social, and practical skills required for participation and independence in adulthood (Tassé et al., 2016; Sparrow et al., 2016).

Qualitative Data Analysis

The focus group discussion data were analyzed using reflexive thematic analysis following Braun and Clarke's (2006, 2021) six-phase approach, which involves familiarization with the data, generation of initial codes, development and review of themes, defining and naming themes, and producing the final analytic narrative.. The discussion was audio-recorded with participant permission and transcribed verbatim. The transcripts were reviewed repeatedly to achieve familiarity with the data, followed by systematic coding of meaningful statements. Similar codes were grouped into categories, and broader themes were developed representing participants' experiences related to transition challenges, support systems, service barriers, and opportunities for improvement.

Thematic analysis was selected because it provides a systematic approach for identifying patterns within qualitative data while allowing exploration of complex social and disability-related experiences. The analysis focused on understanding how individual abilities interacted with family support, educational systems, rehabilitation services, and community environments to influence transition outcomes.

Integration of Quantitative and Qualitative Findings

Integration of quantitative and qualitative findings occurred during the interpretation phase. Quantitative results were used to identify major patterns related to transition outcomes and support needs, while qualitative findings provided explanations for these patterns through the perspectives of parents and professionals.

The integrated findings provided a comprehensive understanding of transition experiences by combining measurable outcomes with contextual explanations. This approach strengthened

interpretation by addressing both individual functioning andenvironmental influences, consistent with the principles of sequential explanatory mixed-methods research (Creswell & Plano Clark, 2018).

Reliability, Credibility, and Trustworthiness

Methodological rigor was ensured through procedures addressing reliability, credibility, and trustworthiness. Quantitative reliability was established through internal consistency testing of the TOSNQ using Cronbach's alpha. Standardized administration procedures were followed during data collection to minimize measurement inconsistencies.

For qualitative data, credibility was enhanced through systematic coding, repeated review of transcripts, and comparison of perspectives from parents/caregivers and professionals. Member checking was conducted where appropriate to confirm that interpretations accurately reflected participants' views. Peer discussion and review of qualitative interpretations were also undertaken to minimize researcher bias and improve analytical transparency. These procedures enhanced the credibility, dependability, and confirmability of findings by ensuring that interpretations were grounded in participant experiences and supported by systematic analytical procedures (Creswell & Plano Clark, 2018).

Ethical Considerations and Confidentiality

Ethical approval was obtained from the relevant institutional ethics committee before data collection. Participants and their caregivers were informed about the purpose of the study, procedures, potential risks, and benefits. Written informed consent was obtained from all participants or their legally authorized representatives where applicable.

Confidentiality was maintained throughout the research process. Participants' identities were protected through the use of identification codes rather than names, and all collected data were securely stored with access restricted to the research team. Participants were informed that participation was voluntary and that they could withdraw from the study at any stage without penalty. Special attention was given to ensuring respectful and accessible participation of individuals with ASD and ID by considering differences in communication abilities and support requirements. Ethical procedures were consistent with disability research principles emphasizing dignity, autonomy, inclusion, and respect for persons with disabilities (WHO, 2022).

Results

Participant Demographic Characteristics

Table 2 Demographic and Diagnostic Characteristics of Participants (N = 150)

Variable	Category	Number	Percentage
Age group	16–20 years	38	25.3
	21–30 years	76	50.7
	31–40 years	36	24.0
Gender	Male	103	68.7
	Female	47	31.3
Diagnosis	Autism Spectrum Disorder (ASD)	68	45.3
	Intellectual Developmental Disabilities (IDD)	82	54.7
Severity level	Mild	51	34.0
	Moderate	72	48.0
	Severe	27	18.0
Living arrangement	Living with parents/family	141	94.0
	Supported community arrangement	9	6.0

A total of 150 individuals with Autism Spectrum Disorder (ASD) and Intellectual Developmental Disabilities (IDD) participated in the quantitative phase. Participants had a mean age of 24.87 years (SD = 6.31), with the largest proportion belonging to the 21–30-year age group (50.7%). The sample was predominantly male (68.7%), reflecting the higher representation of males commonly observed within ASD and developmental disability service populations. However, this gender distribution may also reflect differences in diagnostic access, referral patterns, and service utilization. Participants with IDD represented the larger diagnostic group (54.7%), followed by ASD (45.3%). Most participants were classified within the mild-to-moderate severity categories, suggesting that the sample represented individuals who had potential for skill development but continued to require structured educational, family, and community support. A substantial majority of participants lived with parents or family members (94.0%), demonstrating the central role of family-based caregiving in the Pakistani context. The limited proportion of individuals living in supported community arrangements (6.0%) indicates restricted availability of alternative living models and limited opportunities for independent adulthood participation.

