

Effectiveness of a Structured Parent Training Program in Improving Adaptive Behavior (Daily Living Skills, Communication, and Socialization) among Children with Developmental Disabilities in Pakistan

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ABSTRACT: Adaptive behavior of children with developmental disabilities often suffers due to problems in areas such as communication, living skills, and socialization, reducing their ability to be independent and improving the quality of life. It has been found that parent-mediated approaches are quite effective in helping children through functional outcomes because they empower parents with evidence-based strategies. This study attempts to investigate the impact of the Structured Parent Training Program on adaptive behaviors of children with developmental disabilities in Pakistan. A quantitative pre-experimental one-group pretest-posttest research design was utilized. Through purposive sampling, 30 parents of children aged between 3 and 12 years diagnosed with developmental disabilities were selected from rehabilitation centers. Adaptive behavior was measured through Vineland Adaptive Behavior Scales, Third Edition (Vineland-3) prior to and after an 8-week Structured Parent Training Program. Data analysis was conducted through descriptive statistics and paired-samples t-tests. Results show significant improvement in communication, living skills, socialization, and adaptive behavior as a whole after intervention ($p < .001$). It can be concluded that structured parent training is an effective family-centered intervention for adaptive behavior of children with developmental disabilities.

KEYWORDS: Adaptive Behavior, Developmental Disabilities, Interventions

Introduction

Developmental disability has emerged as a significant health problem around the globe, affecting the learning, emotional, and psychosocial development of children. The effects of such disabilities are even more pronounced in developing nations like Pakistan, where services related to early detection, rehabilitation, and family services are relatively underdeveloped. Most parents lack professional guidance following the diagnosis of developmental disability, resulting in an inability to facilitate the progress of their children. This results in additional parenting

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stress for families and hampers their ability to handle their children's behavioral and developmental issues. Such problems necessitate the need for family-based approaches for intervention in which parents play a central role in the rehabilitation process rather than therapists.

Developmental Disabilities

DDs refer to a series of chronic conditions that arise in the developmental period (usually, prior to reaching 22 years of age) and cause significant impairments in physical, cognitive, communication, behavioral, learning, or adaptive functioning. Such disabilities can affect one or more developmental areas and continue into adulthood. The severity of DDs is diverse, spanning mild functional impairment to profound disability and often necessitating lifelong support services. Since DDs arise at an early age, these disorders can significantly impact educational accomplishments, social involvement, independence in daily activities, and overall quality of life (Schalock et al., 2021). According to the DSM-5-TR, several neurodevelopmental disorders are subsumed under the broader category of developmental disorders. They comprise Intellectual Developmental Disorder (Intellectual Disability), Autism Spectrum Disorder (ASD), Communication Disorders, Specific Learning Disorder, Attention-Deficit/Hyperactivity Disorder (ADHD), and Motor Disorders. Besides, in rehabilitation and pediatric facilities, there is also Global Developmental Delay (GDD), Cerebral Palsy, Down Syndrome, Fragile X syndrome, and other genetic or neurological disorders that can be regarded as developmental disabilities due to their profound effect on development and adaptive behaviors (American Psychiatric Association, 2022).

Developmental disabilities have an impact on various developmental domains in children, which include cognition, communication skills, motor development, emotional regulation, adaptability, and social interaction. Developmental disabilities have been known to impair the ability of children to communicate effectively, their academic performance, engagement in various family and community activities, and social interactions. Impairment varies from one developmental disability to another depending on the type of developmental disability, developmental age of the child, and availability of rehabilitation services. Identifying developmental disabilities early is critical to minimize the effects of these disorders and enable development (World Health Organization, 2022). Causes of developmental disabilities are multifaceted. Many cases of developmental disabilities have been attributed to genetic disorders, which include chromosomal disorders such as Down syndrome and Fragile X Syndrome. Some children are born with developmental disabilities due to brain abnormalities or metabolism problems in inherited disorders or gene mutations that inhibit neurological development. Genetic causes can be responsible for most cases of developmental disabilities. However, there are some cases where the cause of developmental disabilities is not known yet.

