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Evaluation of Psycho-Educational Intervention for Children Having Attention Deficit Hyperactivity Disorder and Their Parents

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Abstract:
Background: *Attention-deficit/hyperactivity disorder (ADHD) is the most common psychiatric disorder of childhood that can profoundly affect the academic achievement, well-being, and social interactions of children. Therefore, this study aimed to evaluate the effect of applying a psycho educational intervention for children having Attention-Deficit Hyperactivity Disorder and their parents. A quasi-experimental research design [pretest -posttest] was conducted at the Psychiatric out patient's clinic at El Ahrar Hospital at Zagazig City. The instruments used for data collection were socio-demographic and clinical data sheet, Conner's rating scale for parents, parents' knowledge about ADHD, and parental care givers positive and negative attitudes toward ADHD child, in addition to parents care givers practices toward their ADHD children. Forty eight children and their parents were participated in this study and were chosen according to inclusion criteria. Results revealed that there was statistical significant improvement of knowledge, practice, attitudes for the parents and also control of some symptoms for the children before and after psycho-educational program. To conclude, the implementation of psycho-educational program to the parents of children with ADHD and their children was effective in improving the knowledge, practice, and attitudes of parents. The intervention was also effective in improving some of child abnormal behaviors, and in controlling most of their ADHD symptoms. Recommendation: Conduct more developed programs in the study settings for more improvements. Nurses should exert more effort to support the parents of children with ADHD, and they need training to be able to do this.*

Keywords: *ADHD; Psycho-educational Intervention; Knowledge; practice; attitude*.

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I. Introduction

Children are the most vulnerable persons at any society that are mainly dependent on adult age persons for becoming well-being, so government, communities, schools, and parents, strive to protect them(1). Regrettably, any type of mental disorder can have a negative impact on the cognitive development and learning of children, which may include very high costs to both the individual and the society (2).

Attention-deficit/hyperactivity disorder (ADHD) is the commonest psychiatric disorder of children that can profoundly influence many dimensions like the well-being, academic achievement, and social interactions of children (3).

ADHD is mentioned in (DSM-5), as a disorder that associated with at least 6 symptoms of inattention and/or at least 6 symptoms of hyperactivity and impulsivity; these symptoms should be severe enough to interfere with functioning, should occur in at least two settings such as school and home, and must have an age of onset before 12 years of age; the diagnoses can be specified as a predominantly inattentive, predominantly hyperactive/impulsive, or combined presentation (4).

To date, no single factor has been specified as the clear cause of this disorder. However, it is thought to be a result of complex interactions between factors like genetic, environmental and neurological one (5).

ADHD places a significant burden on families [6]; much past researches had identified many parental factors which interfere with the parent-child relationship and raise the risk for parental stress. These include low confidence in parenting abilities, low perceived attachment with child, some health problems, role restriction (i.e., the level at which the parental role is restricting their freedom and their ability to keep their own identity), depression, anxiety, and spouse involvement (i.e., level of emotional and active support from co-parent) [7].

Parents with ADHD child play the most serious role in making the decision to initiate treatment sessions for their children [8]. The treatment may include many forms like Psycho-education which is defined as

a specific therapeutic program focusing on didactic communication of information and providing patients and families with numerous coping skills. It may be patient-focused, parent-focused, or school-focused; also it is a cornerstone and the basis of treatments for ADHD [9].

Nurses should be an integral part of the process of increasing the level of awareness about ADHD through improving the service delivery model for affected children and their families [10]; the nurse can assess the global influence of the child's mental health disorder on the child's social functioning, education, and also family life. Moreover, the risk for harm to self or others, and the potential for abuse or neglect are also serious elements of the assessment. A family history of mental health disorders should also be ascertained [11].

Furthermore, nurses help parents understand the rationale for the diagnostic process, the process of treatment, and the importance of follow-up to re-evaluate their child's case and make sure that the diagnosis and treatment are appropriate over time. Ultimately, nurses also help families understand and cope with the inevitable uncertainties [12].

Aim of the study:

The aim of the study was to evaluate the effect of applying a psycho educational intervention for children having Attention-Deficit Hyperactivity Disorder and their parents.

