Research Article

Parental Educational Intervention For Adaptive Behavior and Quality of Life of Children With Autism Spectrum Disorder (ASD)

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ABSTRACT

Objective: The study aimed to evaluate the effect of a parental educational intervention on adaptive behavior and quality of life among children with autism spectrum disorder. Specifically, the study assessed changes in adaptive behavior and quality of life following parental education and training.
Methodology: A two-group quasi-experimental design was used. A total of 90 participants were included and divided equally into an intervention group (n=45) and a control group (n=45). Convenient sampling was used. The intervention consisted of structured parental education focusing on communication skills, daily living skills, socialization, behavior management, and physical activities, with home-based activities and parental support. The control group continued standard therapeutic measures. Adaptive behavior was assessed using the Vineland Adaptive Behavior Scales (VABS), while quality of life was assessed using the Pediatric Quality of Life Inventory (PedsQL). Data were analyzed using IBM SPSS Statistics.
Results: The intervention group demonstrated improvement in all assessed adaptive behavior domains. Communication increased from 18.55 ± 6.19 to 18.91 ± 5.89, daily living skills from 19.91 ± 4.90 to 22.48 ± 4.35, social skills and relationships from 19.26 ± 5.31 to 21.22 ± 4.37, and physical activity from 19.37 ± 5.10 to 22.35 ± 4.07. The overall adaptive behavior score increased from 77.11 ± 20.13 to 84.97 ± 15.36. Improvements were also observed in quality-of-life domains, including emotional, social, and school functioning. The overall quality-of-life score in the intervention group increased from 26.35 ± 3.14 to 26.77 ± 3.57. Within-group changes were statistically significant ($p<0.05$). Some outcomes the numerical improvement was greater in the control group. The findings do not consistently demonstrate that parental educational intervention produced greater improvement than standard care.
Conclusion: The study indicates that children with ASD showed improvement in adaptive behavior and quality of life during the study period, including improvements in communication, daily living skills, social functioning, physical activity, and school functioning. Parental educational intervention may therefore be a valuable component of comprehensive ASD care by providing parents with practical strategies that can be incorporated into everyday family routines.

Keywords: Autism Spectrum Disorder; parental education; parent-mediated intervention; adaptive behavior; quality of life; Vineland Adaptive Behavior Scales; Pediatric Quality of Life Inventory.

Introduction:

The estimated prevalence of autism, a neurodevelopmental situation, is 1% for broad autism spectrum disorder (ASD) and 0·4% for core disorder (Salari et al., 2022). The UK National Autism Plan for Children advocates for early psychosocial intervention since the trinity of social contact, communication, and restricted habits have a big influence on how a youngster develops socially as an adult. According to meta-analyses conducted by the National Institute for Health and Care analysis in the UK, when carers or preschool instructors used social communication interventions, social interactions as measured by the Autism Diagnostic Observation Scale (ADOS), parent-child joint attention, and engagement had minor to moderate effects (Male at el., 2023). In accordance with the Diagnostic and Statistical Manual of Mental Disorders, (DSM-5) autism spectrum disorder (ASD) is a neuropsychiatric developmental disorder that involves repetitive and sensory behaviors, limited interest, and difficulties with verbal and nonverbal social communication (Oberman et al., 2020). Throughout the world, 0.6% of people had ASD. According to the most recent studies, the prevalence of ASD was 0.4%, 1%, 0.5%, 1%, and 1.7% in Asia, USA, Europe, Africa, and Australia, respectively (Salari et al., 2024).

ASD prevalence is thought to be higher than average worldwide. The physical and mental health of those who care for children with ASD is extremely difficult, and families of children with ASD bear a heavy burden. Research indicates that those who care for children with ASD face more stress on all levels physical, mental, social, and family relationships than those who care for children with other disabilities, like Down syndrome, intellectual disability, and

so forth (Sánchez et al., 2024). The stress that is common in families with children with ASD also need care. Clinical recommendations for autistic rehabilitation often call for extensive interventions (25–40 hours per week, child to adult one into one ratio for a year or more), which many families find challenging to implement (Wickstrom et al., 2021).