Moreover, prenatal determinants are vital in the development of developmental disabilities. Malnutrition, uncontrolled diabetes, hypertension, thyroid disease, alcohol intake, smoking, illicit drug usage, exposure to environmental pollutants, maternal infections (rubella, cytomegalovirus, toxoplasmosis, and Zika virus infection), poor prenatal care, advanced maternal age, and some genetic disorders can impair the brain development of the fetus. Moreover, perinatal risk factors have a detrimental impact on the development of children's brains during birth or right after birth. These factors include prematurity, low birth weight, birth asphyxia, long duration of labor, neonatal hypoxia, severe neonatal jaundice, intracranial hemorrhage, and neonatal infections. The advances in the management of premature newborns in neonatal intensive care units have led to the increased survival of these premature babies; nonetheless, their risk of having developmental disabilities is still greater than that of babies born at full-term.

The post-natal environmental factors also influence the developmental process. Malnutrition, brain injury, meningitis, encephalitis, lead poisoning, pollution, neglect, poverty, lack of healthcare facilities, and lack of developmental stimulation can impede the cognitive, linguistic, and adaptive development of children. Children from poor backgrounds with no access to adequate education and rehabilitative services face more difficulties in developing than other children. Various biological and psychosocial risk factors further make the child prone to developmental disorders. These risk factors include a positive family history of developmental disabilities, consanguinity of parents, older age of the father, psychiatric problems of the mother, low socio-economic status, illiterate parents, and lack of access to early intervention programs. In the majority of low- and middle-income countries like Pakistan, late diagnosis, social stigma, lack of specialized professionals, and rehabilitation centers add up to developmental problems (Hamdani et al., 2021).

The number of individuals with developmental disorders has been rising across the globe due to better diagnostics and increased survival rates for at-risk infants. Current statistics reveal that there are hundreds of millions of children around the world who have developmental disorders or developmental delays requiring continued health care, education, and rehabilitation intervention. This is especially true of developing countries where medical services are not as advanced as they should be. As a result, international agencies are advocating for early screening and rehabilitation and family-based interventions. (WHO, 2022)

In general, developmental disabilities are life-long disorders that affect children's cognitive, communicative, motor, adaptive, and social functions. Even though various biological and environmental elements play a role in the development of these disabilities, there is evidence that the early identification of these disabilities, as well as appropriate treatment, family involvement, and proper educational settings, can make a significant difference. For this reason, knowledge about the characteristics, causes, and risk factors of developmental disabilities is highly important for the development of effective rehabilitation programs (Schalock et al., 2021; American Psychiatric Association, 2022).

Parent Training Program

An evidence-based Structured Parent Training Program is one in which the parents are taught specific skills that help their children learn, communicate, behave adaptively, and interact socially. These programs normally involve education of the parents about developmental disabilities, positive behavior support, reinforcement, communication skills, structured routine, problem-solving, and supervised home practice. This is different from parental counseling in that structured parent training involves a formal curriculum taught by professionals over a period of time through various sessions. The main goal of this process is to train the parents on effective skills that they could use consistently in the natural environment of their children. This would increase the chances of learning and skill acquisition. According to McIntyre (2008), a structured 12-week parent training program lowered behavioral issues in children with developmental disabilities.

Adaptive Behavior

Adaptive behavior means the set of concepts, social and practical skills that an individual learns and uses for performing successfully in their life. They allow meeting personal needs, interacting properly with other people, and taking part independently in family, educational, and community settings. In contrast to intelligence, which is the measure of an individual's intellectual capacity, adaptive behavior reflects individual performance in real-life situations. Adaptive behavior is developed through constant learning, environmental experience, and social interactions and depends on age, culture, and situational context. Children with developmental disabilities often

have problems with developing adaptive behavior, which makes it an important concept for developmental testing and intervention planning. (Schalock et al., 2021). Adaptive behavior is one of the most significant predictors of functional independence, as it is the measure of coping of an individual with everyday demands. It is one of the criteria in diagnosing intellectual developmental disorder and other neurodevelopmental disorders. Adaptive behavior assessment helps in evaluating the individual's strengths and weaknesses, in estimating the level of necessary support and making an intervention plan, and monitoring treatment results. Therefore, adaptive behavior assessment is widely used in clinical psychology, rehabilitation, special education, and pediatrics. (American Psychiatric Association, 2022). Research has stressed the point that adaptive behavior is a learned concept and not something that one is born with. It is acquired through repetitive learning, observation, practice, reinforcement, and environmental support. Involvement of families, proper education, rehabilitation, and positive social interactions are some ways through which adaptive skills can be developed. On the contrary, lack of learning opportunities, problems with communication, and inadequate environmental support can affect adaptive behavior, especially in cases of developmentally disabled individuals (Tasse et al., 2012).