Hypothesis:

- Psycho-educational intervention in the form of counseling sessions for parents having children with ADHD enhances their knowledge, attitude, and practice.
- Psycho-educational intervention in the form of training sessions to the children with ADHD controls their symptom

II. Subjects and Method

Design:

A quasi experimental design was used.

Setting:

The study was carried out at the outpatient psychiatric clinic at El-Ahrar Hospital affiliated to the Ministry of Health (MOH), at Zagazig city

Sample:

A total sample of 48 parents and their children diagnosed with ADHD was recruited to participate in this study. This subject was chosen according to the following criteria:

Inclusion criteria:

For children

1. Definitely diagnosed by physicians with ADHD.
2. Aged 3 to 12 years.
3. Both sexes.

For parents:

1. Providing care to the child & Living with the child in the same dwelling.
2. Regular attendance to the clinic.
3. Verbal accepting taking part in the program.

Tools for data collection:

1. **Socio demographic and Clinical Data Sheet:** It was developed by the investigator, including data such as age of children, education's level, sex, and etc.

2. **Conner's rating scale for parents:** This scale was originally designed by Conner (2001) [13], and was given to the parents in order to rate the severity of the children's ADHD symptoms. The scale was designed to measure the intensity of ADHD symptoms. An Arabic version from the scale was used; that was translated into Arabic and valid by El Beheiry, (2012)[14]; so the scale is valid and reliable. It consists of 48 items, with a 4-point Likert scale responses: "Not at all", "Just a little", "Pretty much", and "Very much". This scale contains 6 sub domains: conduct problem, learning problem, psychosomatic, impulsive hyperactive, anxiety problem and hyperactivity index.

3. **Parents' knowledge about ADHD:** This tool was developed by Mourad, (2004) [15], in Arabic to assess parents' knowledge about ADHD. It included 7 questions about definition, causes, manifestations, associated features, associated disturbances, treatment and caring of child with ADHD.

4. **Parental care givers positive and negative attitudes toward ADHD child:** This tool was developed by Mourad, (2004) [15], to assess positive and negative attitudes toward ADHD child. It included 30 questions assessing parent care giver's expectation regarding child behaviors in daily living activities.

5. **Parents care givers practices toward their ADHD children:** This tool was developed by Mourad, (2004)[15], which included 46 questions to assess parents care givers practices toward their ADHD children (action taking by parent care givers when dealing with their ADHD in daily activities related to in attention, hyperactivity & impulsivity.

III. Method

1- An official permission was obtained using proper channels of communication. This was done through letters addressed from the Dean of the Faculty of Nursing, Mansoura University explaining the aim and procedures of the study and asking for cooperation to the director of Outpatient Clinics of Al Ahrar hospital.
2- Informed oral consent was obtained from the participants.
3- A pilot study was done on ten percent of the participants to ensure the clarity, applicability and feasibility of the study tools, and necessary modifications were done.
4- The investigator met with the subjects, introduced herself and explained the purpose of the study to obtain their consent to participate in the study and gain their cooperation and confidence.
5- The participants were interviewed individually before applying the planned program to collect the baseline data using all study tools.
6- The researcher started to fill-out the questionnaire from sample. The researcher read and explained each item to the caregivers and recorded their responses to each item. This interview took about 25 to 30 minute.
7- The objective of the program was to improve knowledge, practice, and attitude of the parents and to control their children's behaviors.
8- The program consisted of two main components: The first component was for giving a theoretical background of ADHD such as definition, signs and symptoms, etiology and types, complications and co-morbidity, medical treatment and precautions associated with medication, related side effects and behavioral therapy and strategies of behavioral modification. In addition to parental attitudes, and practice that included the reactions of parents to child diagnosis and changes that affect the family, and the problems resulting from the disease such as the financial, behavioral, educational, medical and family problems. It also addressed the basic requirements for parents to maintain physical and emotional equilibrium, and the methods that can help the parents in facing stressful situation, in addition to some useful instruction for good dealing with their children. these instructions to avoid behavioral problems inside and outside home, how to improve the child's academic performance and decrease hyperactive behavior, and how to deal with stubborn, nervous and isolated child .The second main component of the program addressed some behavioral sessions for the children to control and improve their behaviors.
9- The intervention was implemented in the form of 13 sessions. The duration of each session ranged between thirty minutes and forty-five minutes. The program was implemented in small homogeneous groups in the outpatient clinic; each group consisted of 5-10 parents according to their attendance, also, the groups were formed based on their mutual problems. The sessions were administered twice per week for each study group. They were held on Saturdays, and Wednesdays.
10- The program was implemented through various teaching methods as short lectures, group discussions, brain storming, demonstration re-demonstration, and role-play. The teaching media included power-point presentations and a handbook.
11- Each session was started by a summary about what was given through the previous session and the objectives of the new one to make sure that family caregivers recognize the program content, taking into consideration the use of simple language to suit the educational level of caregivers. Motivation and reinforcement techniques as praise and recognition were used during the session to enhance participation and learning.
12- The researcher designed an illustrative booklet in simple Arabic language to be distributed to caregivers.

