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The effect of behavioral training program for parents on disruptive behavior among children with attention deficit hyperactivity disorder

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Abstract

Background Attention deficit/hyperactivity disorder (ADHD) is one of the most prevalent ailments that affects both adolescents and children. Previous studies found that 40% of children with ADHD presented with disruptive behaviors, which reflect serious long-term problems associated with daily living activities. This study aimed to evaluate the effect of the behavioral parent training program on disruptive behavior among children with attention deficits hyperactivity disorder.

Results The current study showed significant statistical differences between the study and control groups after the behavioral training program regarding the disruptive of the children.

Conclusion The behavioral training program successfully reduced children's disruptive behavior.

Keywords Behavioral training program, Disruptive behavior, ADHD

Background

Attention deficit hyperactivity disorder (ADHD) can be considered one of the most communal disorders that affects not only children but also adolescents, ADHD is characterized by inattention/hyperactivity-impulsivity or both, ADHD is linked to behavioral, emotional, social, and academic issues in young children, as well as higher rates of antisocial behavior, criminal behavior, and drug misuse in adolescence [1].

Systematic reviews have determined that the community predominance ranges from 2 to 7% globally, with an average of about 5% [2, 3]. Based in a review of

epidemiological studies conducted from 1996 to 2008 on ADHD in Arab countries (Egypt, Palestine, Qatar, Dubai, Lebanon, Muscat, KSA) indicated that gender differences were present in all of the Arab studies they analyzed [3].

Despite the negative effects of this condition, it is unclear how common ADHD is in Arab society as a whole and Egypt in particular. Few studies on ADHD have been published in the Arab world. However, the incidence of ADHD across Arab nations was evaluated through a systematic-review study that used the meta-analysis method. The frequency of ADHD in these nations ranged from 7.4 to 14.8%, with a range of 7.8 to 18.3% in males and 3.5 to 11.4% in girls [4].

Cross-sectional research was carried out on (947) school-age children aged between six to ten years with the purpose of prevalence identification in Damietta governorate revealed that between 1 and 20% of kids worldwide, in both developed and developing nations, have ADHD. There is a wide range across Arab nations,

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including Egypt, between 1.3 and 20%. Prevalence may vary based on the size of the sample, type of study, criteria of diagnosis, study demographics, cultural context, and informants [5].

On the other hand, there were not enough study participants with ADHD to make a meaningful analysis of gender distribution possible. The prevalence of ADHD was greater in men than in women across all Arab research, with ratios ranging from 2:1 to 3:1 which is in line with the international literature on the disorder in both clinical and epidemiological samples [4]. Children's disruptive behavior and functional impairment are strongly linked to ADHD [6]. Children with ADHD are more likely to struggle with controlling troublesome behavior and emotions, and they also tend to have greater cognitive functioning issues [7].

Behavioral parent training (BPT) can be described as a well-established intervention for children suffering from ADHD. Numerous worldwide recommendations recommend BPT as the first line of treatment. Parents are taught how to use behavioral approaches in BPT to improve the prosocial and adaptive behaviors of their children while lowering the disruptive and maladaptive behaviors. BPT also emphasizes fostering healthy parent-child interactions [8].

Nurses assist parents in understanding the reasoning behind the diagnostic procedure, the treatment plan, and the significance of follow-up to reassess the child and make sure the diagnosis and course of treatment are suitable over time [9].

The study aimed to investigate the effect of the behavioral training program for parents on disruptive behavior among children with ADHD.

Methods

This is a single-blinded randomized controlled trial which was conducted on a sample of 50 participants of children with ADHD previously diagnosed according to DSM-5. The closed opaque envelope technique was used for randomization. The participants were divided randomly into two groups of equal numbers, the study group (who received behavioral training program) which was invented by the researchers after reviewing the current, past, local, and international related literature and obtained training courses like TOT and behavior modification and the control group who received traditional care (Family counselling sessions for parents who have a child with ADHD that are held by the social worker in the hospital) the randomization of selected parents either father or mother who was always attending with the child to the clinic was done after obtaining written informed consent.

