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The Effect of Behavioral Training Program on Stress among Parents of Children with Attention Deficit Hyperactivity Disorder

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Abstract

Background: Attention Deficit/Hyperactivity Disorder (ADHD) is one of the most communal disorders that affects not only children but also adolescents, Parents having affected children with ADHD experience significant parenting stress more than other parents, **Aim:** the study was aimed to evaluate the effect of behavioral training program on stress among parents of children with attention deficits hyperactivity disorder **Design:** A randomized control trial research design was utilized in this study. **Subjects:** A convenient sample of parents having child with ADHD (50) **Setting:** Data were collected from the out-patient clinic department at Helwan hospital for psychiatry and mental health & Bet -El shams clinic for Abasia hospital for psychiatric disorder and Addiction. **Tools:** two tools were used for data collection (1): Socio-demographic data sheet, which included (a) Demographic data related to parent, (b) Demographic data of child, (2): parenteral stress scale. **Results:** current study showed that statistically significant differences were found between study and control groups at post behavioral training program regarding parenting stress, **Conclusion:** The behavioral training program has a successful effect in reducing stress among Parents of children with ADHD. **Recommendation:** Facilitating access to behavioral training programs in psychiatric hospitals and out-patient clinics and to integrate this intervention into the regular treatment plans for Parents of child with ADHD.

Keywords: *ADHD, Behavioral Training Program, Parenting stress*

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Background:

Parenting stress was described by (**Deater-Deckard**, **1998**) as the experience of distress or discomfort resulting from the role-specific demands of parenting that are qualitatively different than stressors from other life domains. Even though additional stressors (i.e., work related stress, interpersonal stress, etc.) may influence parenting stress, generally parenting stress is strongly related to differences between parent characteristics (i.e., temperament, psychopathology, etc.) and child characteristics.

Parenting stress is defined as an "aversive psychological and physiological reaction arising from attempts to adapt to the demands of parenthood". The parenting stress may negatively impede family functions in the form of dysfunctional parenting, negative interactions with the child, lower parental efficacy, child maltreatment and poor physical and psychological well-being (**Si, Ma, & Zhang**, **2020**).

The World Health Organization (WHO) defines neuro-developmental disorders as one of today's greatest public health challenges, with Attention Deficit Hyperactivity Disorder (ADHD) being one of the most prevalent among children worldwide, which typically cooccurs with delayed language development, motor functions, impaired emotional control as well as with other psychiatric disorders (**Borge, Biele, Papadopoulou, et al.**, **2021**).

According to Diagnostic and Statistical Manual of Mental Disorders (DSM-V), ADHD is defined as a neurodevelopmental syndrome with inattentive, hyperactive and /or impulsive symptoms (**Blanken, Courbet, Franc, et al.**, **2021**).

Behavioral parent training (BPT) is an evidence-based treatment for children with ADHD. Typical treatment programs include instruction on how to increase attention and rewards for appropriate behavior, how to manage the antecedents of appropriate behavior (e.g., providing effective instructions/ commands; establishing house rules and routines; planning), how to use prudent punishment following misbehavior (e.g., timeout/ grounding). Currently, multiple studies support the use of BPT as an effective approach alone (**Evans, Owens, Wymbs, & Ray**, **2018**), and in combination with other treatments (**Pelham, Fabiano, Waxmonsky, et al.**, **2016**).

Some studies on the components of BPT have yielded information on predictors of attendance. For example, (**Pelham et al.**, **2016**) investigated the sequence with which medication and psychosocial treatments such as BPT were implemented. Results illustrated that when BPT was administered prior to medication, attendance was uniformly high. However, when medication occurred first, and parents were later offered BPT, attendance was low.

The American Pediatric Association recently released guide- lines regarding the assessment and treatment of ADHD (**Wolraich, Hagan, Allan, et al.**, **2019**). These guidelines suggest that evidence-based behavioral parent training (BPT; i.e., parent training in behavioral management) and/or behavioral classroom interventions be prescribed as the first line of treatment for preschool aged children both with a diagnosis of ADHD as well as for behaviors consistent with ADHD if a diagnosis has not yet been confirmed (**Risley, Ciesielski, Loren, Peugh, & Tamm**, **2020**).

