ORIGINAL RESEARCH

Effect of applying play therapy on children with attention deficit hyperactivity disorder

Nahed Saied El-Nagger *[1], Manal Hassan Abo-Elmagd[2], Hanan Ibrahim Ahmed[1]

[1] *Faculty of Nursing, Ain Shams University, Cairo, Egypt*
[2] *Faculty of Nursing, El-Minia University, El-Minia, Egypt*

Received: March 10, 2016 **Accepted:** September 26, 2016 **Online Published:** January 6, 2017
DOI: 10.5430/jnep.v7n5p104 **URL:** http://dx.doi.org/10.5430/jnep.v7n5p104

ABSTRACT

Background: Attention Deficit Hyperactivity Disorder (ADHD) is a serious public health problem affecting a large number of children that often lasts into adulthood, and it is characterized by persistence of inattention, hyperactivity and impulsivity that interferes with functioning or development. Children with ADHD are managed with appropriate pharmacological and non-pharmacological intervention such as educational, psychological, behavioral support and play therapy. Whereas, play therapy is a technique during which the child would be given an opportunity to experience development under the most ideal circumstances. Aim: Evaluate the effect of applying play therapy on children with ADHD.

Methods: Study Design: A quasi experimental. Setting: The study was conducted in Badghish care & Rehabilitation center at Jeddah in Kingdom of Saudi Arabia. Subjects: Purposive sample composed of 40 preschool & school age children with ADHD with their parents and teachers. Study Tools: Data were collected through using a self-administered questionnaire for the parents to assess the socio-demographic characteristics of the studied children and their families, Conner's Abbreviated Parents and Teachers Rating scale, it was used to assess and evaluate the problematic behaviors of children with ADHD for their responses and progress monitoring through play therapy, Children's Symptom Inventory (CSI-4)-Parents and Teachers Form Scale, it was used to assess the children for ADHD symptoms including; inattention, hyperactivity and impulsivity through their parents and teachers and Vanderbilt ADHD Parent and Teacher Rating Scale, it was used to assess children's anxiety symptoms through their parents and teachers.

Results: The mean age of children was 6.282 ± 1.52 years. Also, 67.5% of children were boys and 32.5% were girls. Meanwhile, there were high statistical significant differences (p-value at .00) regarding children inattention, hyperactivity and impulsivity as reported by their parents and teachers pre and post applying play therapy.

Conclusions: The current study concluded that applying play therapy had a positive effect on paying attention, decreasing hyperactivity and controlling impulsive behavior of children with ADHD. Also, there were statistical significant differences in children's emotional and behavioral disturbances pre and post applying play therapy sessions. Recommendations: Encourage parents to cooperate actively when play therapy sessions are held for persistency of treatment effects and further studies should be carried out on the effectiveness of play therapy and use of other different kinds of therapies for children with ADHD are beneficial.

Key Words: Attention Deficit Hyperactivity Disorder, Play therapy, Inattention, Hyperactivity, Impulsivity

* **Correspondence:** Nahed Saied El-Nagger; Email: nahidalngar@yahoo.com; Address: Faculty of Nursing, Ain Shams University, Cairo, Egypt.

1. INTRODUCTION

Attention Deficit Hyperactivity Disorder (ADHD) is a serious public health problem affecting a large number of children that often lasts into adulthood, and is a chronic condition characterized by persistence of inattention, hyperactivity and impulsivity that interferes with functioning or development, whereas the common symptoms of the disease includes: short attention span, over activity, being impulsive and restlessness.[1] ADHD can occur in children with any intellectual abilities and learning difficulties and may have problems such as sleep and anxiety disorders, additionally, ADHD causes problems in how well children do in school, in their ability to function in society and keep friends.[2,3]

The prevalence of school age children diagnosed with ADHD in the United States (US) is 6.4 million that represent 11%.[4] Meanwhile, around 1.6-2.5 million children in the Kingdom of Saudi Arabia (KSA) suffer from ADHD that represent 13% of Saudi population.[3] The average age of ADHD diagnosis is 7 years old, and males are almost more likely to be diagnosed with ADHD three times than females.[3] Whereas, symptoms of ADHD first noticed at an early age and most of children are diagnosed between 6-12 years of their age.[2,5]

Accordingly, ADHD is classified as a learning disability mostly developed during childhood. Children with ADHD find it difficult to pay attention, follow directions and regulate their actions. The disorder does not affect general intelligence, but children with ADHD need proper guidance to distinguish words, letters and symbols. Whereas, previous studies showed that around 30% of children in KSA were incapable of finishing their high school education, a higher rate compared to other countries worldwide.[6–8]

The cause of ADHD is unknown, but there are some factors that plays a role such as: being born prematurely, having a low birth weight and smoking, alcohol or drug abuse during pregnancy.[2,9] However, there is no complete cure for ADHD, but it can be managed with play therapy and educational support for parents and affected children beside medication if necessary.[10,11]

Attention deficit hyperactivity disorder has a problem for pediatric nurse, pediatricians, psychiatrists, psychologists, school nurse, parents and teachers. Because these children's behavioral characteristics such as disability in motor skill, attention defect, educational problems, learning disability, over activity and aggression are basic crisis for parents, peers, and these characteristics also damage to child's, mental potential and social-affective skills oneself.[12–14]