Evaluation phase

- Immediately after the program. Evaluation was done to assess the impact of the program.

Ethical considerations

- Anonymity, confidentiality and privacy of the caregivers were assured.
- Voluntary participation and right to refuse to participate in the study was emphasized to the subjects.

Statistical analysis:

Data entry and statistical analysis had been done by SPSS 20.0 statistical software package. Cronbach alpha coefficient had calculated for assessing the reliability of the developed tools through their internal consistency. Qualitative categorical variables were compared using chi-square test. Statistical significance had been considered at p-value <0.05.

IV. Results

Table (1) show that the age of (60.4%) of the study sample was ranged from 6 to 10 years, with more in males (56.3%). Also, slightly more than half of them (58.3%) were living in rural areas.

Table (2) shows that (39.6.0%) of the fathers and (50.0%) of the mothers had secondary education. Meanwhile, 39.6% and 35.4% respectively, of fathers and mothers had university education. Although, about (72.9 %) of the sample reported no separation for the children from one or both of their parents, about (62.5%) of the study sample reported that there were continues problems between parents at home.

Table (3) demonstrates that there was negative association among the symptoms of ADHD of the children and the level of knowledge, practice, and attitude of their parents. This means when the knowledge, practice, attitude of the parents increased, the symptoms of ADHD of the children will be decreased .

Figure 1 demonstrates that out of the 48 (100%) children having ADHD before the intervention, with 68.8% had moderate symptoms and 22.9% had severe symptoms and after the intervention there was no one with severe symptoms and the percent of the children with moderate symptoms decreased to 6.3%. This means totally improvement at the child's symptoms according to Conner's rating scale for parents. This improvement was statistically significant at ($p<0.001$).

In total, Figure 2 illustrates knowledge score of the study sample. The table reveals statistically significant totally improvements in the parents' knowledge regarding ADHD at ($p<0.001$) in the post-intervention phase. Overall, none of parents (0.00%) had good knowledge before the intervention and this increased to 64.6% after the intervention. Also, the fair knowledge degree increased from 14.6% to 35.4%.

Figure 3 reveals statistically significant totally improvements in the parents' attitudes regarding ADHD at ($p<0.001$) in the post-intervention phase. Overall, the total positive attitudes of the parents increased from 35.4% at the pre phase to 89.6% after the intervention.

In total, Figure 4 illustrates the score of parents, care givers practices toward their ADHD children in the study sample. The figure reveals statistically significant totally improvements in the parents' practices regarding ADHD at ($p<0.001$) in the post-intervention phase. Overall, the percent of parents that feel highly satisfactory about their practice regarding their ADHD children increased from 6.3% at the pre phase to 83.3% after the intervention.

V. Discussion

Regarding to socio-demographic status; The age of slightly less than two thirds of the children in study sample was ranged from six to ten years. This could be explained by the view of Jafari et al. (2011) [16], who mentioned that before the age of five years, ADHD may be difficult to accurately diagnosed, because preschool age are over active, impulsive and easily distracted; when the preschool child becomes older, problems with inattention, hyperactivity and impulsivity tend to increase, more gaps in school performance, and learning, so could be easily diagnosed.