Nurses help parents understand the rationale for the diagnostic process, the approach to treatment, and the importance of follow-up to re-evaluate the child and make sure that the diagnosis and treatment are appropriate over time (**El-sebaie, Abdellatif, & Ali**, **2017**).

Prevalence of the study:

Attention-deficit hyperactivity disorder (ADHD) is a common childhood behavioral disorder. Systematic reviews indicate that the community prevalence globally is between 2% and 7%, with an average of around 5% (**Anokye, Acheampong, Edusei, Owusu, & Mprah**, **2020** ; **Sayal, Prasad, Daley, Ford, & Coghill**, **2018**).

Research conducted in psychiatry advisory indicated that from 1997/1998 to 2015/2016, there was an increase in the prevalence of ADHD among children and adolescents. The research found that 7.9% of children and adolescents were reported to have been diagnosed with ADHD. In 2015/2016, the reported prevalence of diagnosed ADHD was 10.2% (**Xu, Strathearn, Liu, Yang, & Bao**, **2018**).

Based in a review of epidemiological studies conducted from 1996 to 2008 on ADHD in Arab countries (Egypt, Ghaza, Qatar, UAE, Lebanon, Muscat, Saudi Arabia) (**Alhraiwil, Ali, Househ, Al-Shehri, & El-Metwally**, **2015** ; **Alkhateeb & Alhadidi**, **2019**) reported that all the Arab studies they reviewed showed gender difference. The prevalence of ADHD was investigated in different age categories among the Arab countries making it difficult to provide a reliable comparison between the countries.

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The prevalence of ADHD in the Arab society in general and in Egypt in particular is still vague, despite the problematic consequences of this disorder. In the Arab world, few studies have been published on ADHD. However, a systematic review study using the meta-analysis method estimated the prevalence of ADHD across Arab countries. In these countries, the prevalence of ADHD ranged from 7.4% to 14.8%, ranging from 7.8% to18.3% among boys and 3.5% to 11.4% among girls (**Farah, Fayyad, Eapen, et al.**, **2009**).

The prevalence of ADHD in Egypt:

A cross sectional study was conducted on 947 children (aged 6-10 years) to identify the prevalence and the epidemiological profile of ADHD in Damietta governorate reported that, ADHD affects between 1% and 20% of children Worldwide in developed and developing countries. In Arab countries including Egypt vary considerably between 1.3 and 20 %. The variability in prevalence might be due to sample size, study type, diagnostic criteria, populations of the study, cultural and informants (**Tharwat, Elzahab, Abouzed, et al.**, **2019**).

However, the numbers of subjects with ADHD in the study was too low to allow for meaningful examination of gender distribution. Results in all the Arab studies reviewed by (**Farah et al.**, **2009**) revealed the prevalence rate of ADHD was higher in males than in females, with ratios varying from 2:1 to 3:1, which is compatible with the international literature on ADHD in both epidemiological and clinical samples.

Significance of the study: Attention Deficit Hyperactivity Disorder is one of major clinical and public health problems because of its associated morbidity and disability in children, adolescents, and adults. Its consequences on the society are enormous in terms of financial cost, stress on families, impact on academic and vocational activities, and negative effect on self- esteem (**Azazy, Nour-Eldein, Salama, & Ismail**, **2018**).

Attention Deficit Hyperactivity Disorder is highly associated with disruptive behavior and functional impairment in children (**Sukhodolsky, Scahill, Zhang, et al.**, **2003**). Children with ADHD are more likely experience difficulties in regulating problematic behavior and emotions and have more problems with cognitive functioning (**Miller**, **2018).**

Hence, the parents of children with ADHD face challenges placing them at high risk for stress, reducing parenting practices and other negative psychological outcomes, which may result in poor child-parent relationship (**Leitch, Sciberras, Post, et al.**, **2019**).

Caring of children with ADHD incurs considerable costs to health and social services and the wider community. The presence of social, academic, and mental health problems is likely to increase the potential financial impact of children on services. For this reason, management of these problems is of great importance as it is expected to lead to considerable benefits and cost saving for the children, their family, and society.