The rising prevalence of autism has drawn increasing attention and concern from schoolwork, medical experts, and legislators in Pakistan, a nation with a varied population and an intricate healthcare system (Chiarotti et al., 2020). According to recent studies, autism is becoming more common in Pakistan, highlighting the urgent need for thorough investigation and support systems. Over the past few decades, ASD has become more common in Pakistan. The estimated prevalence of autism in Pakistan is around 1.14%, according to research suggesting that a sizable portion of people there suffers from the condition (Shahbuddin et al., 2025).

Autism is characterized by speech, nonverbal communication, repetitive behavior, and social skills. Language impairment, social interaction issues, limited interest, and repetitive motor movements characterize it. About 31% of children with ASD have below 70 (Autism statistics and facts, highlights the importance of social skills in human existence, but poor social skills can hinder growth and cause loneliness, isolation, rejection, and poor academic performance. Children with Autism Spectrum Disorder (ASD) often suffer from these deficits, necessitating the implementation of interventions to help them develop their social skills (Wang et al., 2022). The everyday challenges of caring for a kid with ASD can be exhausting for parents and have a major effect on the family's overall wellbeing. There have been many cases of parents of children with ASD having a lower quality of life (QoL) than parents of children who are typically developing. Compared to other parent groups, parents of children with ASD typically exhibit greater levels of stress (Tathgur et al., 2021). Parental stress has been linked to the intensity of primary ASD symptoms and the parents' mental health (Shepherd, Landon, Goedeke, & Meads). Behavioral (like oppositional-defiance disorder) and emotional (like anxiety) comorbidities in children with ASD are associated with a lower parental quality of life and increase the risk of high levels of stress and emotional pain for parents (Enea et al., 2020). Ineffective parenting and strained parent-child bonds (Hickey, Hartley, & Papp, 2020). In children with ASD, sleeplessness and (comorbid) sensory processing abnormalities have also been directly linked to poor mental health and increased parental stress (Enea & Rusu, 2020; Johnson et al., 2018; Martin, Papadopoulos, Chellew, Rinehart, & Sciberras, 2019) (Nadeem et al., 2024). Parents of children with ASD faced a number of obstacles while trying to receive healthcare treatments, according to a research done in Pakistan. It includes budgetary limitations, lengthy wait periods, and a shortage of skilled personnel (Farooq & Ahmed, 2020). In a similar vein, qualitative research found that when parents in Pakistan sought medical attention for their children with ASD, they encountered barriers and prejudice. as well as exaggerating their challenges in obtaining services (Imran et al., 2011). Accessibility issues in rural locations are exacerbated by geographic considerations and disparities in the healthcare infrastructure. Lack of knowledge, restricted access to specialist treatments, and transportation issues were shown to be major barriers to receiving healthcare for children with developmental abnormalities in a research that concentrated on rural regions, including Pakistan (Hamdani et al., 2022).

A short attention span, self-harming behaviors, aggression, epileptic attacks, and difficulty sleeping are some of the other problems that are associated with autism. According to Imran and Azeem (2014), less than one percent of people with autism also have genetic issues such Down syndrome and fragile X syndrome. Obsessive-compulsive habits and anxiety are also prevalent in children with autism. It's normal to have negative social experiences including stigmatization, rejection, harassment, and isolation. It is a common misconception among the general public that children with autism are "mentally retarded," however this is not the case. Although some individuals with ASD do have mild to severe intellectual deficits, many autistic persons also have average or even high IQs. Some autistic individuals, known as "Savants," have exceptional skills in music, computers, mathematics, or distant memory (Treffert & Rebedew, 2015).

The aim of study is to evaluate the effect of educational intervention on parents' learning for the adaptive behavior of children with autism. The effect of educational intervention on parent's learning for the quality of life of children with autism was analyzed.