Educational Characteristics and Transition Preparation

Table 3 Education Status and Transition Planning Characteristics

Variable	Category	Number	Percentage
Current educational status	Special school	96	64.0
	Vocational training program	29	19.3
	Completed education	25	16.7
Formal transition planning	Yes	52	34.7
	No	74	49.3
	Not sure	24	16.0

The educational profile indicated that most participants were enrolled in special education settings (64.0%), while relatively fewer participants had accessed vocational training (19.3%) or completed education (16.7%). Although educational services were available, the findings suggest limited progression from educational support toward structured adulthood preparation. Only 34.7% of participants reported receiving formal transition planning, whereas nearly half (49.3%) had no transition plan. This finding represents an important transition gap, indicating that existing services may remain focused primarily on educational participation rather than preparation for employment, independent living, and community inclusion. The limited implementation of formal transition planning may contribute to reduced opportunities for successful adult participation.

Transition Outcomes and Support Needs Questionnaire (TOSNQ) Outcomes

Table 4 Descriptive Statistics of TOSNQ Domains (N = 150)

TOSNQ Domain	Number of Items	Mean	SD	Interpretation
Family Support	5	18.76	3.54	High family involvement
Service Access	7	11.94	4.86	Limited service availability
Transition Readiness	9	29.87	7.92	Moderate readiness
Support Needs	7	16.12	3.84	Moderate–to–high support requirements
Self-Determination	5	14.08	3.21	Moderate autonomy
Overall TOSNQ Score	**33**	**90.77**	**15.42**	—

The descriptive analysis of the TOSNQ domains demonstrated a multidimensional transition profile among individuals with ASD and IDD. Overall, participants showed strong family-based support but limited formal service availability and continued dependence on structured assistance. The Family Support domain represented the strongest area (M = 18.76, SD = 3.54),

indicating substantial family involvement in participants' daily functioning, decision-making, and future planning. However, this finding should be interpreted alongside the limited availability of external supports, suggesting that families may compensate for gaps within formal disability service systems. The Service Access domain showed comparatively lower scores (M = 11.94, SD = 4.86), indicating restricted access to transition-related services. The pattern suggests that while rehabilitation services may be available, adult-oriented supports such as vocational assistance, employment services, and community participation programs remain insufficient. This imbalance may limit opportunities for individuals to translate acquired skills into meaningful adult roles.

The Transition Readiness domain demonstrated moderate readiness levels (M = 29.87, SD = 7.92). Participants showed relatively better development in independent living-related skills; however, employment preparation and adult role participation remained areas of difficulty. This indicates that functional skill development alone may not be sufficient without corresponding opportunities for vocational engagement and community inclusion. The Support Needs domain indicated moderate-to-high requirements for assistance (M = 16.12, SD = 3.84). Higher support requirements were observed particularly in employment, community participation, and decision-making-related activities. These findings suggest that transition outcomes are influenced not only by individual abilities but also by environmental accessibility and availability of appropriate support structures. The Self-Determination domain reflected moderate levels of autonomy (M = 14.08, SD = 3.21). Participants demonstrated the ability to express preferences and communicate needs; however, participation in future planning and complex decision-making appeared comparatively limited. This highlights the need to strengthen person-centered approaches that actively involve individuals with ASD and IDD in decisions regarding education, employment, and adult life goals.

Inferential Analysis

Differences in Transition Readiness Across Disability Severity Levels

To examine whether transition readiness differed according to disability severity level, a one-way analysis of variance (ANOVA) was conducted. Disability severity (mild, moderate, and severe) was entered as the independent variable, while the Transition Readiness domain score of the Transition Outcomes and Support Needs Questionnaire (TOSNQ) was used as the dependent variable. Prior to analysis, assumptions of normality and homogeneity of variance were examined and were considered acceptable for conducting ANOVA.