The role of the nurse is essential in helping families of children with ADHD; the nurse's role requires knowledge, skills and patience, listening to parents and teachers, and providers. The treatment plan should include guidance, assessing parental knowledge about treatment, and help both parents and teachers. The nurse's role in educating parents as regards psychosocial interventions is very important which will help increase their compliance and efficacy to the psychosocial interventions. Also, there are some parents of children with ADHD have a higher rate of psychopathology. So, treatment for those parents may be necessary prior to or in conjunction with parent training who have psychopathology. Therefore, the nurse should be responsive to all family members and refer to treatment when necessary.[15–18]

According to the American Psychiatric Association (APA) that five evidence-based treatments exist for children with ADHD in the form of stimulant medication lines, behavioral parent training, social skills training, summer treatment programs and behavioral classroom interventions.[10] Although, drug therapy is the most common method for treating ADHD and stimulant medicines are fairly effective for many children, but 42% of children don't response to medicines and increase behavioral problems.[11,18,19] So, some practitioners use different interventions in the clinical settings that they claim to be effective in improving the behavioral problems of children with ADHD. One of these interventions is play therapy, that has been utilized with children and is effective in improving cognitive skills and treating this disorder.[1,7,19]

Play therapy is defined as an interpersonal process where a trained pediatric and school nurse or psychotherapist systematically applies the curative powers of play (e.g., relationship enhancement, communication, role-playing, abreaction, mastery, attachment formation, etc.) to help the children resolve their current psychological difficulties and help prevent future ones.[13,19] Moreover, play therapy is a technique during which the child would be given an opportunity to experience development under the ideal circumstances. Playing is a natural way for children to express themselves, and it will provide them the most developmentally appropriate means for communication and growth with an opportunity to gradually release suppressed emotions and tensions, disappointments, feeling of insecurity, aggression, and fear of confusion.[1,20] Consequently, play therapy can be used for children with ADHD to connect, learn, provide reassurance, calm anxiety, and improve self-esteem.[19,21] However, play therapy techniques specify how to use the play materials so as to effectively implement the therapeutic powers of play that are enjoyable, inexpensive, and easy to implement focusing on variety of play approaches such as art and game play that are appropriate for 4–12-year-old children.[16,18,19]

Play is an enjoyable, wonderful activity and an instrument

for the expression of emotions, relationships, describing experiences, revealing wishes and mental self-express. Play therapy is a method that help children solve their own problems and consequently play explain this reality that play for a child (normal or abnormal) is something intrinsic.[1,20,21] From Piaget view, children's play and play therapy have a vital role in intelligence growth of children. Piaget says that human intelligence grows through two related process. During the game, various forces grow such as the child's agility, memory, attention, concentration, perception etc., in addition to child's personality will shape and a lot of changes occur in his characteristics.[19,20]

Play therapy is to children what psychotherapy is to adults. Children do not have the vocabulary or insight of adults, so it is difficult for them to talk about things that worry them. Play therapy is a structured, theoretically based approach to therapy that builds on the normal communication and learning processes of children. Toys work like the child's words and play is their language.[1,3] Studies have been done on the effectiveness of play therapy in the control and treatment of ADHD, promising the positive effects of the application of the games in the control and treatment of ADHD in children. Whereas, social skills training involves the children taking part in role play situations, and aims to teach them how to behave in social situations by learning how their behavior affects others.[1,3,19]

Researches have shown that play therapy can manage all issues related to self-esteem & self-concept, adapting to new situations as a new school, uncharacteristic behavior as withdrawn, being aggressive and destructive, keeping friends, symptomatic behavior such as stomach ache, bed-wetting, headache, depression, anxiousness, ADHD, psychological trauma from birth of a sibling, parent divorce or death of a parent, in addition to nightmares, fear and anxiety.[1,3,15,20]

Pediatric and school nurses, psychologists in addition to play therapists work with children of all ages in a trusting and safe environment to help shift perspectives of difficult experiences and increase confidence and self-esteem. They may work as part of a team or individually, and may ask a referral for additional professional support as part of therapy. The main aim of a play therapist is to help children with better coping mechanisms and adaptive behaviors for everyday life and develop a more positive view of their place in the world.[15,17,18]

Primary care clinicians and nurses cannot work alone in the treatment of preschool and school-aged children with ADHD. Ongoing communication with parents, teachers, and other school-based professionals is necessary to monitor the progress and effectiveness of specific interventions. Parents are key partners in the management plan as sources of information and as the child's primary caregiver. Integration of services with psychologists, child psychiatrists, neurologists, educational specialists, developmental-behavioral pediatricians, and other mental health professionals may be appropriate for children with ADHD who have coexisting conditions and may continue to have problems in functioning despite treatment.[22–24]

The initial focus of the play therapy is on building a positive relationship between a child and pediatric or school nurse or the psychotherapist. This relationship is a very important tool in the therapeutic process because the child will more readily talk about their intimate feelings when they feel accepted and respected.[3,23,25] A play therapist works with children to help them learn adaptive behaviors and to help them experience emotional healing.[26–28] Accordingly, the play therapist is able to determine some or all of the following aspects; the self-image of the child, the nature of the relationships between the child and other family members, the child's ability to cope with situation, the child's ability to identify, accept and communicate emotions, the stressors in life, aggression (nature and function), signs of anxiety and depression.[28–30]