The current study provides the rationale for the development a behavioral training program for reducing parenting stress among parents of child with ADHD. The investigators hope that the current study provides hope and motivation for both parents and children who are struggling with ADHD to decrease parenting stress.

Aim of the study: The study was aimed to evaluate the effect of behavioral training program on stress among parents of children with Attention Deficits Hyperactivity Disorder.

Research hypothesis: Parent who receive the behavioral training program will have statistically significant difference in stress than parents who receive traditional care at post intervention than pre intervention.

Design: A randomized control trial design was utilized in this study.

Subjects: A convenient sample of parents having child with ADHD (50) were involved in the study.

Setting: Data were collected from the out-patient clinic department at Helwan hospital for psychiatry and mental health & Bet -El shams clinic for Abasia hospital for psychiatric disorder and Addiction management.

Tools: two tools were used for data collection (1): Socio-demographic data sheet, which included:

A. Part one: parent data; A questionnaire developed by the researcher which includes: Age, sex, occupation, educational level, place of residence, number of children, history of familial suffering from ADHD and monthly income for family.

B. Part two: child data; Age, sex, order of affected child among siblings, parenting style and onset of the disorder.

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(2): parenteral stress scale (PSS) (**Berry & Jones**, **1995**) used to assess the level of stress experienced by parents, which takes into account positive and negative themes of parenthood, PSS is a self-report scale containing 18 items that includes four subscales, or domains of parenting: rewards, stressors, loss of control, and satisfaction.

Sample: A convenience sample of 50 parents having children with ADHD was estimated. A sample size of (50) participant was calculated using a G-power version 3.1.1 for power analysis. A power of 0.95 (B- 1- 0.95= 0.05) at alpha 0.05 (one sided) was used as the significance level, and effect size = (0.05) was utilized (**Cochran**, **1977**).

The parents divided randomly into two groups, study group (who received behavioral training program) and control group (who received traditional care) the randomization of selected parents was done after obtaining the informed consent. During the randomization process, neither the investigator nor parents know who would be assigned to each group. The investigator coded all children, after that the investigator selected the odd numbers for parents who participated in the control group and even numbers for children who participated in the study group.

Participants in each setting were coded and allocated to both groups separately from the other setting. Single blindness procedure was adopted as the investigator was the only one who knew which of both groups was the study or control one. Then, the investigator conducted the pre assessment of all children in both groups using measuring tools. Fig (2) refers to participants' flow diagram for both groups.

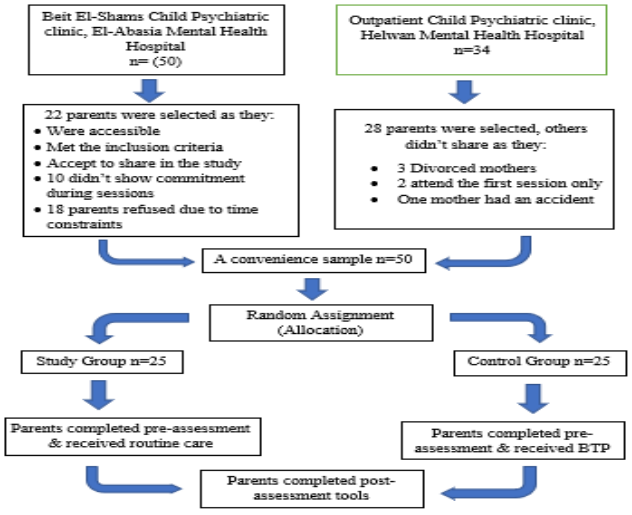

Fig 1): Participant's flow diagram of the study group and control group (developed by the investigator).

Fieldwork:

Data collection of this study was carried out in the beginning of November 2021 after obtaining the ethical approval from the General Secretariat of Mental Health and Addiction Treatment, then the approval of managers of both Al-Abasia and Helwan psychiatric hospital and the statistical center of the same hospitals, followed by the program to implement in three months starting from the beginning of January 2022 to the end of March 2022.

