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Training–Observation on the Effectiveness of Family Rehabilitation Training Model in the Treatment of Autism in Children

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Abstract: *Objective:* To explore the application effect of training-family rehabilitation training model and conventional rehabilitation training model in the treatment of autism in children. *Methods:* 40 children with autism admitted to our hospital from January 2024 to December 2024 were selected and divided into a family rehabilitation group and a conventional rehabilitation group using the random number table method, with 20 cases in each group. The conventional rehabilitation group adopted conventional rehabilitation training, and the home rehabilitation group adopted the training-family rehabilitation training model. The intervention effects of the two groups were compared. *Results:* The improvement in the Autism Behavior Scale score of the family rehabilitation group was greater than that of the conventional rehabilitation group, the social adaptability score was higher than that of the conventional rehabilitation group, and the total treatment effectiveness was higher than that of the conventional rehabilitation group ($p < 0.05$). *Conclusion:* The training-family rehabilitation training model can effectively improve the autistic behavior and social adaptability of children with autism, improve the treatment effect, and has clinical promotion value.

Keywords: Training-family rehabilitation training; Conventional rehabilitation training; Children with autism; Autistic behavior; Social adaptability

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1. Introduction

Childhood autism is a neurodevelopmental disorder that begins in infancy. The core symptoms include social communication difficulties, repetitive stereotyped behaviors, and narrow interests. It seriously affects the growth and development of children and their ability to integrate into society, and places a heavy burden on families and society. In recent years, the incidence of autism in children has gradually increased, and it has become one of the public health issues of global concern [1]. Currently, there is no clinical cure for autism in children. Rehabilitation training is a key means to improve children's symptoms and improve their quality of life. Its core goal is to help children master basic social skills, language expression abilities and self-care abilities in daily life, so as to promote them to better adapt to

society. Conventional rehabilitation training is mostly carried out in hospitals. Due to time and space constraints, training continuity is insufficient, and children are prone to resistance in unfamiliar environments, which affects the training effect. As the main environment in which children live, the family's participation has a very important impact on the effectiveness of rehabilitation. The company and guidance of family members can provide continuous rehabilitation support for children, allowing rehabilitation training to penetrate into every aspect of daily life. Based on this, this study adopts the training-family rehabilitation training model to treat autism in children, and systematically trains family members to become important participants in rehabilitation training, thereby achieving a seamless connection between hospital and family rehabilitation, observing its clinical efficacy, and providing a reference for optimizing the rehabilitation program for children with autism.

2. Materials and methods

2.1. General information

Forty children with autism admitted to our hospital from January 2024 to December 2024 were selected and divided into a family rehabilitation group and a conventional rehabilitation group using the random number table method, with 20 cases in each group. In the home rehabilitation group, there were 12 males and 8 males, 8 to 14 (10.26 ± 1.53) years old. There were 11 males and 9 males in the routine rehabilitation group, aged 8 to 15 (10.38 ± 1.47) years old. The two groups are comparable, $p > 0.05$.

2.1.1. Inclusion criteria

(1) Meet the diagnostic criteria for childhood autism;
(2) Aged 8 to 14 years old;
(3) Family members of the children voluntarily participate in the study.

2.1.2. Exclusion criteria

(1) Combined with serious organic diseases;
(2) Combined with other mental diseases;
(3) Unable to cooperate in completing rehabilitation training.

2.2. Method

The conventional rehabilitation group adopts conventional rehabilitation training, which is carried out by professional rehabilitation therapists in the hospital's rehabilitation treatment room. Before training, the therapist observes the children's behavior and communicates with their families to understand the children's interests, hobbies and ability levels, and develops a basic training plan. The training content includes social ability training, language function training and behavior modification training. Among them, social ability training covers eye contact, emotional expression, peer interaction and other modules, and guides children to actively participate in social interaction through situation simulation, game interaction, etc.; language function training gradually advances from pronunciation practice, vocabulary accumulation, sentence expression, and uses picture prompts, physical aids and other means to help children understand and express; behavior modification training targets children's repeated stereotyped behaviors, impulsive behaviors, etc., through positive reinforcement, alternative behavior guidance and other methods. Each training session lasts for 45 minutes, with a 5-minute rest in between. The training is conducted 5 times a week, at fixed times from Monday to Friday. The intervention continues for 6 months. The training effects of the children are evaluated and the training plan is adjusted every month.

The family rehabilitation team adopts the training-family rehabilitation training model, adding family rehabilitation training and guidance on the basis of conventional rehabilitation training, as follows:

(1) Family training

A training team composed of experienced rehabilitation therapists provides systematic training to the families of children with autism. The training content includes the etiology and mechanisms of childhood autism, clinical symptom characteristics, core principles of rehabilitation training, common training techniques, family training plan formulation methods, children's emotional management and emergency response measures, etc. The training uses a combination of theoretical explanations, case analysis, practical demonstrations, and group drills. The theoretical explanation part helps families understand relevant knowledge through PPT presentations, video playback, etc. In the practical demonstration session, therapists conduct on-site demonstrations of specific training movements and communication skills. During group drills, family members simulate training scenarios in pairs, and therapists provide on-site guidance and corrections. Each training lasts for 90 minutes, including 20 minutes of theoretical explanation, 30 minutes of practical demonstration, and 20 minutes of interactive Q&A. It is conducted twice a month and lasts for one month. After the training, the family members' mastery will be assessed through a theoretical examination and practical assessment. Those who fail to meet the standards will receive one supplementary training.