Materials and Methods

A two-group quasi-experimental study was conducted to evaluate the effectiveness of a parental educational intervention on adaptive behavior and quality of life among children with Autism Spectrum Disorder (ASD). The study was conducted at the Government Special Education Centre, Nishtar Town, Lahore. Parents of children diagnosed

with ASD constituted the study population. A total of 90 participants were included in the study, with 45 participants allocated to the intervention group and 45 to the control group. Participants were selected using a convenience sampling technique. The study included children diagnosed with ASD aged 2–10 years. Children with comorbid conditions other than autism, including cerebral palsy, hearing loss, and Down syndrome, were excluded. Parents were eligible if they had a child diagnosed with ASD and could understand either English or Urdu. Parents whose children were already receiving therapeutic interventions were excluded. Parents in the intervention group received a structured educational program focusing on strategies to improve their children's adaptive behavior and quality of life, while the control group continued with standard therapeutic measures.

The intervention included biweekly parental training sessions addressing communication skills, daily living skills, socialization, and behavior management. Parents were trained to use visual aids, social stories, joint-attention activities, positive reinforcement, behavior charts, and strategies for managing sensory sensitivities. Weekly home-based activities were assigned to reinforce adaptive skills, and parents were encouraged to maintain records of their children's progress and challenges. Monthly support-group sessions were also conducted. Data were collected at baseline and following the intervention. Adaptive behavior was assessed using the Vineland Adaptive Behavior Scales (VABS), while quality of life was assessed using the Pediatric Quality of Life Inventory (PedsQL). Baseline assessment included parent interviews using the VABS and administration of the PedsQL to assess the child's quality of life. Following completion of the intervention, both instruments were re-administered to assess changes from baseline.

The demographic questionnaire collected information regarding age, sex, date of diagnosis, language spoken at home, and mode of communication. The adopted quality-of-life questionnaire consisted of 23 items rated on a five-point response scale ranging from 0 (never) to 4 (almost always). The VABS domain-level parent/caregiver questionnaire consisted of 40 items scored from 0 (never) to 2 (usually/often). The questionnaires were translated into Urdu and reviewed by five experts. Content validity was assessed using the Content Validity Index (CVI), with reported CVI values of 0.90 for VABS and 0.83 for PedsQL. The total study period was reported as nine months, comprising a two-month pre-intervention phase, a four-month intervention phase, a one-month gap period, and a two-month post-intervention phase. Data were analyzed using IBM SPSS Statistics, version 22.0. Descriptive statistics, including frequencies and percentages, were used to summarize categorical variables, while inferential statistical tests were applied to evaluate differences within and between study groups. The thesis reports the use of paired-sample and independent-sample t-tests for pre- and post-intervention comparisons.

RESULTS

The analysis and interpretation of data collected to evaluate the effectiveness of parental educational intervention on adaptive behavior and quality of life among children with autism spectrum disorder (ASD). Data were analyzed using statistical techniques through IBM SPSS Statistics. A total of 90 participants were included in the study, consisting of 45 children in the intervention group and 45 children in the control group.

Adaptive behavior was assessed using the Vineland Adaptive Behavior Scales, while quality of life was measured using the Pediatric Quality of Life Inventory. Statistical analyses included descriptive statistics, independent sample t-tests, and paired sample t-tests to determine differences between and within groups.

4.1 Demographic Distribution of Participants

A total of 90 children diagnosed with Autism Spectrum Disorder participated in the study. Participants were divided into two groups:

Intervention Group = 45

Control Group = 45

Both groups were assessed before and after the parental educational intervention.

4.2 Baseline Comparison Between Intervention and Control Groups

An independent sample t-test was conducted to examine whether there were significant differences between the intervention and control groups before the intervention.