This foregoing present study finding is in agreement with a study conducted at Badghish care and Rehabilitation Center at Jeddah city in KSA. By Abo-Elmagd et al., (2017) [17], who found the age of about sixty five percentage of their children sample was between six to twelve years old. In the same line, Al Hariri and Faisal (2013) [18], mentioned that the high incidence of ADHD among school age children is four to twelve percent .

The finding is in congruence with previous studies reporting such as Welch (2015)[19], who reported that 9.5 percent of children in the United States between the ages of three to seventeen have ever gotten a diagnosis of ADHD; that's about 5.9 million kids. Also, EL-Sebaie, (2016) [20], found the age of children ranged between four to fourteen years, in her study that was carried on fifty ADHD children and their parents

The study also, illustrated that males were more than females. 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. This explanation is supported by the view of Novik et al. (2009) [21],

who reported that ADHD girls having problems on paying attention and are usually not hyperactive and disruptive as boys, that lead to under diagnosis and under treatment of girls than boys.
This finding is in agreement with Rydell, et al., (2018) [22], who reported in a Sweden study that the lifetime prevalence of both diagnostic-level and of sub threshold ADHD was consistently lower among girls compared to boys. Also, it is in the same way with the finding of a recent systematic review and meta-analysis of Wang et al., (2017) [23], in china to estimate the pooled prevalence of ADHD among children and adolescents in which the summarized prevalence of male was significant higher than that of female. Also, El-Nagger et al., (2017) [24], stated in study conducted in Badghish care & Rehabilitation center at Jeddah in Kingdom of Saudi Arabia, that 67.5% of children in their study were boys and 32.5% were girls.

Concerning the characteristics of the parents' of ADHD children in the present study, the current study shows that more than third of the fathers and half of the mothers had secondary education. This may indicate that these parents' level of education was low to intermediate, leading to poor knowledge about how to deal with their children having ADHD. Similar findings were reported in a number of previous studies, which showed that the educational levels of the parents of children with ADHD were generally low to intermediate, and significantly lower compared to control ones [25, 26, and 27].

Totally, the study findings revealed significant amelioration of the children symptoms according to Conner's rating scale for parents; where all of the children having ADHD before the intervention, with most of them had moderate symptoms and some had severe symptoms and after the intervention there was no one with severe symptoms and the percent of the children with moderate symptoms significantly decreased. This can reflect the positive impact of the psycho-educational program that confirmed the study hypnosis regarding the symptoms of the disorder among the sample and also elucidate the effective participation of the volunteers during the program and how they were cooperative with the research and interested in the study .

On the same line of the current results, Bai et al., (2015) [9], concluded in their Chinese study that psycho-education program had a positive impact on clinical symptoms of ADHD children and could be considered as a potential beneficial supplement to clinical practice. The findings of Hirvikoski et al., (2015) [28], also, support the potential values of psychoeducation for patients with ADHD and their significant others.

Regarding the results of parents' knowledge before the intervention, unfortunately, the majority of the study sample was unfamiliar with nature of the disorder and had poor knowledge especially regarding the causes, the definition of ADHD, and styles of caring with children .

This bad level of knowledge could be explained by the high rate of false beliefs that are spread around the disorder, likewise the misinterpretation and misconceptions of the signs and symptoms of illness; in which the hyperactivity and the impulsivity, for example, of the children explained as annoying behaviors and bad morals of them and so most of people don't pay attention to the risk of presence of an illness. Another explanation might be due to the lack of right and specific information about the disease on media such as television, newspapers, magazines, and etc. Furthermore, there is shortage in the health services that introduce health education for family and parents; the health services predominantly interested in giving medical care.

In line with this finding, Shah et al., (2017) [29], in an Indian search explored lack of knowledge among parents of ADHD children, and they concluded this lack as a cultural factor for the experiences of that disease in addition to other cultural factors like, stigma and blaming of family. Similarity, Mukherjee et al., (2016) [30]; declared in their study, in India, on school-aged children diagnosed with attention deficit hyperactivity disorder, that there was a significant lack of knowledge about ADHD among them and they finally concluded their research with a recommendation of the need for psycho-educational individual and group sessions for children with this disorder. However, in disagreement with the abovementioned current study findings, Dodangi et al., (2017) [31], in their cross-sectional descriptive study in University of social welfare and rehabilitation sciences in Tehran, found that the majority of their sample was familiar with the disorder of ADHD before participating in the study.