(2) Family rehabilitation training

Based on the training content and the personalized training plan formulated by the therapist, family members conduct rehabilitation training for the children at home every day. The training environment is the living room or bedroom that the children are familiar with to avoid external interference. The training content is consistent with hospital rehabilitation training, including social interaction, language expression, behavioral norms, etc. It is specifically set up as basic modules such as daily greeting exercises, object recognition and naming, simple command execution, emotion recognition and expression, etc. Each training is 30 minutes, and the training is twice a day, scheduled at 10 a.m. and 4 p.m., staggered with the hospital training time. The therapist will follow up once a week by phone or at home for 30 minutes each time to understand the training situation of the child and the problems encountered by the family. They will view the training process through video, adjust the training plan according to the child's progress and ability improvement, and continue the intervention for 6 months.

(3) Precautions

During the training process, family members need to closely observe the child's facial expressions, body movements, etc., and avoid forced training. If the child appears crying, emotional, etc., the training must be suspended in time and comforted through toys and games that the child is interested in. Control the training intensity during training and gradually increase the difficulty to avoid excessive fatigue of the child. At the same time, the child should be taken to the hospital for review regularly, once a month, so as to promptly evaluate the recovery effect and adjust the overall intervention plan.

2.3. Observation indicators

Compare the Autism Behavior Scale scores, social adaptability scores and total treatment effectiveness between the two groups before and after intervention. The Autism Behavior Scale includes dimensions such as social interaction and language expression. The higher the total score, the more severe the symptoms of autism. The social adaptability score is evaluated using the Social Adaptability Rating Scale. The higher the total score, the stronger the social adaptability. The total effective rate of treatment is determined by the degree of symptom improvement. Significant improvement in symptoms is considered effective, and the proportion of effective cases is calculated.

2.4. Statistical methods

Data were analyzed using SPSS24.0. *t*-test for measurement data; χ^2 test for count data. $p < 0.05$ represents significant difference.

3. Results

3.1. Comparison of autism behavior scale scores between the two groups before and after intervention

After the intervention, the scores of the home rehabilitation group were lower than those of the conventional rehabilitation group ($p < 0.05$), **Table 1**.

Table 1. Comparison of Autism Behavior Scale scores between the two groups before and after intervention ($\bar{x} \pm s$, points)

Group	Pre-intervention score	Post-intervention score
Conventional rehabilitation group (20)	62.35 ± 5.82	45.68 ± 4.96
Family rehabilitation group (20)	61.98 ± 5.74	32.45 ± 4.18
t	0.286	12.900
p	0.775	0.000

3.2. Comparison of social adaptability scores between the two groups before and after intervention

After the intervention, the scores of the home rehabilitation group were higher than those of the conventional rehabilitation group ($p < 0.05$), **Table 2**.

Table 2. Comparison of social adaptability scores between the two groups before and after intervention ($\bar{x} \pm s$ points)

Group	Pre-intervention score	Post-intervention score
Conventional rehabilitation group (20)	35.26 ± 4.38	48.75 ± 5.12
Family rehabilitation group (20)	34.98 ± 4.26	62.34 ± 5.86
t	0.290	11.045
p	0.773	0.000

3.3. Comparison of the total effective rate of treatment between the two groups

The total effective rate of treatment in the home rehabilitation group was higher than that in the conventional rehabilitation group ($p < 0.05$), **Table 3**.

Table 3. Comparison of the total effective rate of treatment between the two groups [n (%)]

Group	Valid	Invalid	Always efficient
Conventional rehabilitation group (20)	14 (70.00)	6 (30.00)	14 (70.00)
Family rehabilitation group (20)	19 (95.00)	1 (5.00)	19 (95.00)
χ^2			4.329
p			0.037

4. Discussion

The rehabilitation of children with autism is a long-term and complex process that requires continuous and effective intervention support. However, due to the limitations of training time and venue, conventional rehabilitation training is difficult to achieve all-weather, continuous rehabilitation intervention, resulting in the rehabilitation effect being often

affected to a certain extent. The training-family rehabilitation training model combines professional rehabilitation training in hospitals with daily rehabilitation training at home. Through systematic training for family members, family members can master professional rehabilitation training skills, thereby providing continuous rehabilitation intervention for children in the family environment, making up for the shortcomings of conventional rehabilitation training, and significantly improving the continuity and pertinence of rehabilitation training. This model breaks the time and space limitations of traditional rehabilitation training, allows children to receive rehabilitation stimulation in various scenes of daily life, realizes the normalization of rehabilitation training, and effectively solves the problem of discontinuous intervention in conventional training [2].