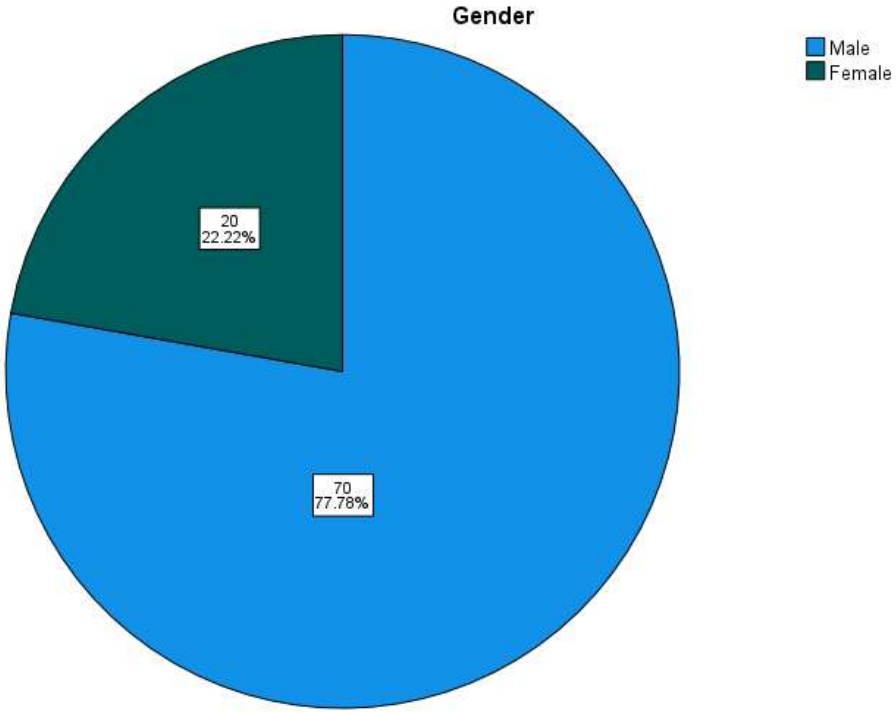

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Table 1: Effect of Educational Intervention on Adaptive Behavior

Adaptive Behavior Domains		Pre Data Mean ± SD	Post Data Mean ± SD	P value
Communication	Intervention Group	18.55 + 6.19	18.91+ 5.89	0.004
	Control Group	20.40 +4.42	22.84+ 2.99	0.001
Daily Living Skills	Intervention Group	19.91 + 4.90	22.48+ 4.35	0.001
	Control Group	21.24+ 3.31	21.86+ 2.95	0.007
Social Skills & Relationships	Intervention Group	19.26 + 5.31	21.22+ 4.37	0.002
	Control Group	19.97 + 3.83	21.22 + 3.17	0.001
Physical Activity	Intervention Group	19.37 + 5.10	22.35+ 4.07	0.001
	Control Group	20.64 +3.53	22.64 + 3.06	0.001
Overall Adaptive Behavior Score	Intervention Group	77.11 + 20.13	84.97 + 15.36	0.001
	Control Group	82.26 + 13.10	88.57 + 8.68	0.001

The mean scores for all adaptive behavior domains increased from pre and post data in both the intervention and control groups. In the intervention group, Communication increased from 18.55 ± 6.19 to 18.91 ± 5.89, Daily Living Skills from 19.91 ± 4.90 to 22.48 ± 4.35, Social Skills and Relationships from 19.26 ± 5.31 to 21.22 ± 4.37, and Physical Activity from 19.37 ± 5.10 to 22.35 ± 4.07. The Overall Adaptive Behavior Score also increased from 77.11 ± 20.13 to 84.97 ± 15.36. All these improvements were statistically significant ($p<0.05$). Similarly, in the control group, Communication increased from 20.40 ± 4.42 to 22.84 ± 2.99, Daily Living Skills from 21.24 ± 3.31 to 21.86 ± 2.95, Social Skills and Relationships from 19.97 ± 3.83 to 21.22 ± 3.17, and Physical Activity from 20.64 ± 3.53 to 22.64 ± 3.06. These changes were also statistically significant (all $p<0.05$). Overall, post-intervention mean scores were higher than pre-intervention scores in both groups, indicating significant improvement in adaptive behavior.