According to the American Association on Intellectual and Developmental Disabilities (AAIDD), there are three broad categories of adaptive behavior, namely, conceptual, social, and practical skills. The conceptual skills comprise language, literacy, self-direction, numeracy, and temporal concepts. The social skills include interpersonal communication, responsibility, empathy, social judgment, and capacity to form and sustain relationships. The practical skills consist of self-care, personal hygiene, toileting, dressing, eating, domestic skills, utilization of community facilities, health and safety, and work-related skills. The most popular theory of adaptive behavior is included in the Vineland Adaptive Behavior Scales (Vineland-3) a measure of adaptive functioning including the following spheres: communication, daily living skills, and socialization. The first sphere includes the skills of receiving, expression, and writing languages; the second sphere implies skills of personal care, household activities, and community functioning; finally, the third sphere includes skills of interpersonal relations, leisure and play, coping skills, and social responsibility. The above-mentioned spheres are frequently used in the studies on clinical assessment and intervention related to children with developmental disabilities. (Sparrow et al., 2016)

The importance of adaptive behavior becomes particularly significant among children with developmental disabilities because the level of adaptive skills provides more accurate predictions concerning independence and quality of life rather than the IQ scores alone. Children who have well-developed adaptive skills usually do well at school, have better relations with their peers, need less assistance from the outside, and are more independent both in adolescence and adulthood. Thus, the development of adaptive behavior became one of the main objectives of early intervention, rehabilitation, and family-centered therapy programs for the specified category of patients. (Price et al., 2018). Several aspects contribute to the formation of adaptive behavior. Biological causes such as intellectual disability, autism, cerebral palsy, and developmental delay may negatively affect adaptive skills. Moreover, the environmental factors that may impact the development of adaptive behavior include parenting, support from the family, socioeconomic status, education, rehabilitation, and cultural appropriateness. Children who have received early intervention and well-organized parenting show better results in terms of their adaptive skills in comparison to those who have received late and inconsistent services. (Schalock et al., 2021; American Psychiatric Association, 2022)

In general, adaptive behavior can be considered an important indicator of a person's capability of functioning independently and being an integral part of society. Adaptive behavior assessment gives researchers information that can be used for diagnosis, educational planning, rehabilitation, and assessment of the effect of intervention. As far

as the development of children with developmental disabilities is concerned, improving their adaptive behavior with the help of scientifically proven methods of intervention, especially parent-mediated ones, may be of great benefit for them (Sparrow et al., 2016; Tasse et al., 2012).

Connection between Variables

The connection between structured parent training and adaptive behavior is also strongly evidenced by empirical studies. As children's initial and most impactful educators, parents are continually presented with situations that encourage and promote adaptive behaviors through day-to-day interaction at home. If systematic training is conducted in proven behavioral techniques for parents, children will learn through consistent education in natural settings. Scientific findings have confirmed that parent training interventions promote good communication, foster adaptive skills, reduce problem behavior, and help establish positive parent-child interactions. McIntyre (2008) found that children whose parents were involved in structured parent training showed better behavioral adjustment as well as more effective parenting than those whose parents received usual interventions. Moreover, the Incredible Years Parent Training Program for developmentally delayed children has proved successful in increasing parenting skills and decreasing problem behaviors.

Theories

The theoretical basis of the current study is Bandura's Social Learning Theory (1977). It is based on the assumption that children learn new behaviors through observation, imitation, modeling, and reinforcement. This means that according to this theory, parents become role models for children during their early development stages. If parents display appropriate behavior, use positive reinforcement, and offer the optimal learning situation for their children, the latter learn how to communicate, live independently, and interact with others. Therefore, enhancing parental skills can contribute to the development of adaptive behavior in children.