The results of this study show that after the intervention, the scores of the Autism Behavior Scale in the family rehabilitation group were lower than those in the conventional rehabilitation group, and their social adaptability scores were higher than those in the conventional rehabilitation group. This result fully demonstrates that the training-family rehabilitation training model has a more significant effect in improving the symptoms of children with autism. As the most familiar living environment for children, family rehabilitation training can effectively reduce children's sense of strangeness and resistance, allowing children to receive training in a comfortable and relaxed state, thereby improving training compliance. At the same time, there is a close emotional connection between family members and children. Family members can more keenly observe the behavioral changes and needs of children, and adjust training methods and intensity in a timely manner to make rehabilitation training more suitable for the individual conditions of children, thereby improving the training effect. In addition, the process of family members participating in rehabilitation training is also a process of strengthening communication and enhancing emotions with the children. This kind of emotional support has a positive role in improving the children's social communication barriers. In family scenes, children can show real behaviors in a natural state, and family members can seize training opportunities in time, such as integrating simple language communication and instruction execution training into daily activities such as eating and washing, making rehabilitation training more practical and interesting [3].

In terms of total treatment effectiveness, the home rehabilitation group was higher, which further confirmed the clinical advantages of the training-home rehabilitation training model. The formation of this advantage is closely related to the continuity of family rehabilitation training. Conventional rehabilitation training is only carried out in hospitals, and children lack effective rehabilitation intervention in the home environment, making it difficult to consolidate the rehabilitation effect. Family rehabilitation training can allow children to continue to receive rehabilitation stimulation in their daily lives, so that the effects of rehabilitation training can be effectively continued and strengthened. At the same time, rehabilitation therapists provide guidance and adjustments to family rehabilitation training through regular follow-up visits, ensuring the professionalism and standardization of family rehabilitation training and avoiding the impact of improper training methods on rehabilitation effects. After receiving systematic training, family members can accurately master the core skills and principles of rehabilitation training, effectively avoid wrong methods in family training, and ensure the scientific nature of the training. Regular follow-up visits by therapists provide professional support for family training, solve problems encountered by family members in a timely manner, and form a good pattern of collaborative intervention between hospitals and families [4].

From the perspective of the rehabilitation principles of childhood autism, continuous sensory stimulation and social communication are the key to alleviating the symptoms of children, and the training-family rehabilitation training model just meets this need. In the family environment, children can be exposed to more real-life scenes and social situations, and family members provide children with services by guiding them to participate in daily housework and other activities. Enriching sensory stimulation and social opportunities can help promote the development of children's brain neurological functions and improve their social communication skills and behavioral performance. In addition, the encouragement and support given by family members during rehabilitation training can enhance children's self-confidence and willingness to participate, allowing children to more actively cooperate with training, thus forming a virtuous circle to further enhance the rehabilitation effect [5]. The brains of children with autism have strong neuroplasticity, especially in infants and young

children. Continuous positive excitation can promote synaptic connection and development. Family rehabilitation training provides children with a stable source of excitation through daily routines, which helps to reshape brain function and improve core symptoms. At the same time, social communication in the family is more authentic and diverse. Children with family members can learn social skills that are more relevant to real life in their daily interactions with their family members. These skills are more easily transferred to other social scenes to improve social adaptability [6].

Practical clinical applications show that the degree of family participation is a key factor affecting the rehabilitation of children with autism. The training-family rehabilitation training model fully mobilizes the positive role of the family in the rehabilitation process by improving the rehabilitation and care capabilities of family members, extending rehabilitation intervention from a single hospital diagnosis and treatment to all aspects of family life. It not only improves rehabilitation effectiveness but also reduces hospital medical pressure. At the same time, it allows family members to have a deeper understanding of the child's condition and needs during the rehabilitation training, enhances mutual emotional communication, and has a multi-faceted positive impact on the physical and mental health development of the child. For hospitals, the implementation of family rehabilitation training reduces the length of intensive training for children in the hospital, alleviates the problem of shortage of rehabilitation resources, and enables more children to obtain professional rehabilitation services; for family members, participation in rehabilitation training changes their status from passive acceptance of diagnosis and treatment to active participation in intervention, enhances confidence and sense of responsibility for children's rehabilitation, and provides emotional support and relieves psychological burden through communication and sharing with other family members [7,8].

In short, the training-family rehabilitation training model is very effective in children's autism intervention. It can effectively improve children's autism-related behaviors and social adaptability and improve the overall efficiency of intervention. It provides a more effective intervention path for children's autism rehabilitation. This model fully exerts the important role of the family in the rehabilitation process and achieves the organic integration of hospital rehabilitation and family rehabilitation. It has high clinical promotion significance and is worthy of being widely used in children's autism rehabilitation intervention.

About the author

Ma Bihui (1989.06), Han nationality, native of Wuxi City, Jiangsu Province, undergraduate, supervisor of rehabilitation therapist; research direction: application of positive behavioral support strategies in the family environment.

Disclosure statement

The author declares no conflict of interest.

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