The number of play therapy sessions depends on the difficulties child with ADHD having and how responding to treatment through using specific techniques to assess how a child they communicate and react to the events and experience their world. Children are lead to become aware of what they are feeling and opportunities are given to express these feelings. Awareness is a very important process in play therapy, because without awareness change is not possible. Throughout the play therapy sessions, the child is supported and empowered to talk about things that are frightening, to be self-supportive, to learn more about who they are, and to experiment with new behavior.[28,30,31]

It is important that child with ADHD feels safe to communicate about different issues, thus through play children are able to build self-esteem, trust, become more regulated, and connect with others in a meaningful and authentic way. Healing from trauma can be healed with play therapy techniques that are used, and allowing children and their families to reconnect with a safe and secure attachment. So, involvement of parents is essential for making positive change and they are eventually able to use play therapy techniques with the child at home continuing to build a connected relationship with their child.[27,32]

1.1 Significance of the study

Play therapy is considered an ideal method for emotional and social problems of children with ADHD.[1,18] Also, play therapy has a positive effect on internalizing and externalizing behavioral problems, self-efficacy, self-concept, anxiety, depression and treatment compliance, these plays lead to decrease severity of attention deficit and hyperactivity symptoms and control impulsivity of 4 to 12 years old children.[19,20] Whereas, play therapy increase level of children's' functions and abilities when they faced with socially acceptable behaviors.[19] Therefore, play therapy is a developmentally responsive intervention used by child's therapists and pediatric nurses widely but often criticized for an inadequate research base to support its growing practice.[1,18,20]

So, the current study may be helpful in dealing with children of poor behavioral and thinking skills as aggression , inattention and inability to control mobility. On the other hand, there have been few educational studies of any type with children who have ADHD or related disorders in Kingdom of Saudi Arabia (KSA).[3,8] From the practical aspect, this study will describe the use of applying play therapy for children with ADHD in the preschool and school age to develop the thinking and behavioral skills they need.

1.2 Aim of the study

This study aimed to evaluate the effect of applying play therapy on children with ADHD through:

- Assessing the children's inattention, hyperactivity, impulsivity, and anxiety symptoms before applying play therapy sessions.
- Designing and implementing play therapy sessions for children with ADHD.
- Evaluating the effect of play therapy on children's inattention, hyperactivity, impulsivity, and anxiety symptoms after applying play therapy sessions.

1.3 Research hypothesis

The current study was hypothesized that applying play therapy has a positive effect on paying attention, decreasing hyperactivity, controlling impulsive behavior, and decrease anxiety symptoms of children with ADHD.

2. SUBJECTS AND METHODS

2.1 Study design

Quasi experimental study design was utilized.

2.2 Research setting

The study was carried out in Badghish care and Rehabilitation private Center at Jeddah city in Kingdom of Saudi Arabia. Where, these setting provides different services such as educational, and speech and behavioural therapies for the largest number of children with ADHD. Children were compliance in attending to the center daily as a substitute for school.

2.3 Research subjects

A purposive sample composed of 40 preschool & school age children with their parents and teachers, whereas those children were identified and diagnosed with ADHD in the previously mentioned setting also, they receive their education in the Badghish care and Rehabilitation private Center not in a primary school, the studied children served as their own control according to the inclusion and exclusion criteria.

2.4 Inclusion criteria

Children diagnosed with ADHD and receiving medication regimen, children's age ranged from 4-12 years, and from both genders.

2.5 Exclusion criteria

Children with physical and mental handicaps (e.g., cerebral palsy, and mental retardation), and children having a history of epilepsy.

2.6 Tools of data collection

Four tools were used for data collection:

I. A Self-Administered Questionnaire for children's parents on an individual base

It was adapted from Abdul Rahman et al. (2013),[33] It was used to assess the socio-demographic characteristics of the children with ADHD and their families in simple Arabic language. Some modifications as omission or adding some items were done by the researchers to suit the nature of the current study. Time taken by the parent for each child to fill in questionnaire was 10-15 minutes. It includes four parts:

Part 1: Characteristics of the children: As regards the child's age, gender, birth order, duration of the ADHD, other chronic diseases and presence of other siblings suffering from ADHD etc.

Part 2: Characteristics of the families: It was concerned with data regarding the family such as; mothers' and father's age, level of education, number of children, and socio-economic levels etc.

Part 3: Children's health and developmental history: It was concerned with data regarding the antenatal history of the mother as maternal health problems during pregnancy, and natal history as regards type of delivery, in addition to neonatal and developmental history as; birth condition, birth weight, complications for child during birth, type of infant's

feeding, time & technique of weaning, bowel & bladder control, child's school performance, child's abilities in reading, writing etc.

Part 4: Children's emotional and behavioral problems (pre and post): It includes assessing children's emotional and behavioral disturbances as fear and anxiety, sleeping and eating disturbances, crying, aggression, stealing, lying, and nails cutting etc.