The study was conducted at outpatient clinics in two psychiatric and mental health hospitals. The study was conducted through a face-to-face interaction between participants and the researchers using a sociodemographic characteristics questionnaire and Child Behavior Assessment Instrument which was developed by Samarakkody and colleagues, 2010 [10] which used to identify children who may experience behavioral problems translated into Arabic (the mother language of participants) for a better understanding of the questions. The translation was done at the Center for Specialized Languages of the Faculty of Arts, Helwan University. The content validity was established through the evaluation of three experts in both psychiatric nursing and psychiatric medicine. Subsequent to the professional opinion of the professionals, some elements were adjusted to better suit the parents of the children with ADHD. The Cronbach alpha coefficient test was employed to assess the internal reliability. Cronbach's alpha coefficient value was 0.897. This study's data collecting began at the beginning of November 2021 then the program's implementation started in the first week of January 2022 and ended in the last week of March 2022.

The application of the behavioral training program in outpatients' clinics was two sessions per day weekly, in each hospital from (9 AM to 10:30 AM) and from (11 AM to 12:30 AM) and dividing parents into 4 groups with 6:7 parents/group. Researchers started with easy and widely accepted more difficult content. Lectures, group discussions, questions and answers, and demonstrations with participants to practice new skills methods were used to attain sessions.

The behavioral training program's design was 12 sessions implemented over three stages, the first session was the assessment session, ten sessions for training program application including both theoretical and practical application of the acquired knowledge about ADHD, Parental stress related to ADHD, relaxation techniques and how to practice, enhancement of problem-solving skills, proposing solutions and generating alternatives, Childs' time management at home, child's behavior management, while the final session for post-intervention evaluation.

Statistical analysis was performed using SPSS Program, version 20, 2013 created by IBM, Illinois, Chicago, USA. Qualitative data were presented using numbers and percentages, while the quantitative ones were displayed as mean and standard deviation (SD). While numerical variable differences were analyzed by independent sample *t*-test. *P*-value ≤ 0.05 was considered statistically significant.

Results

The current study's findings indicate that the study group's mean age was 35.4 ± 5.447 as opposed to 35.8 ± 4.749 for the control group. In addition, 76% of the study group, as opposed to 96% of the control group, had female participants. Also, 76% of the study group's parents were jobless, compared to 60% of the control group's parents, with $X^2 = 1.471$ and P -value = 0.225 indicating no statistically significant difference, which reflects the similarity of the two groups' occupations.

The current study's findings on parents' educational levels indicate that 24% of the study group had university degrees, compared to 56% of the control group. In contrast, 16% control group's parents had a secondary education, compared to 40% of the study group's parents. The current study's findings show that 76% of the study group's children aged between 5 and 10 years mean + SD = 7.36 ± 1.977 , while 50% of the control group's children aged between 5 and 10 years with mean + SD = 8.88 ± 3.244 , P value 0.185 With no statistically significant difference that reflects the homogeneous of the two samples with regard to the child's age. Regarding the child's gender, this study reveals that only 32% of both group's children were males.

Results of the current study show that statistically significant differences were found between post-program scores of the study and control groups regarding struggles (runs about or climbs things) where $t = -2.025$ at $P < 0.05$. Also, statistically significant differences were found between aggression among children as reported by their parents for both groups as regards purposely harm, where $t = 3.168$ at $p = 0.003$.

The finding of the current study shows that statistically significant differences were found between impaired social interaction among children as reported by their parents for both groups as regards plays easily with other children, where $t = 2.825$ at $p = 0.007$. However, statistically significant difference was found between total subscale impaired social interaction among children at pre-behavioral training program for both groups where $t = 3.707$ at $P = 0.001$.

Results of the current study shows that statistically significant differences were found between total subscale stereotyped behavior among children at post-behavioral training program for both groups, where $t = -2.165$ at $P = 0.035$. However, no statistically significant differences were found between abnormalities of communication among children as reported by their parents for both groups at pre- and post-behavioral training program and its total subscale.