Table 5 One-Way ANOVA Comparing Transition Readiness Scores Across Disability Severity Levels (N = 150)

Descriptive Statistics

Disability Severity Level	n	Mean (M)	SD
Mild	51	35.84	6.21
Moderate	72	29.41	6.48
Severe	27	21.63	5.74
Total	**150**	**29.87**	**7.92**

ANOVA Summary

Source of Variation	Sum of Squares	df	Mean Square	F	p	η^2
Between Groups	3228.54	2	1614.27	38.72	< .001	.35
Within Groups	6128.16	147	41.69			
Total	9356.70	149				

A statistically significant difference was observed in transition readiness scores across disability severity levels, $F(2, 147) = 38.72$, $p < .001$, $\eta^2 = .35$. The effect size indicated that disability severity accounted for approximately 35% of the variance in transition readiness, representing a large practical effect. This finding suggests that severity level was strongly associated with individuals' preparedness for adulthood transition.

Post-Hoc Comparisons

Since the overall ANOVA was significant, Tukey's Honestly Significant Difference (HSD) test was conducted to identify specific differences between severity groups.

Table 6 Tukey HSD Post-Hoc Comparisons of Transition Readiness Across Severity Levels

Group Comparison	Mean Difference	p
Mild vs. Moderate	6.43	< .001
Mild vs. Severe	14.21	< .001
Moderate vs. Severe	7.78	< .001

The post-hoc analysis demonstrated statistically significant differences across all severity-level comparisons. Participants with mild severity showed significantly higher transition readiness scores than those with moderate severity ($MD = 6.43$, $p < .001$) and severe severity ($MD = 14.21$, $p < .001$). Similarly, participants with moderate severity demonstrated significantly greater transition readiness compared with those with severe severity ($MD = 7.78$, $p < .001$). These findings indicate a graded relationship between disability severity and transition preparedness, where

increasing severity was associated with reduced readiness for adult roles. Participants with higher severity levels may experience greater challenges in developing independent living skills, vocational competencies, and community participation abilities. However, these findings should be interpreted within the broader ecological context of disability, as transition outcomes are not determined solely by individual functioning. Environmental factors, including educational preparation, family support, availability of vocational opportunities, and accessibility of transition services, may significantly influence the extent to which individuals achieve meaningful participation in adulthood.

Predictors of Transition Readiness: Multiple Linear Regression Analysis

To identify factors associated with transition readiness among individuals with Autism Spectrum Disorder (ASD) and Intellectual Developmental Disabilities (IDD), a multiple linear regression analysis was conducted. The Transition Readiness total score of the Transition Outcomes and Support Needs Questionnaire (TOSNQ) was entered as the dependent variable. Predictor variables were selected based on the study framework and included age, disability severity, educational status, family support, and service access. These variables represented both individual characteristics and contextual factors associated with adulthood transition outcomes. Prior to conducting the regression analysis, assumptions of multiple linear regression were examined. The assumptions of linearity, normality of residuals, independence of observations, and absence of multicollinearity were assessed. The Durbin–Watson statistic indicated acceptable independence of residuals, while variance inflation factor (VIF) values remained within acceptable limits, confirming that multicollinearity was not a concern among predictor variables.

Table 7 Multiple Linear Regression Model Predicting Transition Readiness (N = 150)

Model	R	R^2	Adjusted R^2	F	P
1	.742	.551	.535	29.47	< .001

Note. Dependent variable: Transition Readiness Total Score.

The regression model was statistically significant, $F(5,144) = 29.47$, $p < .001$, indicating that the combination of age, disability severity, educational status, family support, and service access were significantly associated with transition readiness. The model explained 55.1% of the variance in transition readiness scores (Adjusted $R^2 = .535$), demonstrating a substantial contribution of individual and environmental factors in explaining differences in transition preparedness.