II. Conner's abbreviated parents and teachers rating scale (Pre and post)

It was adopted from Arffa (1969)[34] and Mohammad-Esmaeil (2004).[35] It is a short form tool for both parents and teachers in Arabic and English languages. It was used to assess and evaluate the problematic behavioral of children with ADHD for their responses and progress monitoring through play therapy, that filled out by their parents and teachers . These assessments are designed to be used with children between the age of 3-17 years. Time consumed to fill in the scale from each parent and teacher was 5-10 minutes. It consists of ten statements that are rated on a four-points frequency scale, and scored from 0-3, whereas not at all "0", just a little "1", pretty much "2", and very much "3".

Scoring system: The total score of Conner's scale for each form was 30 and classified into two categories as the following; Score 0-15 means that the child hadn't behavioral difficulties or there was an improvement for symptoms of ADHD, Score 15-30 means that the child had behavioral difficulties or increasing of ADHD symptoms.

III. Children's symptoms inventory rating scale (CSI-4) Parents and Teachers Forms version 4 (Pre and post)

It was adopted from Mohammad-Esmaeil (2004),[35] Gadow and Sprafkin (2002):[36] It was used to assess the children for ADHD symptoms including; inattention, hyperactivity and impulsivity through their parents and teachers in Arabic and English languages. CSI parents rating scale consists of 61 symptoms of ADHD in the form of 15 for inattention, 28 for hyperactivity and 18 for impulsivity. Meanwhile, CSI teachers rating scale includes 55 symptoms of ADHD: In the form of 20 for inattention, 19 for hyperactivity and 16 for impulsivity. Parents and teachers were rate each symptom on a frequency of four available options (0 = rarely, 1 = sometimes, 2 = often, 3 = always). Time consumed to fill in the CSI rating scale from each parent/teacher was 10-15 minutes.

Scoring system of CSI-4 rating scale: The total scores were 183 and 165 for both parents and teachers forms respectively, the mean score of scale was used to measure and compare the child's ADHD symptoms between pre and post. This means that the higher means scores represent increasing ADHD symptoms.

A. Scoring System of CSI-4 Rating Scale Parents' Form was:

- Total score for inattention was 45, score 0-22.5. i.e. no inattention, while $\geq$ 22.5 i.e. inattention.
- Total score for hyperactivity was 84, score 0-42. i.e. no hyperactivity, while $\geq$ 42 i.e. hyperactivity.
- Total score for impulsivity was 54, i.e. no impulsivity, while 0-27 i.e. impulsivity.

B. Scoring System of CSI-4 Rating Scale Teachers' Form score was:

- Total score for inattention was 60, score 0-30 i.e. no inattention, while $\geq$ 30 i.e. inattention.
- Total score for hyperactivity was 57, score 0-28.5 i.e.no hyperactivity, while $\geq$ 28.5 i.e. hyperactivity.
- Total score for impulsivity was 48, score 0-24. i.e. no impulsivity, while $\geq$ 24 i.e. impulsivity.

IV. Vanderbilt ADHD parents and teachers rating scale (Pre and Post)

It was adopted from Wolraich (1998).[37] It was used to assess anxiety symptoms of children with ADHD through their parents and teachers. It consists of 7 behaviors questions in an English language and translated into Arabic language at a four point, and scored 0-3. Whereas, 0 = Never; 1 = Occasionally; 2 = Often; 3 = Very Often. Time needed for filling in by both children's parents and teachers was 5-10 minutes. Anxiety symptoms scores 3 of 7 are required (scores of 2 or 3 are positive).

Play Therapy Guidelines Booklet Construction: Play therapy guidelines booklet was prepared by the researchers after reviewing of the related literature. It was specially designed in simple Arabic and English languages for parents of studied children and their teachers. The booklet included: Objectives from the booklet, introduction about ADHD, concept of ADHD, causes of ADHD, symptoms of children with ADHD, parents role in caring ADHD children, play therapy guidelines, and play therapy sessions (eight sessions included type of play used in each session). The booklet was also included illustrations and figures.

2.7 Validity and reliability

Validity and reliability were determined for each study tool and play therapy guidelines booklet. Expert's validity was based on feedback from five experts from academic and clinical fields: professors in pediatrics, community health nursing, psychiatric & mental health nursing, play therapist, and specialist in rehabilitation & special needs center. In addition to

assessing content validity by both internal consistency and test-retest reliability that was very good. Whereas, internal consistency coefficients (Cronbach's alpha) for study tools was ranged from 0.69 to 0.97.

2.8 Phases of study application

Preparatory phase

A review of the past, current international and local related literature through using magazines, books and journals was done to get acquainted with research problem and develop the study tools and guide the researchers in tools preparation process used in the study.

A designed play therapy sessions by the researchers after reviewing of the relevant literature, and the available resources. The researchers were guided by literature about play therapy guidelines. The general objectives of the designed play therapy were to guide both children's parents and teachers about the benefits of applying play therapy for children with ADHD, how to apply and follow play therapy guidelines in the treatment of ADHD.

Exploratory phase

A. Pilot study: It was conducted at the beginning of the study. It was carried out on 10% of the study sample (4 children with ADHD and their parents and teachers in the previously mentioned setting) to investigate the feasibility and clarity of the study tools and they were excluded from the sample of the study.

B. Field Work: The actual field work was carried out at 29/9/2015–29/12/2015 for data collection and application of the play therapy sessions. Whereas, the pilot study took one month followed by two weeks for assessment of studied children by their parents and teachers (pre), then eight weeks for application of play therapy sessions and the last two weeks were for re-assessment of studied children by their parents (post).