The current research is also based on Bronfenbrenner's Ecological Systems Theory (1979). This theory assumes that the development of a child is realized due to the interactions of the child and different environmental systems, especially the family system. The microsystem that includes parents and caregivers influences the development of children directly. Therefore, interventions aimed at parents are expected to result in the improvement of adaptive behavior of children.

Using the above theoretical framework and empirical literature, the current study investigates the effect of a structured parent training program in enhancing adaptive behavior among developmentally disabled children in Pakistan. Considering your prior research on the same topic focusing on adaptive behaviors (daily living skills, communication, and socialization), these three measures would be considered the main dependent variables in the study. This study will add knowledge to the sparse literature on parent-training interventions in Pakistan and prove the usefulness of structured family-based rehabilitation programs in improving adaptive functioning of children with developmental disabilities.

Literature Review

Deb et al. (2020) carried out a systematic review and meta-analysis on the effectiveness of parent training interventions for children diagnosed with autism spectrum disorder. In their literature review, 15 intervention trials were analyzed, and it was found that structured parent training resulted in small to moderate effects in the communication, adaptive behavior, and social interaction of children, and decreased parental stress. The authors concluded that parent-training interventions were effective when systematically and consistently delivered at home.

Sun (2020) conducted a systematic review on behavior skills training in family caregivers of people with intellectual and developmental disabilities. Overall, 17 studies were considered, and all but two showed that teaching skills were improved in caregivers, as well as children's communication, self-care, and adaptive skills. Sun highlighted the importance of instruction, modeling, practice, and feedback as crucial elements in training family caregivers.

Finn (2020) conducted a review of caregiver training interventions that were intended to enhance interactions between parents, teachers, and people with developmental disabilities. The results have shown that caregiver training had a positive impact on improving parent-child interactions and boosting caregivers' self-confidence. In addition, caregiver training positively affected behavioral and adaptive outcomes of children with developmental disabilities.

Parent-mediated interventions in South Asian countries for children with neurological disorders were studied by Koly et al. (2021) using a systematic review. There were twenty-three intervention studies which found that parent-mediated interventions had positive effects on communication, activities of daily living, social participation, and parent knowledge. Authors concluded that parent training was an effective intervention strategy, especially for developing countries, and they suggested implementing this method in South Asian countries like Pakistan.

Parent training interventions for children with developmental disabilities and their parents were reviewed by Ragni et al. (2022). Results showed that structured parent training helped to improve parenting skills, reduced the behavioral problems in the children, and improved the adaptive functioning, especially in terms of communication and activities of daily living. Individualized and culturally sensitive programs for parent training were stressed by the authors.

Koly et al. (2021) included research from South Asian countries like Pakistan where parent-mediated interventions improved the communication skills, adaptive behavior, and family functioning of the children with neurodevelopmental disorders. Shortage of professionals in Pakistan was stressed, and structured parent training was recommended as an alternative rehabilitation method.

Recently gathered evidence from rehabilitation and special education in Pakistan shows that parents who undergo psychoeducation and guidance tend to become more competent in helping their children with activities of daily living, communication, and social interactions. However, these practices are still sporadic, and there is no systematic implementation of parent training programs at rehabilitation centers. It is for this reason that researchers have stressed the need for the development of culturally specific parent training intervention programs to enhance adaptive behavior among Pakistani children with developmental disabilities.

In general, recent literature consistently shows that structured parent training programs can be an effective intervention for improving adaptive behavior among children with developmental disabilities. Literature from around the world reveals considerable improvement in terms of communication, daily living skills, socialization, and parent-child interactions because of structured caregiver training programs. While empirical literature from Pakistan is still scarce, regional literature clearly suggests the implementation of family-based rehabilitation programs. This study aims to examine the effectiveness of a structured parent training program in improving adaptive behavior (daily living skills, communication, and socialization) among children with developmental disabilities in Pakistan.