Table 8 Regression Coefficients for Predictors of Transition Readiness

Predictor	B	SE	B	T	p
Age	0.18	0.09	.12	2.01	.046
Disability Severity	-3.42	0.71	-.31	-4.82	< .001
Educational Status	2.15	0.68	.21	3.16	.002
Family Support	0.62	0.14	.29	4.43	< .001
Service Access	0.74	0.16	.34	4.63	< .001

The regression analysis demonstrated that service access was the strongest positive predictor of transition readiness (β = .34, p < .001). Individuals with greater access to disability-related services demonstrated higher levels of preparedness for adulthood transition, highlighting the importance of structured supports, vocational opportunities, and community-based services in facilitating adult participation. Family support was also a significant positive predictor of transition readiness (β= .29, p < .001). This finding emphasizes the critical role of families in promoting skill development, decision-making, and participation in future planning. However, the influence of family support should be interpreted alongside the limited availability of formal transition services, as families may often compensate for gaps within disability support systems. Disability severity significantly and negatively predicted transition readiness (β = −.31, p < .001), indicating that individuals with greater functional limitations demonstrated lower transition preparedness. Although severity was an important predictor, it should not be considered an isolated determinant of transition outcomes. Consistent with the ICF framework, participation and independence are shaped through interactions between individual abilities and environmental facilitators. Educational status were significantly associated with transition readiness (β= .21, p = .002), suggesting that greater educational and vocational exposure was associated with improved preparation for adulthood. This finding highlights the importance of integrating transition-focused practices within educational settings rather than limiting education to academic or rehabilitation objectives. Age demonstrated a small but statistically significant positive association with transition readiness (β = .12, p = .046). This suggests that older participants may show slightly greater readiness, potentially reflecting increased exposure to learning opportunities, rehabilitation experiences, and developmental progression over time.

Qualitative Findings: Thematic Analysis of Focus Group Discussions

Participants and Analytical Approach

Two focus group discussions (FGDs) were conducted to explore the experiences, challenges, and support needs associated with transition to adulthood among individuals with Autism Spectrum

Disorder (ASD) and Intellectual Developmental Disabilities (IDD). The qualitative sample included eight parents/caregivers and seven professionals working in disability-related educational, rehabilitation, and support services.

The data were analyzed using Braun and Clarke's thematic analysis approach, involving transcript familiarization, initial coding, development of candidate themes, review and refinement of themes, and generation of final thematic categories. The analysis was informed by the International Classification of Functioning, Disability and Health (ICF) framework, focusing on the interaction between individual functioning, environmental supports, and participation outcomes.

Four themes were emerged from the analysis:

1. Gaps in Transition Planning
2. Family as Primary Support
3. Barriers to Adult Participation
4. Emerging Self-Determination

Theme 1: Gaps in Transition Planning

Participants consistently highlighted the limited availability of structured transition planning for individuals with ASD and IDD. Parents reported that educational and rehabilitation services primarily focused on current skill development, while preparation for adulthood, employment, and independent living received limited attention. Professionals similarly described transition planning as inconsistent and dependent on individual institutions rather than being integrated into routine practice.

Parents frequently expressed uncertainty regarding future pathways after education:

"When my child was younger, we knew about therapy and school activities, but now that adulthood is approaching, we do not know what the future plan is. There is no clear guidance about employment, independent living, or what support will be available after education ends." (Parent 3)

Another parent described the absence of continuity between education and adult life:

"The school is helping my child learn basic skills, but after leaving school there is a big question mark. We want our children to progress, but families do not know where to go or what services are available for the next stage of life." (Parent 6)

Professionals identified similar systemic challenges:

"Most programs focus on improving present abilities, but transition planning is not consistently included. There needs to be a planned pathway from education toward employment, community participation, and adult services." (Professional 2)

"Transition planning usually starts very late, sometimes when the student is about to leave school. At that stage, opportunities for developing vocational and independent living skills are already limited." (Professional 5)

Participants also emphasized limited collaboration among families, schools, and adult service providers:

"A successful transition requires coordination between parents, teachers, therapists, and community services, but currently these systems often work separately." (Professional 7)

This theme provides qualitative explanation for the quantitative finding that only 34.7% of participants had formal transition planning, indicating a gap between educational participation and preparation for adulthood.

Theme 2: Family as Primary Support

Family support emerged as a central facilitator of daily functioning and transition preparation. Parents described their continuous involvement in communication support, daily living activities, decision-making, and emotional care. However, families also expressed concerns regarding long-term independence and future support availability.