- The researchers were available for 2 hours, from 8-10 am at Sunday and Tuesday/week.
- Total numbers of play therapy sessions were eight sessions for each group. One hour for each session, and two sessions/week.

Procedures

A. Assessing children with ADHD before applying play therapy (pre-test in two weeks) through:

- Identifying the children whom diagnosed with ADHD by helping the teachers in the previously mentioned setting.
- Selecting the children whom were meeting the inclusion and exclusion criteria.
- Giving a copy from the study tools of data collection for the parents of children after taking their verbal agreement and their volunteer sharing in the study, including the A Self-Administered Questionnaire, Conner's Abbreviated Parents Rating Scale, Child Symptoms Inventory Rating Scale (CSI-4) Parent Form and Vanderbilt ADHD Parent and Teacher Rating Scale to filled out by the parents.
- Giving another copy from the study tools of data collection to 6 teachers whom were responsible for children in the classes after taking their verbal agreement including of Conner's Abbreviated Teacher Rating Scale, Child Symptoms Inventory Rating Scale (CSI-4) Teacher Form and Vanderbilt ADHD Parent and Teacher Rating Scale to filled out by the teachers.

B. Preparing for applying play therapy sessions:

- At the beginning, the researchers assessed the environment as well as services provided in the Badghish care and Rehabilitation private center, at the same time, the researchers asked the center's manager kindly not to change any of the services or activities rendered or done by them, for the purpose of the current research.
- Group play therapy sessions were performed by the researchers after full explanation for each teacher in each class about the nature and purposes of play therapy.
- All children were divided into 6 groups according to their age (Two groups for preschool age children and 4 groups for school age children).
- Three groups in the first session (8-9 am) and three groups in the second sessions (9-10 am) whereas, play therapy for each group was applied in a separate quite class, each group number was ranged between 6-7 children.
- Gather all equipment and toys used in play therapy sessions for each group in 3 classes, such as: dolls, hand and finger puppets (animal and human), art supplies such as pencils, paints, and drawing boards, also toy construction tools as construction blocks and puzzles, memory cards in addition to musical instruments.

C. Applying for play therapy sessions (two months):

- Each researcher as a play therapist start the play therapy session by introducing self and let each child to introduce him/her-self.
- Start for applying group play therapy sessions, one hour for each session including five minutes for arrangement and two sessions per week for eight sessions for each group.
- Each session was included four different types of play activities that are suitable for a child with ADHD to

enhance their personal and mental abilities for paying children's attention, decreasing hyperactivity and controlling their impulsivity, and the researchers were applying for at least two to three types of these activities (time of each play activity was ranged between 20–25 minutes) that determined in each session such as: art activities, story, asking questions, puzzle construction, working memory games, chair and song game etc.

- The researchers use a range of toys that were carefully selected to allow children to express their feeling and interests that were appropriate for the children's age, gender and the child preferences for the type of play.
- At the beginning of every session, feedback was taking by the researchers from children on the previous session.
- The researchers used the reinforcing and rewarding techniques with the studied children for their good doing and responses to encourage them to acquire and develop thinking and behavioral skills that they lack by giving them simple reward, symbolic and oral reinforcement.
- At the end of each play therapy session, the researchers were asking the children to collect, arrange and return all play equipment to its place.

D. Evaluating for Applying Play Therapy Sessions (Post-test in two weeks):

- After completing the eight play therapy sessions, the researchers were giving another copy from the study tools of data collection for the children's parents, including the Self-administered Questionnaire, Conner's Abbreviated Parents Rating Scale, Child Symptoms Inventory Rating Scale (CSI-4) Parent form and Vanderbilt ADHD Parent Rating Scale to filled out.
- The researchers were giving another copy from the study tools of data collection to the teachers whom were responsible for children in the class after taking their verbal agreement in the form of Conner's Abbreviated Teachers Rating Scale, Child Symptoms Inventory Rating Scale (CSI-4) Teacher form and Vanderbilt ADHD Parent and Teacher Rating Scale to filled out.
- At the end, the researchers thanked for children, parents, teachers and the manager of the center and provided them play therapy guidelines booklet.

2.9 Administrative design

An official permission for data collection was obtained from the vice dean of researches and post graduates studies in the Nursing College at Umm Al-Qura University to the manager of Badghish care and Rehabilitation Center at Jeddah city in KSA.

2.10 Statistical design

The collected data were organized, tabulated and analyzed by using SPSS version 20. Descriptive statistics was calculate percentages, and frequencies. Appropriate statistical testes as Chi-square (χ^2) and *T*. tests were used for estimation of the statistical significant differences between pre and post play therapy. Statistical significant difference consider at *p* value $\leq .05$, meanwhile statistical insignificance consider at $> .05$.

2.11 Ethical considerations

- The required permissions were obtained through the appropriate channels.
- The researchers maintained an anonymity and confidentiality of the research subjects.
- The aim of the study was explained to children, parents and teachers.

3. RESULTS

Table 1 revealed that the mean age of children was 6.28 ± 1.52 years, 17.5% of studied children were the first child and 42.5% of them as the fourth child. Additionally, the majority of children (87.5%) hadn't have siblings with ADHD.