The study program was designed to be 12 sessions implemented in three phases, where the first session was for assessment, 10 sessions for applying training program, while the final session for evaluation.

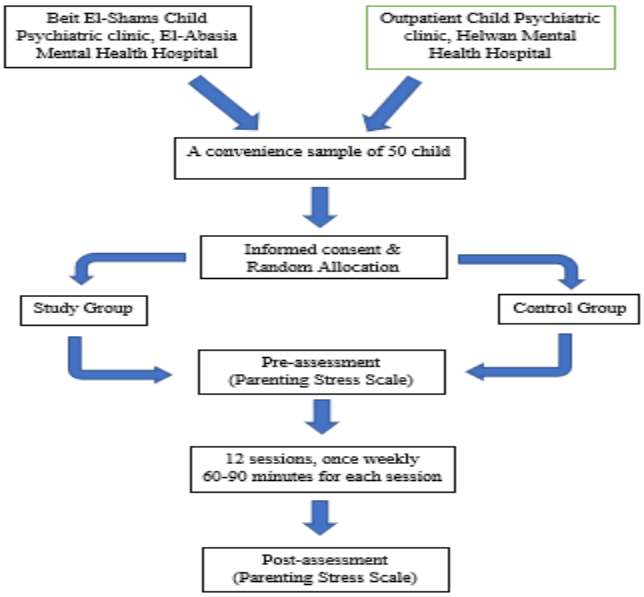

Figure 2): General Plan of the Program (developed by the investigator).

Results:

Results of the current study shows that the mean age of the study group was 35.40±5.447compared with 35.84±4.749 of the control group. In addition, 76 % of the study group were females, compared with 96% of the control group. Also, 76 % of the studied group parents were unemployed, meanwhile 60% of the control group parents were unemployed with X2 =1.471 and P-value = .225 without significant statistical difference which reflect the homogeneity between the two groups regarding the parent's occupation.

As regard to level of education results of the current study shows that 24% of the studied group parents' level of

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education was university level comparing to 56% of the control group. Meanwhile 40% of the studied group parents' level of education were secondary level of education comparing to 16% of the control group.

Regarding to child characteristics results of the current study shows that 76% of the child who enrolled to the study group aged between 5 <10 years with mean + SD equal 7.36±1.977, However 50% of the children who enrolled to the control group aged between 5 <10 years with mean + SD equal 8.88±3.244, P value 0.185 with no significant statistical difference which reflect the homogeneity of the two samples regarding the child's age, while regarding the gender of the child this table shows that 68% of the children of both the study group and control group were males, while only 32% were females.

Table 1) Parental satisfaction as perceived by parents of children with ADHD for both groups at pre and post behavioral training program (n=25 for each).

Parental Satisfaction		Study group Mean + SD	Control Group Mean + SD	t test	P Value
Doing necessary for child	Pre	2.12±.881	2.32+.900	-.794	.431
	Post	1.88±.781	2.24±.879	-1.530	.132
Child's behavior often embarrassing or stressful.	Pre	2.52±.782	2.56±.768	-.172	.864
	Post	1.88±.781	2.24±.779	-1.632	.109
I am satisfied as a parent.	Pre	1.28±.678	1.40±.645	-.641	.525
	Post	1.32±.627	1.36±.638	-.224	.824
Total Parental Satisfaction	Pre	5.92±1.382	6.28±1.370	-.925	.360
	Post	5.08±1.552	5.84±1.405	-1.815	.076

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Table 1): shows that no statistically significant differences were found between Parental satisfaction total score and its subitems for both groups at pre and post behavioral training program.

Table 2): Parental reward for both groups as perceived by parents of children with ADHD at pre and post behavioral training program (n=25 for each).