Fortunately, these poor results of parents regarding knowledge about attention deficit hyperactivity disorder improved after the implementation of the psycho-educational sessions; as two thirds of the participants became good in their knowledge score, the other third became fair and no one had poor knowledge. These good amendments in the level of the participant's knowledge could elucidate the favorable impact of the educational sessions and how they were effectiveness in the program.

In agreement with these results, Bai et al., (2015) [9], found major refinement in parents' knowledge about ADHD after psycho-educational sessions, as the average knowledge score of the parents in the intervention group significantly increased compared to the baseline and was also significantly more than the control one's endpoint knowledge score. As well as of these findings, Hirvikoski et al., (2015) [28], demonstrated similar increase and improvement in Knowledge about ADHD for the participants of their an open clinical feasibility trial at Stockholm County Council clinics.

Regarding the attitude of the parents of the study sample; the result of the current study revealed that more than two thirds of the parents had negative attitudes, before the implementation of the program. Similarly to this finding, but on teachers, Al-Omari et al., (2014) [32], represented their findings among primary school teachers in in Zarqa city, Jordan as teachers' attitude towards children with ADHD was down than expected, where many misconceptions about the causes and management of ADHD have emerged. The researchers attributed this low attitude to the lack of pre-service teachers' training on ADHD, the dearth of studies on the condition, and the almost absent formal and informal support of children with ADHD in Jordan. Also, Ghanizadeh et al., (2006) [33], said in Shiraz, Iran, that the attitude level towards ADHD children was low . However, in disagreement with the abovementioned current study findings, Amiri et al., (2016) [34], concluded their search results in Tabriz, Iran that among parents, most of them were estimated to have a positive attitude. Moreover, but among teachers; Youssef et al., (2015) [35], in Trinidad and Tobago, proclaimed that the attitudes toward students with ADHD were generally positive although most teachers suggested that students with this disorder should be taught by specialist teachers. Also, the majority of the studied sample of Mirza et al., (2017)[36], showed positive attitude, in the search done in Karachi, Pakistan.

Fortunately, the sessions of the psycho-educational program of the study positively changed the parents' attitudes; as the majority of the study sample changed to have positive attitudes. This could profess the success of these sessions and declare the positive effect of the program on the participants. Also, this positive change reflexes the formidable role of education in improving the attitudes toward ADHD.

In congruence with this explanation, Youssef et al., (2015) [35], in Trinidad and Tobago, represented the positive role of the in-service education concerning the attention deficit hyperactivity disorder among teachers that these services caused significantly improve knowledge, attitudes, and management skills among teachers which support their positive results of teachers' attitudes about ADHD .

In the same line with the present finding after the program, Wong et al., (2017) [23], proclaimed the effect of their group sessions with parents of children having ADHD that the sessions contributes to the moderate reductions in parenting stress and their dysfunctional attitudes. Aside from this positive effect of the present program, Wolraich et al., (2009) [37], stated the enhancement in attitudes after their guidelines .

Regarding parents practices, the present study declared that most of the parents had satisfactory feel regarding their ADHD children before the implementation of the program and after it, the majority of the sample felt highly satisfactory about their practice regarding their ADHD children.

In congruence with these present study findings, but on teachers, it was found that there was good practice regarding ADHD which play an important role in prevention, detection and screening of these children and prevent them from future consequences, in a study done by Mirza et al., (2017) [36], in Karachi, Pakistan among primary school teachers. Beside, Abikoff et al., (2014)[38], said in their randomized controlled trial of specialized and generic programs that parent training enhanced their behavior and practice toward the children. In addition, Wolraich et al., (2009) [37], stated the enhancement in practice after implementing their guidelines.

Regarding the correlation among symptoms of ADHD children and practice, knowledge, attitude of the parents in the current study sample; it was demonstrated that there was negative association among the symptoms of ADHD of the children and the level of knowledge, practice, and attitude of their parents. This means when the knowledge, practice, attitude of the parents increased, the symptoms of ADHD of the children will be decreased .