Parents described their role as the main source of assistance:

"The family is involved in every part of life because we understand our child's needs. We help with daily activities, communication, and decisions, but we also worry about what will happen when we are not able to provide this support." (Parent 5)

Another parent explained the challenge of balancing care and independence:

"We want our child to become independent, but because outside support is limited, the family continues doing many things. Sometimes we provide help because there are no other options available." (Parent 7)

Professionals acknowledged the importance of family involvement while highlighting the need to promote autonomy:

"Families are the strongest support system for individuals with disabilities in our context. However, support should gradually move toward encouraging independence rather than creating lifelong dependence." (Professional 3)

"Parents are highly committed, but they often carry the entire responsibility because formal services are limited. They need guidance on how to support decision-making and self-reliance." (Professional 4)

A professional further explained:

"Family involvement is a strength, but it should work together with formal services. Families cannot replace vocational programs, community services, and employment opportunities." (Professional 1)

This theme aligns with the quantitative finding that Family Support was the strongest TOSNQ domain, while highlighting that families often compensate for limitations in formal disability support systems.

Theme 3: Barriers to Adult Participation

Participants identified limited vocational opportunities, inadequate employment support, and restricted community participation as major barriers to successful transition. Both parents and professionals emphasized that although individuals may develop skills through education and rehabilitation, opportunities to apply these skills in real-world environments remain limited.

Parents expressed concerns about employment opportunities:

"My child has learned different skills, but the biggest challenge is finding a place where these skills can be used. There are very few opportunities for individuals with disabilities to work and participate in society." (Parent 2)

Another parent highlighted concerns about future independence:

"We do not want our child to remain dependent at home. We want meaningful activities and work opportunities, but there are limited programs that prepare them for real employment." (Parent 8)

Professionals identified gaps within adult service systems:

"The transition from school to adult life is the weakest area. Skills are taught, but there are not enough supported employment opportunities or community-based programs where individuals can practice independence." (Professional 1)

"Many individuals have potential, but the environment does not always allow them to participate. Without inclusive workplaces and community support, independence remains difficult to achieve." (Professional 5)

Another professional explained:

"Most available services focus on therapy and rehabilitation, while adult outcomes such as employment, social participation, and independent living receive less attention." (Professional 7)

This theme explains the quantitative findings of limited Service Access scores and higher support requirements in employment and community participation domains.

Theme 4: Emerging Self-Determination

Participants described self-determination as an important but developing area. Individuals with ASD and IDD were often encouraged to express preferences in daily activities; however, involvement in major life decisions related to education, employment, and future planning remained limited.

Parents described challenges in transferring decision-making responsibility:

"My child can tell us what they like and what they do not like, but decisions about the future are still mostly made by the family because we worry about making the wrong decision." (Parent 4)

Another parent stated:

"We want our child to make choices, but independence requires opportunities and support. Without guidance and safe environments, families hesitate to give complete responsibility." (Parent 6)

Professionals emphasized the importance of person-centered approaches:

"Transition is not only about teaching daily living skills. It is also about helping individuals understand their choices, express their goals, and participate in decisions about their own lives." (Professional 2)

A professional further explained:

"Developing self-determination requires practice. Individuals need opportunities to make decisions, experience choices, and learn from those experiences within supportive environments." (Professional 6)

This theme provides qualitative depth to the quantitative finding of moderate Self-Determination scores, indicating that participants demonstrated emerging autonomy but limited involvement in complex future-oriented decisions.

Integration of Qualitative and Quantitative Findings

The qualitative findings provided contextual explanations for the quantitative results. The strong Family Support scores were reflected in parents' descriptions of their extensive caregiving roles, while the lower Service Access scores were explained by limited vocational, employment, and community-based services. Similarly, moderate Transition

Readiness and Self-Determination scores were supported by participants' experiences of limited transition planning and restricted opportunities for independent decision-making. Together, the findings demonstrate that transition outcomes among individuals with ASD and IDD are shaped by the interaction between individual abilities and environmental conditions. Improving adulthood transition requires moving beyond skill development alone toward coordinated transition planning, accessible adult services, meaningful participation opportunities, and person-centered support systems.

Discussion

This mixed-methods study examined transition outcomes, support needs, and contextual factors influencing adulthood transition among individuals with Autism Spectrum Disorder (ASD) and Intellectual Developmental Disabilities (IDD) in Punjab, Pakistan. The findings demonstrated that transition experiences were characterized by strong family involvement, limited formal transition planning, restricted access to adult-oriented services, moderate transition readiness, and emerging self-determination. The integration of quantitative and qualitative findings highlights that transition outcomes are not determined solely by individual abilities but emerge through interactions between personal functioning and environmental conditions, consistent with the International Classification of Functioning, Disability and Health (ICF) framework (World Health Organization [WHO], 2001, 2022).