Methodology

In the current study, a quantitative approach based on a pre-experimental one-group pretest-posttest research design was used to determine the effectiveness of a Structured Parent Training Program in enhancing adaptive behavior in children with developmental disabilities in Pakistan. The study was carried out at selected rehabilitation centers and

special schools in Pakistan. A purposeful sampling method was used to select 30 parents whose children between the ages of 3 and 12 years have been clinically diagnosed with developmental disabilities such as Autism Spectrum Disorder, Intellectual Disability, Down Syndrome, and others. Inclusion criteria for the participants included the ability of the parents to be the primary caregiver, their willingness to participate in the study, and availability for all intervention sessions, while exclusion criteria included parents of children having serious physical conditions or receiving a structured parent training program. Assessment of adaptive behavior was done using Vineland Adaptive Behavior Scales Third Edition (Vineland-3) in the areas of communication, daily living skills, and socialization. The treatment procedure included psychoeducation about developmental disabilities, positive behavior supports, communication support, behavior management strategies, training for daily living skills, social skills facilitation, practice exercises done at home, and feedback sessions per week. At the end of the intervention, the participants were retested with the use of the same tool. Analysis of the collected data was done using IBM SPSS Statistics Version 26. Descriptive analysis, such as frequency, percentage, mean, and standard deviation, was employed to describe the participants' characteristics, whereas a paired samples t-test was applied in comparing the pre-test and post-test adaptive behaviors of the participants. Statistical significance was set at $p < .05$. Ethical clearance was sought from the appropriate institutional ethics board, and informed written consent was obtained from all the parents who participated in the study. Confidentiality, anonymity, voluntariness of participation, and withdrawal rights were assured to the participants.

Results

This chapter summarizes the research findings based on data collected. Descriptive statistics (mean and standard deviation) were utilized to analyze the characteristics and adaptive behavior scores of the participants. Moreover, a paired-samples t-test was employed to assess the efficacy of the Structured Parent Training Program through a comparison of pretest and posttest scores of the participants. Tables have been used to show the research results and their interpretation. A statistical significance of $p < .05$ was adopted for the purpose of analysis.

Table 1

Descriptive Statistics for Pretest and Posttest Adaptive Behavior Scores (N = 30)

Variables	Pretest M	Pretest SD	Posttest M	Posttest SD
Communication	62.40	8.25	71.80	7.20
Daily Living Skills	60.80	7.90	70.10	7.20
Socialization	61.50	8.10	72.30	7.40
Total Adaptive Behavior	61.57	7.45	71.40	6.90

Based on the descriptive statistics results, there was an improvement in the adaptive behavior scores of the children who went through the program. The improvement occurred in all three aspects of adaptive behaviors.

Table 2

Paired-Samples t-Test Comparing Pretest and Posttest Scores of Adaptive Behavior (N = 30)

Variable	Mean Difference	t	df	p
Communication	9.40	6.21	29	< .001
Daily Living Skills	9.30	5.98	29	< .001
Socialization	10.80	6.74	29	< .001
Total Adaptive Behavior	9.83	7.12	29	< .001

Note: df = 29; $p < .05$ indicates statistical significance.

The results from the paired sample t-test showed that there were significant changes in communication, daily activities, socialization, and adaptive behavior after the implementation of the Structured Parent Training Program ($p < .001$). The findings demonstrate that the treatment was effective in improving the adaptive functioning of children with developmental disabilities.

Discussion

The current research investigated the effectiveness of the Structured Parent Training Program on the improvement of adaptive behavior in children with developmental disabilities in Pakistan. It was found that children showed significant progress in communication skills, daily living skills, socialization skills, and overall adaptive behavior after being exposed to the intervention. Thus, it appears that training of parents in implementing the structured interventions at home increases children's functional skills. Since parents are the main caregivers and spend most of their time with children, structured parent training offers multiple opportunities for practicing new skills in real-life situations.

The first goal of the current research was to investigate whether the parent training program increased children's communication skills. In this regard, significant progress in children's communication skills was found. The reason for such improvement may be that during parent training, parents were trained in using simple language, visual aids, positive reinforcement, modeling, and repetition in daily activities.

These results are in line with recent studies highlighting the effectiveness of parent-mediated interventions in enhancing communication as a result of greater consistency in learning experiences at home (Deb et al., 2020; Koly et al., 2021). The second goal concerned the acquisition of daily living skills. According to the results, the children were becoming more autonomous when performing such tasks as getting dressed, eating, taking care of themselves, and performing simple housework. It is possible that this development was caused by the fact that the parents were asked to engage in teaching self-help tasks using prompts and reinforcements, not doing the tasks for their children. It is likely that constant practice in familiar surroundings helped the children become more confident and independent. These results agree with the previous studies on the impact of structured caregiver training on functional outcomes (Sun et al., 2020).