Parental rewards		Study group Mean + SD	Control Group Mean + SD	t test	P Value
- I am happy in my role as a parent.	Pre	1.72±.737	1.56±.583	.851	.399
	Post	1.52±.586	1.52±.586	.000	1.000
- I feel close to my child.	Pre	1.48±.714	1.56±.712	-.397	.693
	Post	1.48±.653	1.56±.712	-.414	.681
- I enjoy spending time with my child.	Pre	1.84±.850	1.72±.678	.552	.584
	Post	1.52±.653	1.68±.690	-.842	.404
- My child is an important source of affection for me.	Pre	1.24±.597	1.56±.712	-.910	.368
	Post	2.28±.542	1.40±.645	-.712	.480
- Having child gives me an optimistic view for the future.	Pre	1.64±.757	1.60±.764	.186	.853
	Post	1.40±.707	1.56±.712	-.797	.429
- I find my child enjoyable.	Pre	2.04±.790	1.96±.676	.385	.702
	Post	1.64±.757	1.92±.702	-1.356	.182
Total Parental rewards	Pre	9.96±3.062	9.80±2.198	.212	.833
	Post	9.84±3.032	9.64±2.196	-1.070	.290

*** Significance level at P<0.05** **** P<0.01**

Table 2): shows that no statistically significant differences were found between parental reward for both groups at pre and post behavioral training program for the total scale score and it's subitems.

Table 3): Parental stress as perceived by parents of study group at pre & post behavioral training program (n=25).

	Pre-intervention	Post-intervention

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Items	Mean ± SD	Mean ± SD	**Paired t-test**	**p-value**
Parental stress	36.56 ± 4.96	31.00 ± 8.357	3.495	**.002****

Table 3): reveals that there were statistically significant differences between Parental stress score within the study group between pre and post behavioral training program intervention where T=3.495 at P =.002

Table 4): Parental stressors as perceived by parents of children with ADHD for both groups at pre and post behavioral training program (n=25 for each).

Parental stressors		Study group Mean ± SD	Control Group Mean + SD	T	P Value
- Child caring takes more time & energy.	Pre	2.60±.577	2.64±.700	-.220	.826
	Post	2.08±.640	2.48±.823	-1.919	.691
- I sometimes worry whether I am doing enough for my child.	Pre	2.64±.569	2.68±.690	-.224	.824
	Post	2.08±.759	2.60±.764	-2.414	**.020***
- The major source of stress in my life is my child.	Pre	2.08±.812	2.32±.690	-1.126	.266
	Post	1.76±.597	2.24±.663	-2.689	**.010***
- Having child leaves little time and flexibility in my life.	Pre	2.24±.779	2.56±.768	-1.463	.150
	Post	1.84±.624	2.44±.768	-3.030	**.004****
- Having child has been a financial burden.	Pre	2.36±.810	2.72±.614	-1.771	.083
	Post	1.84±.746	2.56±.651	-3.637	**.001****
- Responsibility balance difficulty.	Pre	2.48±.770	2.40±.816	.356	.723
	Post	2.04±.676	2.32±.802	-1.335	.188
Total Parental stressors	Pre	14.40+2.828	15.32±2.410	-1.238	.222
	Post	11.64+3.252	14.64+2.464	-3.676	**.001****

*** Significance level at P<0.05 ** P<0.01 ***P<0.001**

Table 4): shows that statistically significant differences were found between parental stressors for both groups post behavioral training program as their worry about doing enough for child, their child is the major source of stress in their life, having child with ADHD leaves little time and flexibility in life, also cause a financial burden for them, where t= (2.414, 2.689, 3.030, and 3.637) respectively at P= (0.02, 0.010, 0.004 and 0.001). Also, statistically significant difference was found between total parental stressors for both groups after behavioral training program where T= 3.376 at P= .001.

Table 5) Parental loss of control as perceived by parents of children with ADHD for both groups at pre and post behavioral training program (n=25 for each).

Parental loss of control		Study group Mean + SD	Control Group Mean + SD	T test	P Value
If I had to do it again, I might decide not have child.	Pre	1.64+.860	1.88±.971	-.925	.360
	Post	1.40+.645	1.92±.954	-2.257	**.029***
I feel overwhelmed of being a parent.	Pre	2.36+.810	2.40±.866	-.169	.867
	Post	1.96+.790	2.32±.900	-1.503	.139
Having child meant too few choices of control.	Pre	2.28+.678	2.36±.700	-.410	.683
	Post	1.76+.597	2.36±.700	-3.260	**.002****
Total Parental Loss of control	Pre	6.28+1.568	6.64+1.890	-733	.467
	Post	5.12+1.536	6.60+1.893	-3.035	**.004****

*** Significance level at p<0.05 ** P<0.01**

Table 5): shows that statistically significant differences were found between Parental loss of control for both groups at post intervention regarding the total of subscales and items of; deciding not to have child and having child has meant too few choices of control over their life where t= (3.035, 2.257 and 3.260) at P= (0.004, 0.02, 0.002) respectively.