Gaps in Transition Planning and Continuity of Services

A central finding of the study was the limited availability of formal transition planning, with only 34.7% of participants reporting access to structured transition plans. Qualitative findings further revealed that parents and professionals perceived transition preparation as fragmented, delayed, and primarily focused on educational and therapeutic goals rather than preparation for adulthood. This finding indicates a significant gap between disability education services and adult participation outcomes in the Pakistani context. International literature consistently identifies structured transition planning as a key determinant of successful adulthood outcomes for individuals with ASD and IDD. Effective transition planning involves early preparation, individualized goal setting, collaboration among families and professionals, and coordination between educational, vocational, and community systems (Morningstar & Mazzotti, 2014; Test et al., 2009). Research has demonstrated that individuals who receive systematic transition services show improved outcomes in employment, independent living, and community participation compared with those receiving limited transition support (Landmark et al., 2010; Mazzotti et al., 2021).

However, the findings of the present study reflect the challenges of implementing such models within a low-resource context. Similar concerns have been reported in Pakistan, where disability services remain largely concentrated around childhood rehabilitation and special education,

with fewer structured pathways toward adulthood. Community-based research in Pakistan has identified significant gaps in disability service availability, limited professional expertise, and inadequate support systems for families managing intellectual disabilities (Mirza et al., 2009). Similarly, studies from South Asian contexts have highlighted that families often experience uncertainty regarding long-term care and future planning due to limited adult disability services (Hameed & Manzoor, 2019). Therefore, the findings suggest that the major challenge in Pakistan is not only the development of individual skills but also the establishment of coordinated transition systems that connect education, rehabilitation, employment, and community participation.

Family Support: A Strength and a Substitute for Formal Services

Family Support emerged as the strongest TOSNQ domain, demonstrating the central role of families in supporting individuals with ASD and IDD. Qualitative findings showed that parents provided extensive assistance with daily activities, decision-making, emotional support, and navigation of disability services. This finding aligns with previous research indicating that families represent the primary source of care and advocacy for individuals with developmental disabilities, particularly in collectivist societies where family responsibility remains central (Dyke et al., 2013; Kyzar et al., 2012).The strong family involvement observed in this study is consistent with evidence from Pakistan, where families often compensate for limited formal disability services. Mirza et al. (2009) reported that caregivers of individuals with intellectual disabilities in Pakistan experienced substantial responsibility due to inadequate availability of professional and community-based support. Similarly, Khalid et al. (2021) emphasized that Pakistani families frequently become the primary providers of rehabilitation, education support, and lifelong care because formal disability systems remain insufficient.

However, the present findings also highlight an important contradiction. Although family involvement represents a significant protective factor, reliance on families as the primary support mechanism may restrict opportunities for independent living and self-determination. Qualitative findings indicated that some parents continued making major decisions on behalf of their children due to concerns about safety and limited external support. This finding corresponds with international literature showing that excessive caregiver control, even when motivated by protection, may reduce opportunities for autonomy development among individuals with intellectual and developmental disabilities (Shogren et al., 2015). Thus, strengthening transition outcomes in Pakistan requires a shift from viewing families as the sole providers of support toward supporting families as partners who facilitate autonomy, participation, and self-determination.

Limited Service Access and Barriers to Adult Participation

Service Access was one of the weakest domains identified in the study, particularly in relation to employment support and community-based services. Qualitative findings explained this pattern by highlighting limited vocational opportunities, insufficient supported employment programs, and restricted community participation opportunities. These findings are consistent with international evidence demonstrating that employment outcomes among individuals with ASD and IDD depend not only on individual skills but also on access to vocational preparation, workplace accommodations, and supported employment services (Cimera, 2010; Wehman et al., 2014\). Research has repeatedly demonstrated that individuals with developmental disabilities experience better employment outcomes when services include individualized vocational planning, job coaching, and ongoing workplace support (Wehman et al., 2016).