Similar to this finding, Coates et al., (2015) [39], concluded their result that parenting interventions were associated with reduction in ADHD symptoms with their children. Also, Zwi et al., (2011) [40], stated that parent training may have a positive impact on the behaviour of children with attention deficit hyperactivity disorder. Furthermore, Raghibi et al., (2014) [41], represented the result of their examination of the impact of parent training and behavioral therapy to control ADHD children; that the symptoms reduced after the program; their results indicated that parent training and behavioral therapy were effective in controlling ADHD children's behaviors. Therefore, it could be said psycho-educational intervention like programs conducted in the present study could improve knowledge, practice, attitudes of the parents having children with ADHD and will also control some of abnormal behaviors like ADHD symptoms for the children .

VI. Conclusion

The study findings lead to the conclusion that the ADHD children's most common symptoms are low concentration, excess activity, and impulsive behaviors. Their parents had poor knowledge, negative attitudes and unsatisfactory practices with their children case. The implementation of psycho-educational intervention in the form of educational sessions to these parents was effective in improving practice, knowledge, and attitudes of the parents. Also, the intervention in the form of training sessions was effective in improving some child abnormal behaviors and controls some of their symptoms. Moreover, the improvement in parents' knowledge, practice, attitudes, was the predictor of the improvement in their children's behavior.

VII. Recommendation

- The developed training program should be implemented in the study settings for further validation and for more improvements.
- Counseling clinics for parents with ADHD children are needed to ensure an effective and sensitive response to the needs of the ADHD children and their families.
- Nurses should exert more effort to support the parents of children with ADHD through developing and implementing group educational programs to inform parents about ADHD and provide them with an opportunity to meet and support each other.
- To be able to achieve this, the nurses, especially those working in setting deal with children with ADHD should be trained to be trainers of the parents of children with ADHD to help them deal properly with their affected children, and to be able to cope with the related stressors.

Acknowledgements

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Table (1): Distribution of socio-demographic characteristics of children in the study sample (n=48):

socio-demographic characteristics	Frequency	%
Age		
2- <6	8	16.7
6- < 10	29	60.4
10-12	11	22.9
Mean ±SD	7.3958±2.48176	
Gender		
Female	21	43.7
Male	27	56.3
Residence		
Rural	28	58.3
Urban	20	41.7

Table (2): Family characteristics of children in the study sample (n=48):

Family characteristics	Frequency	%
Father's level of education		
Primary	10	20.8
Secondary	19	39.6
University	19	39.6
Mother's level of education		
Primary	7	14.6
Secondary	24	50.0
University	17	35.4
Presence of continues problems between parents at home		
No	18	37.5
Yes	30	62.5
The child's separation from one or both of his parents		
No	35	72.9
Yes	13	27.1
Causes of separation		
Divorced	8	16.7
Death	0	0.00
Traveling	5	10.4
Non	35	72.9

Table (3): Correlation among symptoms of ADHD children and practice, knowledge, attitude of the parents in the study sample (n=48)

	Symptoms		practice		knowledge		Attitude	
Variable	r	P value	R	P value	R	P value	r	P value
symptoms	1		-.793**	.000	-.795**	.000	-.875**	.000
Practice	-.793**	.000	1		.840**	.000	.882**	.000
knowledge	-.795**	.000	.840**	.000	1		.851**	.000
Attitude	-.875**	.000	.882**	.000	.851**	.000	1	

(**) Correlation is significant at the 0.01 level (2-tailed).

Figure 1: Total scores of Conner's rating scale for parents (n=48):