Table 1. Distribution of the studied children with ADHD according to their socio-demographic characteristics

Items	Total No. = 40 (100%)	
	No.	%
Age (years)		
< 6	14	35
6-12	26	65
(Mean ± SD = 6.28 ± 1.52)		
Birth order		
First	7	17.5
Second	10	25
Third	6	15
Fourth +	17	42.5
Duration of the ADHD (years)		
1- < 3	24	60
3- <6	11	27.5
6- ≥ 9	5	12.5
Other siblings suffering from ADHD		
Yes	5	12.5
No	35	87.5

Figures 1 & 2 showed that 67.5% of children were boys and the rest of them (32.5%) were girls. Also, 85% of studied children hadn't have any other chronic diseases and the rest of them (15%) of them had chronic diseases.

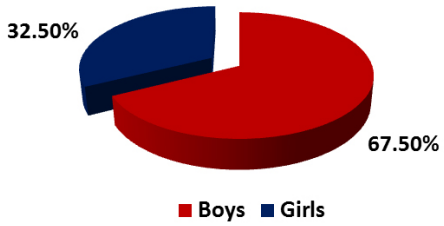

Figure 1. Distribution of the studied children according to their gender

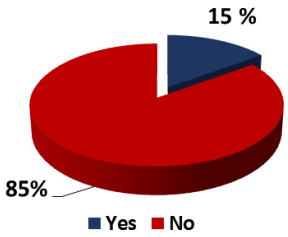

Figure 2. Distribution of the studied children for having of other chronic diseases

Table 2 showed that the mean ages of studied children fathers and mothers were 40.60 ± 7.55 and 34.75 ± 6.12 years respectively. This table also revealed that 45% of children's fathers and mothers had secondary school and nearly half of families (45%) were having 1-3 children. Meanwhile, 85% and 77.5% of families their socio-economic condition was moderately and had chronic diseases respectively.

Table 3 showed that the majority of children (87.5%) delivered as preterm and regarding the child's feeding and weaning technique, it was founded that 42.5% and 80% of children were breast fed and weaned suddenly respectively.

Figures 3&4 showed that nearly two thirds of children (62.5%) delivered through normal vaginal delivery (NVD) and the rest of them (32.5%) through cesarean section (CS), and 77.5% of children their birth weight were normal birth weight and 20% of them were low birth weight.

Table 4 revealed that half of the studied children (50%) were gained their bowel and bladder control at normal age. On investigating the children's school performance, speech development, their abilities in reading, writing & counting, this table clarified that most of them (92.5%, 90% and 97.5%) had difficulty in both their school performance & speech development , their abilities in reading, writing and counting were below normal respectively.

Table 5 revealed that all of the studied children (100%) were nervous before applying play therapy compared with 90% of them after applying play therapy. Also, it was founded that 82.5% of children were having thumb sucking before play therapy compared with 60% of them after applying play therapy. Additionally, there were statistical significant differences (χ^2 = 6.41, 6.33 and 8.10, *p*-values at .01, .03, and .04) concerning children fear and anxiety, crying, and sleeping disturbances respectively.

Table 2. Distribution of the families of studied children with ADHD according to their socio-demographic characteristics

Items	Total No. = 40 (100%)	
	No.	%
Father's Age (years)		
25- < 35	7	17.5
35- < 45	21	52.5
≥ 45	12	30
Mean ± SD = (40.60 ± 7.55)		
Mother's Age (years)		
25- < 35	20	50
35- < 45	18	45
≥ 45	2	5
Mean ±SD = (34.75 ± 6.12)		
Father's educational level		
Read & write	1	2.5
Preparatory	1	2.5
Secondary	18	45
University	20	50
Mother's educational level		
Read & write	1	2.5
Preparatory	5	12.5
Secondary	18	45
University	16	40
Number of children		
1-3	18	45
4-6	15	37.5
> 6	7	17.5
Socio-economic condition		
Low	4	10
Moderate	34	85
High	2	5
Parental chronic diseases		
Yes	31	77.5
No	9	22.5
Consanguinity		
Yes	30	75
No	10	25

Table 6 demonstrated that the total mean score levels for Conner's abbreviated parents and teachers rating scale pre and post play therapy were 22.10 ± 6.63 & 21.90 ± 6.61 and

15.12 ± 4.59 & 14.10 ± 5.09 respectively. Also, this table revealed out that there were statistical significant differences (*T* test = 7.97 & 7.07, *p*-values at .00 & .00) parents and teachers responses pre and post play therapy.