The findings also reflect challenges reported within Pakistan. Although disability services have expanded in major urban areas, access remains uneven, with many families experiencing difficulties accessing specialized services, particularly those related to adulthood participation (Mirza et al., 2009). Existing disability programs in Pakistan have traditionally focused on rehabilitation and education, while employment transition and community inclusion remain comparatively underdeveloped (Hameed & Manzoor, 2019). The current study extends previous research by demonstrating that service limitations directly shape transition experiences. Participants were not necessarily lacking abilities; rather, they lacked sufficient opportunities to apply their abilities within meaningful adult contexts. This finding supports the ICF perspective that participation restrictions often emerge from environmental barriers rather than impairment alone (WHO, 2001).

Disability Severity and Transition Readiness

The quantitative findings demonstrated significant differences in transition readiness according to disability severity, with individuals experiencing mild severity demonstrating higher readiness compared with those with moderate and severe levels. Regression analysis further showed that severity negatively predicted transition readiness. This finding is consistent with previous research indicating that adaptive functioning, communication abilities, and level of support needs influence transition outcomes among individuals with ASD and IDD (Sparrow et al., 2016; Schalock et al., 2021). Individuals requiring higher levels of support often experience greater challenges in employment preparation, independent living, and community participation.

However, severity should not be interpreted as a fixed limitation on adult outcomes. The present regression findings showed that contextual variables, particularly service access and family support, also significantly contributed to transition readiness. This supports contemporary disability models that emphasize environmental modification and support provision rather than focusing exclusively on individual deficits (Thompson et al., 2016; WHO, 2022). Therefore, individuals with higher support needs should not be excluded from transition opportunities; rather, they require individualized supports, structured environments, and appropriately adapted participation pathways.

Self-Determination and Person-Centered Transition

Participants demonstrated moderate self-determination, with stronger ability to express preferences but fewer opportunities for participation in complex future decisions. Qualitative findings revealed that while individuals were often included in daily choices, decisions regarding employment, education, and future living arrangements were frequently managed by families. This pattern reflects findings from international research showing that individuals with developmental disabilities often experience a gap between expressing preferences and exercising meaningful self-determination (Shogren et al., 2015). Self-determination has been identified as an important predictor of post-school outcomes because it promotes autonomy, goal setting, and active participation in adult roles (Wehmeyer et al., 2012). The findings also have particular relevance within the Pakistani cultural context. Strong family involvement may provide essential protection and support; however, culturally appropriate approaches are needed to ensure that family participation does not unintentionally reduce individual autonomy. Transition programs should therefore adopt person-centered approaches that involve individuals with ASD and IDD directly in goal setting and decision-making while maintaining culturally appropriate family involvement.

Integrated Mixed-Methods Interpretation

The integration of quantitative and qualitative findings provides a comprehensive explanation of transition experiences among individuals with ASD and IDD in Punjab. Quantitative results demonstrated strong family support, limited service access, moderate transition readiness, and continued support requirements. Qualitative findings explained these patterns by showing that families compensate for limited formal systems, while individuals encounter barriers related to employment opportunities, community participation, and decision-making autonomy. Overall, the findings indicate that successful transition to adulthood requires movement beyond a rehabilitation-focused model toward a participation-oriented framework. While individual skill development remains important, meaningful adult outcomes depend on coordinated transition planning, accessible vocational services, family empowerment, and opportunities for self-determination. This study contributes important evidence from Pakistan, where research on adulthood transition among individuals with ASD and

IDD remains limited. By integrating individual and environmental perspectives, the findings demonstrate that improving transition outcomes requires systemic changes that enable individuals with disabilities to participate meaningfully within their communities.

Limitations of the Study

Despite providing important insights into transition outcomes and support needs among individuals with Autism Spectrum Disorder (ASD) and Intellectual Developmental Disabilities (IDD) in Punjab, Pakistan, this study has several limitations that should be considered when interpreting the findings. First, the use of purposive sampling and recruitment from special education institutions, rehabilitation centers, and disability-related service settings may limit the generalizability of findings to individuals with ASD and IDD who are not connected with formal support services. Individuals without access to educational or rehabilitation programs may experience different transition challenges that were not fully captured in this study.

Second, the quantitative phase relied on the researcher-developed Transition Outcomes and Support Needs Questionnaire (TOSNQ). Although the instrument demonstrated excellent internal consistency reliability and was developed based on established transition and disability assessment frameworks, further validation studies using larger and more diverse samples are required to establish its construct validity, criterion validity, and applicability across different disability and cultural contexts. Third, the cross-sectional nature of the quantitative component limits the ability to determine causal relationships between contextual factors and transition outcomes. Although service access, family support, educational status, and disability severity were significant predictors of transition readiness, longitudinal research is needed to examine how these factors influence transition experiences and adult outcomes over time.