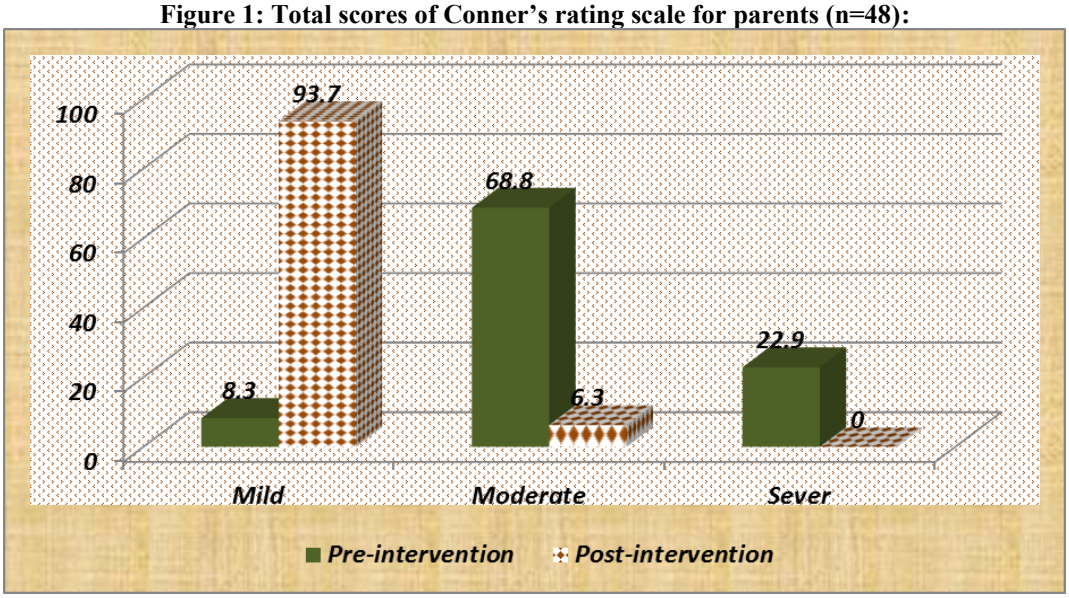


Figure 2: Total knowledge score of the study sample (n=48)

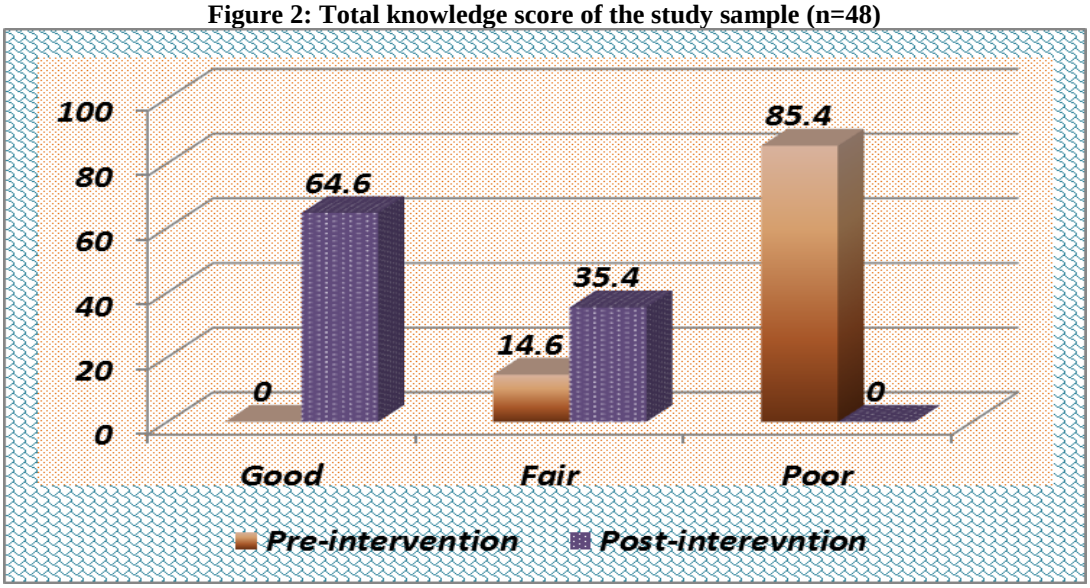


Figure 3: Total negative and positive attitude of the parents of the study sample (n=48)