Table 3. Distribution of the studied children with ADHD according to their prenatal, natal and postnatal histories

Items	Total No. = 40 (100%)	
	No.	%
Maternal health problems during pregnancy		
Yes	4	10
No	36	
Child delivered as		
Preterm	33	87.5
Full term	4	10
Post term	3	2.5
Complications for child during birth**		
Obstructed Labor	3	7.5
Delayed neonate's crying	35	87.5
Decreased oxygenation	30	75
Type of infant feeding		
Breast feeding	17	42.5
Artificial feeding	8	20.0
Complementary feeding	15	37.5
Time of weaning		
Early	15	37.5
Appropriate	11	27.5
Late	14	35
Technique of Weaning		
Suddenly	32	80
Gradually	8	20

**Numbers weren't mutually exclusive

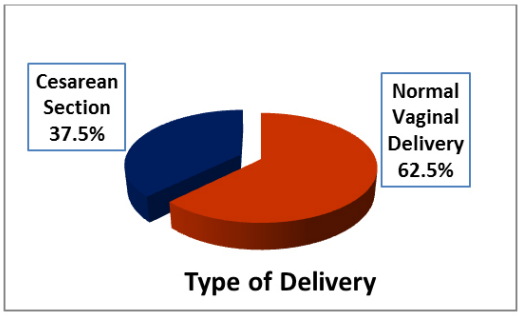

Figure 3. Distribution of the studied children according to their type of delivery

Table 7 showed that the total mean scores level of studied children as regards inattention , hyperactivity and impulsivity in pre and post applying play therapy as reported by their parents were 63.40 ± 16.41 and 42.80 ± 15.94 compared to 61.35 ± 21.7 and 42.80 ± 15.90 by their teachers respectively. Also, this table reported that there were high statistical significant differences (*T* test = 13.66, *p* value at .00 and *T* test = 6.5, *p* value at .00) regarding children inattention, hyperactivity and impulsivity pre and post applying play therapy as reported by their parents and teachers respectively.

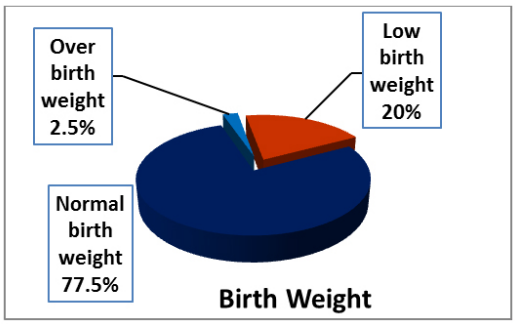

Figure 4. Distribution of the studied children according to their birth weight

Table 4. Distribution of the studied children with ADHD according to their development

Items	Total No. = 40 (100%)	
	No.	%
Bowel & bladder control		
Controlled at normal age	20	50
Delayed control	6	15
Not controlled	14	35
Child's school performance (learning abilities)		
Difficult/delayed performance	37	92.5
Normal performance	2	5
High performance	1	2.5
Speech development		
Difficult speech	35	90
Normal speech	2	5
Accelerated speech	3	7.5
Child's ability in reading, writing and counting		
Below normal	39	97.5
Acceptable/normal	1	2.5

Table 8 clarified that the total mean scores as regards anxiety symptoms of studied children pre and post applying play therapy as reported by their parents were 16.10 ± 2.17 and 4.19 ± 1.50 compared to 17.90 ± 1.61 and 5.10 ± 0.09 by their teachers respectively. Also, this table reported that there were high statistical significant differences (*T* test = 5.67, *p* value at .00 and *T* test = 5.97, *p* value at .00) regarding children anxiety level pre and post applying play therapy as reported by their parents and teachers respectively.

Table 5. Distribution of the studied children regarding their emotional & behavioral disturbances as reported by their parents pre & post play therapy

Items**	Total No. = 40 (100%)				χ^2	*p*-values
	Pre		Post			
	No.	%	No.	%		
Emotional disturbances						
Fear and anxiety	28	70	18	45	6.41	.01*
Depression	5	12.5	4	10	2.24	.42
Aggression	24	60	21	52.5	1.60	.20
Nervousness	40	100	36	90	7.32	.00*
Crying	27	67.5	22	55	6.33	.03*
Eating disturbance	12	30	12	30	-	-
Sleeping disturbance	11	27.5	7	17.5	8.10	.04*
Lying	13	32.5	13	32.5	-	-
Behavioral Disturbances						
Destructiveness	30	75	30	75	-	-
Isolation (Escaping)	13	32.5	13	32.5	-	-
Nail cutting	4	10	3	7.5	1.75	.31
Thumb sucking	33	82.5	24	60	8.01	.02*
Stealing	3	7.5	3	7.5	-	-

**Numbers weren't mutually exclusive; **p*-value ≤ .05 statistical significant differences; *p*-value > .05 No statistical significant differences.

Table 6. Comparison between mean score levels related to parents & teachers responses as regards conner's abbreviated rating scale of the studied children pre & post play therapy