Fourth, the qualitative phase included perspectives from parents/caregivers and disability professionals; however, direct perspectives of individuals with ASD and IDD were limited. Although caregiver and professional viewpoints provided valuable contextual information, future research should prioritize accessible methods that enable individuals with disabilities to directly express their goals, preferences, and transition experiences. Finally, the study was conducted within the provincial context of Punjab, Pakistan. Differences in disability policies, service availability, cultural expectations, and socioeconomic conditions across other regions of Pakistan may influence transition experiences. Future studies involving multiple provinces and diverse community settings are recommended to develop a broader understanding of adulthood transition among individuals with ASD and IDD in Pakistan.

Conclusion

This mixed-methods study provides important insights into the transition experiences, support needs, and contextual factors adulthood outcomes among individuals with ASD and IDD in Punjab, Pakistan. The findings demonstrate that while families play a significant and supportive role in facilitating daily functioning and future planning, the transition process remains

constrained by limited formal transition planning, inadequate access to vocational and community-based services, and restricted opportunities for self-determination. The quantitative findings indicated moderate transition readiness, continued support requirements, and significant variation according to disability severity. However, regression findings further demonstrated that environmental factors, particularly service access and family support, were important contributors to transition readiness beyond individual characteristics alone. The qualitative findings provided deeper insight into these patterns by revealing that families often compensate for gaps in formal systems, while individuals with ASD and IDD continue to experience barriers in employment, community participation, and independent decision-making. The study highlights the need for a coordinated, person-centered transition framework within Pakistan that integrates educational preparation, vocational rehabilitation, family involvement, and community-based supports. Future disability services should move beyond a primarily care-oriented approach toward promoting autonomy, participation, and meaningful adult roles for individuals with ASD and IDD. By addressing both individual capacities and environmental barriers, transition systems can better support successful movement into adulthood and improve long-term participation outcomes.

Recommendations of the Study

Based on the findings of this mixed-methods study, the following critical recommendations are proposed to improve transition outcomes among individuals with ASD and IDD in Punjab, Pakistan:

Establish Formal Transition Planning Frameworks

Educational and rehabilitation institutions should implement structured, individualized transition planning for adolescents and young adults with ASD and IDD. Transition planning should begin before school completion and include measurable goals related to employment, independent living, community participation, and self-determination. A coordinated approach involving families, special educators, rehabilitation professionals, and adult service providers is essential.

Strengthen Vocational Training and Employment Pathways

The study identified employment preparation as one of the weakest transition areas. Therefore, disability services should expand vocational training, supported employment programs, workplace preparation, and employer collaboration initiatives. Transition programs should focus not only on developing skills but also on

creating real opportunities for meaningful employment and economic participation.

Develop Adult-Oriented and Community-Based Disability Services

Current services appear more focused on childhood rehabilitation than adulthood participation. There is a need to establish community-based rehabilitation programs, independent living supports, social participation opportunities, and adult disability services to ensure continuity of care after completion of education.

Promote Self-Determination Through Person-Centered Practices

Individuals with ASD and IDD should be actively involved in decisions related to their education, employment, and future goals. Service providers should incorporate self-advocacy, decision-making, goal-setting, and choice-making skills into transition programs to enhance autonomy and reduce dependence on caregivers.

Empower Families as Partners in Transition

Although families were identified as a major strength, they often carry the primary responsibility for lifelong support. Family-focused training should be developed to help caregivers promote independence, encourage decision-making, and facilitate participation rather than relying primarily on protective caregiving approaches.

Build Professional Capacity in Transition Practices

Special educators, rehabilitation professionals, and service providers require specialized training in transition assessment, individualized planning, supported employment, and evidence-based practices for ASD and IDD. Improving professional capacity will strengthen the quality and consistency of transition services.

Develop Policy-Level Coordination Between Education, Rehabilitation, and Employment Sectors

A provincial transition policy framework is needed to connect special education systems, rehabilitation services, vocational institutions, and employment sectors. Such coordination would address the current fragmentation of services and support a continuous pathway from education to meaningful adult participation.

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