Results show that the statistical differences between the study group and the control group were not significant at pre-intervention, which reflect homogeneity of

the sample. However, statistically significant differences were found between post-program scores of study and control groups regarding total child behavioral scores where $T = (2.116)$ at $p < 0.05$. Also, that there were highly significant statistical differences between child behavior assessment index score within the study group between pre- and post-behavioral training program intervention, where $T = 4.497$ at $P < 0.001$.

Discussion

The current study's findings show that there were no appreciable variations in sociodemographic data between both groups, which reflects similarity and harmony between the two groups. In addition, the mean parents' age for both groups were 35.40 ± 5.447 for study group compared with 35.84 ± 4.749 for control group; with about 48% of parents of both groups lie in the age group 35–45 years old.

This finding is in agreement with recent study in China studied factors influencing parenting stress among Chinese families of children with attention-deficit/hyperactivity disorder and reported that parents age mean + SD = 36.56 ± 5.2 [11].

According to the current study's findings, more than three-quarters of the study group's parents are female compared to the majority of the control group's parents attended with the child to the outpatient clinic and linked to behavioral training program.

This finding is in line with Bai and colleagues who studied the effectiveness of a focused, brief psychoeducation program for parents of ADHD children: improvement of medication adherence and symptoms, and stated nearly mothers' participation was nearly 75% [12].

On the other hand, the Italian study carried out by Bonifacci and colleagues 2019 who studied parenting stress and broader phenotype in parents of children with attention deficit hyperactivity disorder, dyslexia or typical development and revealed that 47% of the parents that had been studied were men [13].

According to the current study, boys made up more than two thirds of both groups' children. This finding may have a more reasonable explanation in that boys with ADHD are more likely to display disruptive behaviors, which make them referred for diagnostic testing earlier than girls.

The finding is in an agreement with Chesterfield and colleagues 2020 who studied Evaluating a Brief Behavioral Parenting Program for Parents of School-aged Children with ADHD and reported that boys exhibit ADHD more overtly and in a different way than girls. In comparison to boys, girls with ADHD tend to be less impulsive, hyperactive, and inattentive [14].

The current study result reveals no statistically significant differences were found between the study and control groups as regards some symptoms of ADHD (inattention, hyperactivity and impulsivity) in the post-behavioral training program. These results may be due to attention problems, especially among ADHD children are of those neurodevelopmental and cognitive problems that could result in crucial health problems such as stress in mothers of ADHD children. Impaired attention among ADHD children could contribute to lowering their efficacy in managing everyday life, play and/or schooling.

It is likely that inattention, hyperactivity and impulsivity among mothers of ADHD in our study acted as a barrier against the mental health of their mothers and resulted in feeling stress among them. Moreover, ADHD is a pervasive developmental disorder that could be worse as time prolongs. Therefore, long days or months spending with ADHD children resulted in stress in their mothers.

These findings are in line with the finding of the study conducted by Franke and colleagues, 2020 [15] who studied a RCT of an online parenting program for parents of preschool-aged children with ADHD symptoms. However this finding is in contrast with the result of the finding conducted by Risley and colleagues, 2020 [16] who studied effectiveness of behavioral parent training in the outpatient setting for preschoolers at risk for ADHD and reported statistically significant difference was found as regards inattention subscale at post-parent training program.

Also, this finding in contrast with the finding of the American study conducted by (Morgan and O'Keefe, 2021) [17] titled does a behavioral parent training program for parents of ADHD children improve outcomes? a pilot project and reported BPT programs have demonstrated significant improvement in frequency of the problem behaviors of hyperactivity, and impulsivity associated with ADHD.

The current study demonstrated the effectiveness of BPTP on some of symptoms of ADHD among children is consistent with findings from other studies. For example, in a study, participants who completed the BPT program relative to waiting-list controls showed parent-reported improvements in the overall severity of their children's ADHD symptoms [18].

Results of the current study reveal that statistically significant differences were found between aggression among children as reported by their parents for both groups as regards purposely harm at post-behavioral training program. This finding can be explained as the skills acquired during the behavioral training program teach the parents to contain their child which reduce

their harmful behavior and changed the parents' concept about their children's behavior.