Table 6): Total parental stress score as perceived by parents of study & control groups at pre and post behavioral training program (n=25/each).

Items		Study group Mean + SD	Control group Mean + SD	t-test	p-value
Parental stress score	Pre	36.56 ± 4.96	38.04 ± 6.140	.937	.353
	Post	31.00 ± 8.357	35.76 ± 6.002	2.313	**.025***

*** Significance level at p<0.05 ** P<0.01**

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Table 6): showed that there was no significant statistical difference between control group and study group 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 parental stress where T= 2.313 at P<0.05.

Figure 3): Distribution of parents' stress level in study and control group pre-intervention program (n=25).

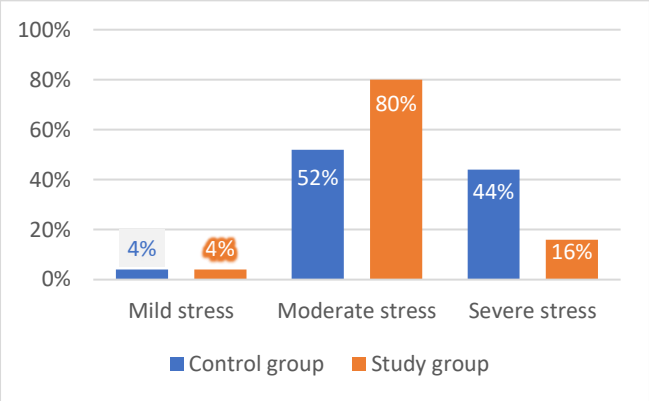

Figure 3): illustrates that 80% of the parents enrolled the study group were suffering from moderate stress while 16% of them were suffering from severe stress. Considering the parents enrolled to the control group 52% of them experienced moderate stress, beside 44% reported severe stress.

Figure 4): Distribution of parents' stress level in study and control group post behavioral training program intervention.

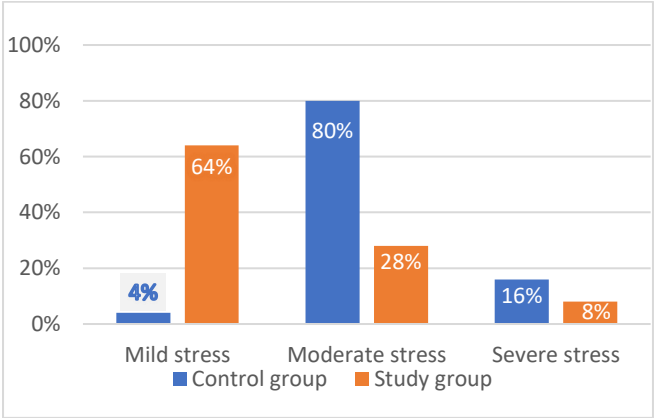

Fig 5): illustrates that parents enrolled the study group were suffering from moderate stress reduced to 28% while those were suffering from severe stress reduced to 8%. Considering the parents enrolled to the control group 80 % of them experienced moderate stress, beside 16% reported severe stress, which reflects highly significant statistically differences between control group and study group post intervention where X^2=20.161 at P - value <.001.

Discussion:

The current study results reveal that there were no significant differences between and control groups in terms of socio-demographic characteristics. This result indicates matching and harmony between the two groups. In addition, the mean age of the parents for both groups was 35.40±5.447 for the 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.

The majority parents in both study group and control group belonged to the age group from 35-45 years. This result may be explained in relation to increased awareness among the parents in this age category because of wide spread of technology and increasing awareness campaigns.

This result may be explained in relation to the criteria for selection of participating parents. The middle age will give the parents good opportunities to actively participate and taught in the behavioral training program. Also, to implement what they taught to their children at home.