Table: 2: Effect of Educational Intervention on Quality of Life

Quality of Life Domains	Group	Pre Data Mean ± SD	Post Data Mean ± SD	p-value
Emotional Functioning	Intervention Group	16.31 +2.20	16.86+ 2.63	0.01
	Control Group	16.24 + 2.11	18.28 + 4.27	0.001
Social Functioning	Intervention Group	16.62+ 2.35	18.97 + 4.19	0.001
	Control Group	16.20+ 2.76	17.84 + 3.91	0.001
School Functioning	Intervention Group	16.82 + 2.47	19.02+ 4.11	0.001
	Control Group	16.22 + 2.59	17.31 + 3.69	0.02
Overall Quality of Life Score	Intervention Group	26.35 + 3.14	26.77+ 3.57	0.013
	Control Group	25.53 + 3.72	29.15+ 6.97	0.001

The mean scores of all quality-of-life domains increased from pre and post data in both groups. In the intervention group, Emotional Functioning increased from 16.31 ± 2.20 to 16.86 ± 2.63, Social Functioning from 16.62 ± 2.35 to 18.97 ± 4.19, and School Functioning from 16.82 ± 2.47 to 19.02 ± 4.11. While the Overall Quality of Life Score increased from 26.35 ± 3.14 to 26.77 ± 3.57. These improvements were statistically significant ($p<0.05$). Similarly, in the control group, Emotional Functioning increased from 16.24 ± 2.11 to 18.28 ± 4.27, Social Functioning from 16.20 ± 2.76 to 17.84 ± 3.91, School Functioning from 16.22 ± 2.59 to 17.31 ± 3.69. Overall Quality of Life Score from 25.53 ± 3.72 to 29.15 ± 6.97, with all changes being statistically significant ($p<0.05$). Overall, the post-intervention mean scores were higher than the pre-intervention scores in both groups, indicating significant improvement in quality of life. However, based on these within group p values lone, it cannot be concluded that the educational intervention was more effective than the control group.

Table: 3 Comparison of Daily living among children with Autism with pre and post data with both groups

Daily Living		Pre Data		Post Data	
		Intervention Group	Control Group	Intervention Group	Control Group
Uset the toilet during the day. May need help, but must know when he/she needs to go	Never	12(26.7%)	5(11.1%)	8(17.8%)	5(11.1%)
	Sometimes	13(28.9%)	25(55.6%)	13(28.9%)	25(55.6%)
	Usually or often	20(44.4%)	15(33.3%)	24(53.3%)	15(33.3%)
Counts at least 10 objects, one by one	Never	16(35.6%)	15(33.3%)	10(22.2%)	13(28.9%)
	Sometimes	17(37.8%)	16(35.6%)	17(37.8%)	16(35.6%)
	Usually or often	12(26.7%)	14(31.1%)	18(40%)	16(35.6%)
Puts on pullover clothing. Examples: T-shirt, sweatshirt, dress.	Never	14(31.1%)	8(17.8%)	9(20%)	7(156%)
	Sometimes	20(44.4%)	22(48.9%)	20(44.4%)	22(48.9%)
	Usually or often	11(24.4%)	15(33.3%)	16(35.6%)	16(35.6%)
Is careful around things that could burn him/her. Examples: Stove, oven, fire.	Never	4(8.9%)	1(2.2%)	3(6.7%)	1(2.2%)
	Sometimes	15(33.3%)	24(53.3%)	15(33.3%)	24(53.3%)
	Usually or often	26(57.8%)	20(44.4%)	27(60%)	20(44.4%)
Brushes his/her teeth. Must put toothpaste on toothbrush, brush well, and rinse.	Never	13(28.9%)	8(17.8%)	7(15.6%)	7(15.6%)
	Sometimes	19(42.2%)	19(42.2%)	19(42.2%)	19(42.2%)
	Usually or often	13(28.9%)	18(40%)	19(42.2%)	19(42.2%)