This finding is in line with the finding with the study conducted by (Zwi, Jones, Thorgaard, York, and Dennis, 2012) [19] who studied parent training interventions for attention deficit hyperactivity disorder (ADHD) in children aged 5 to 18 years and reported that parent training may have a positive effect on aggressive behavior among children with ADHD.

However this finding contradict with the finding of the study conducted by Franke and colleagues, 2020 [15] who studied a RCT of an online parenting program for parents of preschool-aged children with ADHD symptoms and reported no statistically significant differences were found between aggression among children at post-parent training.

Results of the current study reveal that statistically significant improvements were found between impaired social interaction among children as reported by their parents for both groups as regards plays easily with other children. This finding can be explained as parental training programs can improve parenting skills which enhance the child's social interaction.

In agreement with the current study results Storebø and colleagues, 2019 [20] indicate a significant decrease in emotional problems, conduct problems, and peer problems in children with ADHD through social skills group training. An increase in prosocial behavior is also noted as a significant result of the training. Parents reported significant improvement in overall behavior in home setting and less complaints from class teacher. Parents rated improvement in emotional regulation by reporting exhibition of less anger and saying sorry after the unpleasant events.

Results of the current study reveal that statistically significant difference was found between total subscale stereotyped behaviors among children at post-behavioral training program for both groups. This finding is in line with the study conducted by Dahl, Ramakrishnan, Spears, and colleagues, 2020 [21] who studied psychoeducation interventions for parents and teachers of children and adolescents with ADHD: a systematic review of the literature who reported effects of psychoeducation as an intervention led to improvement in ADHD symptoms and behavioral problems, as reported by parents—potentially as a result of parents' greater knowledge about how ADHD influences their child's behavior, as well as potentially through an improvement in adherence to treatment following a psychoeducation course.

Results of the current study reveal that statistically significant differences were found between study and control groups at post-behavioral training program regarding child behavior. These results accept the

research hypothesis; Parent who receive the behavioral training program their children's disruptive behavior will be minimized than the children who receive traditional care at post-intervention than pre-intervention.

This finding can be explained in relation to the concept of acceptance as parents learned in behavioral training program how to deal with their child's behavior and sometimes parents should ignore minimal disruptive behavior of the child, also behavioral parent training includes comprehensive assortment of skills such as objective fragmentation, time scheduling, child involvement in the decision related to him.

The finding of the current study is in an agreement with the result of the study conducted by Ferrin and Taylor, 2013 who studied Evaluation of a psychoeducation program for parents of children and adolescents with ADHD: immediate and long-term effects using a blind randomized controlled trial and reported that psychoeducation program produced significant reductions in disruptive behavior [22].

Aligned with the previous analysis study conducted by Risley and colleagues 2020 who studied Effectiveness of behavioral parent training in the outpatient setting for preschoolers at risk for ADHD reported that parent who received behavioral parent training their children's disruptive behavior were minimized at post-intervention than in pre-intervention assessment [16].

Conclusion

This study's findings allow us to draw the following conclusions: disruptive behavior of the children whose parent received the behavioral training program minimized than the children who receive traditional care at post-intervention than pre-intervention.

Abbreviations

ADHD	Attention deficit hyperactivity disorder
BTP	Behavioral training behavior
CBAI	Child behavior assessment index

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Author contributions

AED, ZO, and WA: share the design, data collection and interpretation of the data, writing of the draft. All the authors read and approved the study.

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Availability of data and materials

Essential data supporting the findings of this study are available within the article. Further data are available on request from the corresponding author. The data are not publicly available due to privacy reasons.

Declarations

Ethics approval and consent to participate

The study was approved by Scientific Research Ethics Committee of the Faculty of Nursing, Helwan University, in its session No. 17 on 25/9/2019, then the ethical approval from the General Secretariat of Addiction and Mental Health on 4/10/2021 followed by the approval of managers of both Al-Abasia and Helwan psychiatric hospital and the statistical center of the same hospitals. All study procedures were conducted within the ethical guidelines as outlined in the Declaration of Helsinki and its later amendments. All the participants signed a written consent for participation.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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