This finding is in agreement with recent Chinese study conducted by (Si et al., 2020) who studied Factors influencing parenting stress among Chinese families of children with attention-deficit/ hyperactivity disorder and reported that parents' mean+ SD= 36.56+5.2.

As regard to gender of the parents the finding of the current study shows that more than three thirds of the study group parents compared with most of the control group parents who attended with the child to the outpatient clinic and joined the behavioral training program were females.

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A possible explanation for this result may be that the mothers are involved with the care of the children due parents' preoccupation with work to provide sufficient income for the family and financial care, and because of the rise in living demands and the deteriorating economic conditions, it became imperative for the father to work to provide financial security for the family. In addition, the women in the Egyptian society play a significant role and give more time in caring for the sick individual.

This finding is in agreement with (Bai, Wang, Yang, & Niu, 2015) who studied effectiveness of a focused, brief psychoeducation program for parents of ADHD children: improvement of medication adherence and symptoms and reported nearly three quarters of the parents who participated in this program were mothers.

However this finding contradict with the finding of the Italian study conducted by (Bonifacci, Massi, Pignataro, Zocco, & Chiodo, 2019) who studied parenting stress and broader phenotype in parents of children with attention deficit hyperactivity disorder, dyslexia or typical development and reported that 47% of the studied parents were males.

Result of the current study shows that the mean age of the Childs for both groups was 7.36+1.977 for the study group compared with 8.88+3.244 for control group; with about three quarters of the study group child compared with half of the control group child lie in the age group 5:>10 years old.

This result may be explained in relation to the concept of early detection. Teachers, school administrators, and parents are unable to early detect the disruptive behavior or inattention in children as students in the first two grades in the primary governmental schools pass easily without any effort, educational requirements, or challenges; they are hidden in the crowd of the class or may be misperceived as having a normal developmental learning difficulty that will be improved with increased age and skills of the child.

This result is in line with a study carried out by (Mimouni-Bloch, Offek, Engel-Yeger, et al., 2021) who studied "Association between sensory modulation and sleep difficulties in children with Attention Deficit Hyperactivity Disorder (ADHD) " and reported that the majority of children aged between 8:11 years with mean+ SD= 9.24+9.74.

However this result mismatch with the finding of the study performed by (Franke, Keown, & Sanders, 2020) who studied An RCT of an Online Parenting Program for Parents of Preschool-Aged Children With ADHD Symptoms and reported that the majority of children aged between 3:4 years old.

The present study shows that more than two thirds of children in both the study group and control group were boys. A possible explanation for this result may be that the boys with ADHD are more likely to exhibit disruptive behaviors and are thus referred for diagnostic evaluation earlier than girls are.

The finding is in an agreement with (Chesterfield, Porzig-Drummond, Stevenson, & Stevenson, 2020) who studied Evaluating a Brief Behavioral Parenting Program for Parents of School-aged Children with ADHD and reported that ADHD is more revealed in boys and is displayed differently than in girls. Thus, girls with ADHD are often less hyperactive, inattentive, and impulsive compared with boys.

The current study found that four fifth of the study group parents compared with half of the control group experienced moderate stress, This result may be due to significant child-level predictors of parenting stress in families of children with ADHD include severity of child ADHD symptoms in general hyperactivity and inattention/ distractibility, aggressive, and externalizing behavior has often been found to be an even more potent predictor of parenting stress.

In the same vein, the meta-analysis done by (Theule, Wiener, Tannock, & Jenkins, 2012) showed that parents of children with ADHD experience significantly more parenting

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stress than parents of children without ADHD. Except in child domain stress, ADHD was not associated with more parenting stress than other clinical disorders, indicating that parent domain stress may result from factors common to having a child identified with any clinical disorder (e.g., genetic factors that contributed to the child's disorder, hassles associated with having a child with a clinical disorder such as financial obligations and time commitments related to appointments).

Furthermore, both hyperactive impulsive and inattentive symptoms were predictive of parenting stress (although inattentive symptoms were not predictive of child domain stress), indicating that both types of symptoms play a role in parenting stress but that inattentive symptoms are associated with less family disruption.