Buttons large buttons in the correct holes. Example,Coat buttons.	Never	20(44.4%)	13(28.9%)	13(28.9%)	10(22.2%)
	Sometimes	17(37.8%)	21(46.7%)	17(37.8%)	21(46.7%)
	Usually or often	8(17.8%)	11(24.4%)	15(33.3%)	14(31.1%)
Is careful when using sharp objects. Examples: Knives, scissors.	Never	11(24.4%)	7(156%)	9(20%)	7(15.6%)
	Sometimes	18(40%)	27(60%)	18(40%)	27(60%)
	Usually or often	16(35.6%)	11(24.4%)	18(40%)	11(24.4%)
Knows which foods are healthy and unhealthy,	Never	17(37.8%)	9(20%)	10(22.2%)	9(20%)
	Sometimes	17(37.8%)	18(40%)	17(37.8%)	18(40%)
	Usually or often	11(24.4%)	18(40%)	18(40%)	18(40%)
Calls others using phone, computer, or other electronic device.	Never	15(33.3%)	11(24.4%)	6(13.3%)	7(15.6%)
	Sometimes	18(40%)	22(48.9%)	18(40%)	22(48.9%)
	Usually or often	12(26.7%)	12(26.7%)	21(46.7%)	16(35.6%)
Uses household products correctly. Examples: Laundry detergent, furniture polish, glass cleaner.	Never	19(42.2%)	10(22.2%)	8(17.8%)	7(15.6%)
	Sometimes	18(40%)	26(57.8%)	18(40%)	26(57.8%)
	Usually or often	8(17.8%)	9(20%)	19(42.2%)	12(26.7%)

The above table show that the daily living domain an overall improvement after the intervention. Children who usually or often used the toilet appropriately increased from 20(44.4%) to 24(53.3%). While those who were usually/often able to count at least 10 objects increased from 12(26.7%) to 18(40%). Similarly, brushing teeth improved from 13(28.9%) to 19(42.2%) and using household products correctly increased from 8(17.8%) to 19(42.2%).

The analysis of the collected data revealed the following key findings: Both intervention and control groups were comparable before the intervention. The intervention group showed significant improvement in communication, daily living skills, socialization, motor skills, adaptive behavior composite, and quality of life after the parental educational intervention. The control group did not demonstrate significant improvement in adaptive behavior or quality of life. Post-intervention comparisons showed significantly higher scores in the intervention group compared to the control group. Overall, the results indicate that parental educational intervention significantly improved adaptive behavior and quality of life among children with Autism Spectrum Disorder.

Discussion

The present study evaluated the effectiveness of a parental educational intervention on adaptive behavior and quality of life among children with Autism Spectrum Disorder (ASD). The findings demonstrated that children in the intervention group showed significant improvements in communication, daily living skills, socialization, motor skills, overall adaptive behavior, and quality of life following the intervention. In contrast, no significant improvement was observed in the control group (Ho et al., 2020). The improvement observed in the intervention group suggests that structured parental education can play an important role in supporting the developmental and functional needs of children with ASD. Training parents in communication strategies, daily living activities, social interaction, positive reinforcement, and behavior management may help them provide consistent support in the home environment (Liang et al., 2022). The findings further indicate that involving parents directly in intervention programs may contribute not only to improvements in adaptive functioning but also to better quality of life. The absence of comparable changes in the control group strengthens the observed association between the parental educational intervention and improved outcomes. Overall, the results support the integration of parent-focused educational interventions into clinical, educational, and rehabilitation services for children with ASD (Musetti et al., 2021). However, the findings should be interpreted considering the study's relatively small sample, single-center setting, reliance on parent-reported measures, and absence of long-term follow-up.

Conclusion

The study evaluated the effectiveness of a parental educational intervention on adaptive behavior and quality of life among 90 children with Autism Spectrum Disorder (ASD), with 45 participants in each intervention and control group. Adaptive behavior and quality of life were assessed using the Vineland Adaptive Behavior Scales and Pediatric Quality of Life Inventory, respectively. The findings showed that both groups were comparable at baseline. Following the intervention, children in the intervention group demonstrated significant improvements in communication, daily living skills, socialization, motor skills, overall adaptive behavior, and quality of life, whereas the control group showed no significant changes. Overall, the study concluded that parental education and training are effective in improving adaptive functioning and quality of life among children with ASD. Parent-focused training programs should therefore be incorporated into clinical, educational, and community-based services.

RECOMMENDATIONS

Based on the findings of the present study, several recommendations are proposed to enhance adaptive behavior and improve the quality of life of children with Autism Spectrum Disorder (ASD). These recommendations are directed toward parents, healthcare professionals, educators, and policymakers.

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