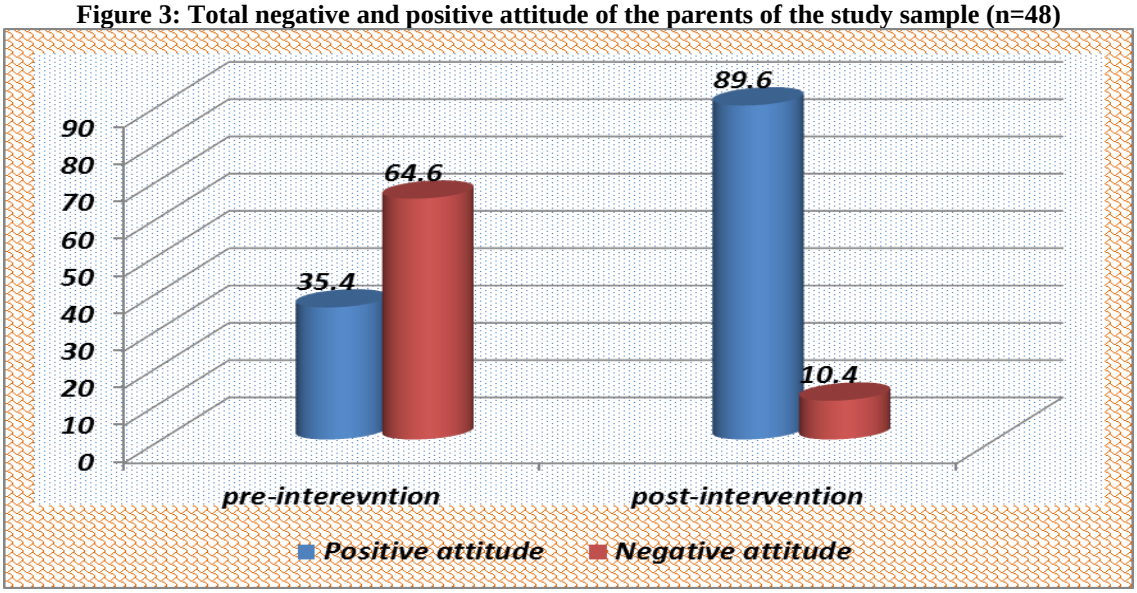
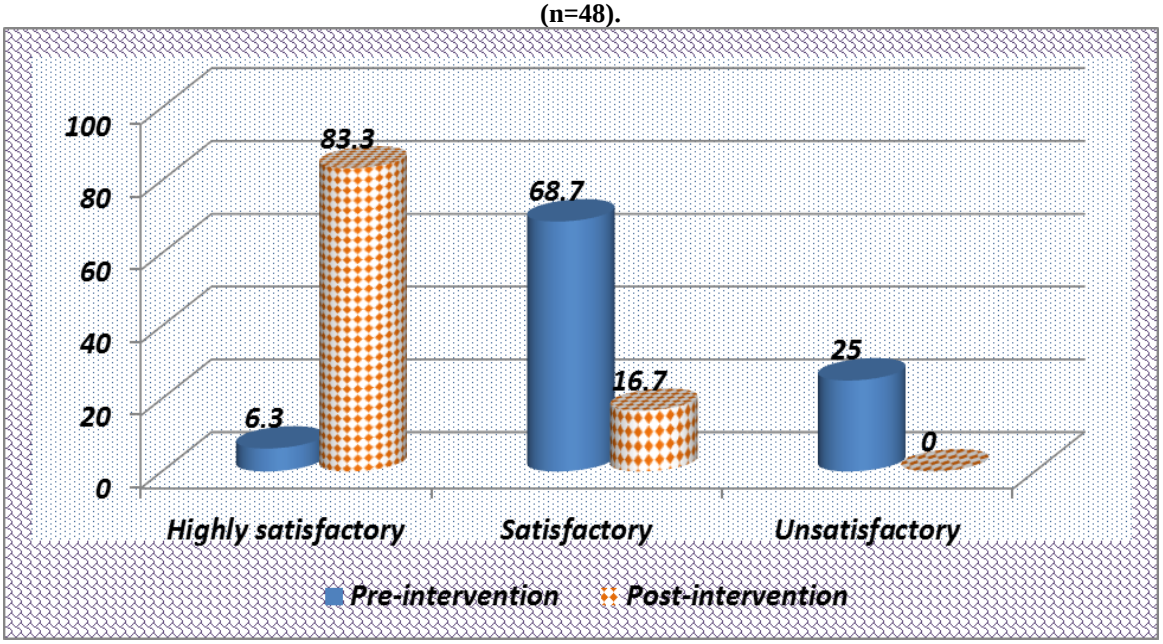


Figure 4: Total score of parents, care givers practices toward their ADHD children in the study sample (n=48).



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