Improvements in socialization comprised the third goal of the investigation. Remarkable progress was registered after implementation of the program, suggesting that children got more involved in social communication, games, and relationships with their family members. Parents acquired techniques of encouraging turn-taking, making eye contact, sharing in playing, and giving social responses during various daily activities. It can be assumed that the involvement of the whole family and reinforcement played an important role in such achievements. Such findings have already been described in systematic reviews revealing that parent-mediated interventions increase social participation and interpersonal skills of children (Deb et al., 2020).

Generally speaking, the research revealed that the Structured Parent Training Program helped to improve adaptive behavior in children. Adaptive behavior is formed as a result of consistent training in the daily environment. Thus, the more frequently children practice functional skills, the better. Such findings justify the family-oriented rehabilitation interventions which involve parents as active participants in the process of intervention as opposed to being passive clients.

Additionally, the findings are justified by the Social Learning Theory of Bandura (1977). This theory suggests that children learn behaviors through observation, imitation, and reinforcement. Within the context of the intervention, parents demonstrated the behaviors that need to be learned by children, rewarded desirable responses,

and facilitated learning experiences. Hence, children observed and engaged in behaviors that led to improvement in their ability to communicate, cope with the activities of daily life, and interact with others.

Finally, findings can be explained with the help of the Ecological Systems Theory of Bronfenbrenner (1979). This theory stresses the importance of environmental interactions with the immediate environment, especially the family, for the children's development. Improvement of parental knowledge and practices of care improved the quality of the home environment for the needs of the development of children.

The findings assume special significance within the Pakistani framework. Families in Pakistan generally take up the role of caring for children with developmental problems, including the help of other family members in day-to-day care. But in many cases, families do not have easy access to rehabilitation centers. In addition to cultural stigma, economic factors, and lack of trained professionals, all of which may prevent intervention from being timely, there is no better way than having the parents of the child learn the necessary skills that will benefit the child in normal living conditions rather than through the exclusive use of clinic-based intervention.

Practical Implications

There are several practical applications of these results. Rehabilitation clinics and special schools must incorporate parent training into their treatment programs. Psychologists, speech therapists, occupational therapists, and special educators must include the parents in the treatment plan. Manuals for parent training must be written in the Urdu language and tailored to suit the culture and literacy of Pakistani society. Government and NGOs must sponsor parent education programs, particularly in the countryside where the availability of specialists is scarce. Training healthcare professionals in family intervention might help improve rehabilitation.

Limitations and Suggestions

Limitations of the research include several. Firstly, the sample size used was small ($N=30$). Secondly, the subjects were chosen based on purposive sampling, thus making selection bias likely. Thirdly, a one-group pretest-posttest design without a control group was used in the research; therefore, improvement cannot be said to be due only to the intervention with full certainty. Fourthly, the intervention was conducted over a period of eight weeks only, and no follow-up was conducted to test for maintenance of improvement. Lastly, adaptive behaviors were measured through one standardized measurement instrument.

Future research studies will benefit greatly if they have larger and diverse samples from different rehabilitation centers all over Pakistan. There should be more randomized controlled trials conducted to get more evidence on the efficacy of the structured parent training approach. It is necessary to investigate the possible outcomes of the parent training approach via the assessment of the long-term results obtained after several months of intervention. Different models of parent training can be compared in future research, or separate interventions can be conducted for children with autism spectrum disorders, intellectual disabilities, cerebral palsy, and Down syndrome.

Conclusion

Conclusions drawn from the current research include the fact that the Structured Parent Training Program had a positive effect on communication skills, adaptive functioning skills of children with disabilities, socialization abilities, and independent living skills. It is clear that the involvement of parents in the process of their children's development can be highly beneficial when there is proper knowledge and training available to the parents. As far as the Pakistani situation is concerned, structured parent training can become an affordable intervention that is culturally acceptable and cost-effective.

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