In addition the study conducted by (Putri & Lutfianawati, 2021) who reported that that 74% experienced moderate stress. However this finding contradicts with a study carried out by (Çınar, Boztepe, Ay, et al., 2021) who reported the majority of parents experience high level of stress.

These discrepancies with the present study might be related to the differences of the approaches of assessment of stress among parents as well as the difference of the parent's characteristics like educational level, income, acceptance of the disorder, background about the disorder and point of view of the parent to the disorder.

Results of the current study reveal that, statistically significant differences were found between study and control groups at post behavioral training program regarding parenting stress. These results accept the research hypothesis; Parents who receive the behavioral training program will have statistically significant difference in stress than parents who receive traditional care at post intervention than pre intervention.

This result may be explained by different reasons; the first is the overlapping and bi-direct relationship between stress and behavior which highlight both variables as targets for intervention. In addition, the current study focused on parenting stress as the main target of remediation.

Behavioral training program typically includes a Comprehensive assortment of skills such as planning, setting goals, working cooperatively, social problem solving, decision making, responding to aggression, responding to failure, dealing with frustration, using self-control, asking for help, friendships, conversation, dealing with feelings, positive problem solving, relaxation techniques usage, time management, alternative preferences; these individual attributes may contribute to reduce parenting stress resulting from parenting child with ADHD.

Another Possible explanation for this finding is that behavioral training help in improving parents' social perception (how to be well adjusted to the demands of the different ongoing social situations). Stressed parents may be aware of what do in social situations, but they may not fully understand the reason or goal behind behavior of the child.

The inability to recognize social goals which cause to experience more difficulty in interpersonal conflicts and more difficulty adjusting to the behavioral demands of the child. Parent's Social perception is considered multidimensional with its components related to different types of social skills. Social perception involves the ability not only recognize the behavior of the child, but the knowledge of different social behaviors and their consequences on the child's well-being.

One of the most important explanations for this current result is that behavioral parent training interventions help in promoting parent's individual capacities as well as modifying the familial and environmental contexts and counterbalance its negative effects on children wellbeing.

This finding is similarly with the finding of the study conducted by (Rice, Ni Bhearra, Kilbride, Lynch, & Mcnicholas, 2020) who studied Rolling out a mindfulness-based stress reduction intervention for parents of children

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with ADHD: a feasibility study and reported that parents experienced a small but significant reduction in parental stress.

However this finding mismatch with the finding of the study performed by (Scavenius, Chacko, & Horn, 2021) who studied ADHD Symptoms do not Moderate Outcomes to Behavioral Parent Training Delivered in the Voluntary Sector and reported that the analyses indicated no effect of the behavioral training intervention on parenting stress.

Conclusion:

The main results showed that, Parent who received the behavioral training program had statistically significant difference in stress, than parents who received traditional care at post intervention than pre intervention.

Recommendations:

Based upon findings of the current study, the following recommendations were suggested:

Stress management programs should be designed and implemented for parents of child with ADHD to reduce stress among them and therefore, improve their mental health status.

Behavioral training program should be implemented into continuous professional developmental programs at hospitals, schools and campiness to decrease the parenting stress.

Further research is indicated to implement an analysis on the effect of behavioral training program on parenting stress.

The Future research should be done with a larger sample size in several psychiatric hospitals, schools and in a broader geographical area is recommended for generalizing the study findings.

Access to behavioral training programs in psychiatric hospitals out-patient clinics must be accessible, less expensive and easily reached and integrating this intervention into the regular treatment plans for parents of child with ADHD.

A hotline must be accessible and easily reached to solve immediate problems of parents of child with ADHD.

Further studies are needed to examine the effects of behavioral training program on the other outcomes such as parenting efficacy, parenting styles, and medication compliance.

Future research needs to further explore parental and contextual predictors of parenting stress in families of children with ADHD.

Future research should utilize longitudinal designs to further investigate the developmental pathway between child ADHD and parenting styles.

Further investigation regarding treatment dosage and mastery of parenting skills associated with the program is warranted.

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