Child's Symptoms	Total No. = 40 (100%)							
	Mean ± SD							
	Parents' Responses				Parents' Responses			
	Pre	Post	*T* test	*p*-value	Pre	Post	*T* test	*p* value
Restless or overactive	2.67 ± 0.52	2.10 ± 0.59	6.11	.00*	2.27 ± 0.12	1.91 ± 0.59	6.01	.00*
Excitable and impulsive	2.50 ± 0.75	1.75 ± 0.70	7.08	.00*	2.10 ± 0.75	1.01 ± 0.70	6.14	.00*
Disturbs other children.	2.07 ± 1.09	1.27 ± 0.78	5.92	.00*	2.07 ± 1.09	1.17 ± 0.78	5.72	.00*
Fails to finish things started-short attention span	2.20 ± 0.85	1.50 ± 0.71	5.38	.00*	2.11 ± 0.15	1.59 ± 0.11	4.98	.00*
Constantly fidgeting	2.50 ± 0.71	1.82 ± 0.78	5.58	.00*	2.40 ± 0.81	1.92 ± 0.28	5.18	.00*
Inattentive and easily distracted	2.15 ± 0.76	1.50 ± 0.67	5.58	.00*	2.25 ± 0.66	1.90 ± 0.37	4.88	.00*
Demands must be met immediately-easily frustrated	2.02 ± 0.86	1.35 ± 0.86	4.65	.00*	1.92 ± 0.66	1.25 ± 0.76	5.15	.00*
Cries often and easily	2.00 ± 0.98	1.4 ± 0.74	4.51	.00*	2.10 ± 0.18	1.34 ± 0.24	4.41	.00*
Mood changes quickly and drastically	1.82 ± 0.84	1.22 ± 0.69	4.87	.00*	2.02 ± 0.36	1.12 ± 0.61	4.68	.00*
Temper outburst, explosive and unpredictable behavior	1.85 ± 0.86	1.20 ± 0.82	4.46	.00*	1.99 ± 0.56	1.40 ± 0.32	4.16	.00*
Total Mean ± SD	22.10 ± 6.63	15.12 ± 4.59	7.97	.00*	21.90 ± 6.61	14.10 ± 5.09	7.07	.00*

* *p*-value ≤ .05 statistical significant differences; *p*-value > .05 no statistical significant differences.

Table 7. Comparison between mean scores levels as regards symptoms of ADHD as reported by children's parents & teachers pre & post play therapy

Child's Symptoms	Total No. = 40 (100%)							
	Mean ± SD							
	Parents' Reporting				Teachers' Reporting			
	Pre	Post	*T* test	*p*-value	Pre	Post	*T* test	*p*-value
Inattention	17.55 ± 4.56	10.70 ± 3.89	12.11	.00*	19.50 ± 7.22	15.40 ± 6.03	3.65	.00*
Hyperactivity	22.25 ± 6.86	13.30 ± 4.84	12.53	.00*	24.30 ± 9.39	16.15 ± 6.47	7.29	.00*
Impulsivity	23.60 ± 7.13	14.32 ± 5.64	9.64	.00*	17.55 ± 7.47	11.25 ± 5.68	7.40	.00*
Total Mean ± SD	63.40 ± 16.41	42.80 ± 15.94	13.66	.00*	61.35 ± 21.7	42.80 ± 15.9	6.5	.00*

* *p*-value ≤ .01 high statistical significant difference; *p*-value > .05 no statistical significant differences.

Table 8. Comparison between mean scores levels as regards anxiety symptoms of studied children as reported by children's parents & teachers pre & post play therapy

Child's Symptoms	Total No. = 40 (100%)							
	Mean ± SD							
	Parents' Responses				Teachers' Responses			
	Pre	Post	*T* test	*p*-value	Pre	Post	*T* test	*p*-value
Fearful, anxious, or worried	2.23 ± 0.12	1.07 ± 0.34	4.17	.00*	3.19 ±0.17	1.91 ± 0.59	5.11	.00*
Self-conscious or easily embarrassed	2.68 ± 0.15	1.15 ± 0.10	6.25	.00*	2.60 ± 0.55	1.01 ± 0.70	4.64	.00*
Afraid to try new things for fear of making mistakes	2.34 ± 1.08	1.17 ± 0.24	4.90	.00*	3.00 ± 0.01	1.17 ± 0.78	5.77	.00*
Feels worthless or inferior	2.30 ± 0.85	1.40 ± 0.31	4.37	.00*	2.61 ± 0.75	1.59 ± 0.11	5.01	.00*
Blames self, feels guilty	2.90 ± 0.11	1.62 ± 0.25	4.51	.00*	3.10 ± 0.01	1.92 ± 0.28	4.11	.00*
Feels lonely, unloved; complains that "no one loves him/her"	2.75 ± 0.48	1.80 ± 0.67	4.27	.00*	2.15 ± 0.66	1.90 ± 0.37	4.80	.00*
Sad, unhappy, or depressed	2.92 ± 0.17	1.33 ± 0.34	4.11	.00*	2.92 ± 0.66	1.25 ± 0.76	5.11	.00*
Total Mean ± SD	16.10 ±2.17	4.19 ± 1.50	5.67	.00*	17.90 ± 1.61	5.10 ± 0.09	5.97	.00*

* *p*-value ≤ .01 high statistical significant difference; *p*-value > .05 no statistical significant differences.

Table 9 regarding the relationship between symptoms of ADHD for studied children as reported by parents and their socio demographic characteristics pre & post play therapy. As regards children's age and symptoms of ADHD, it was founded that there weren't statistical significant differences (*T* test = 3.94 & 0.38, *p* values at .69 & .70) pre and post play therapy respectively. Meanwhile, there were statistical significant differences as regards children's gender and symptoms of ADHD (*T* test = 2.07, *p* value at .04) pre applying play therapy.

4. Discussion

ADHD is a chronic condition that affects millions of children and often persists into adulthood. The current study was aimed to evaluate the effect of applying play therapy on children with ADHD. Regarding the studied children characteristics, the current study revealed that more than half of children were boys and nearly two thirds of them their age was 6-12 years. These results were supported by Schlack et al. (2014)[21] who mentioned that the rate of ADHD is higher in boys than girls, and they added that ADHD more likely to be reported four and half times among boys than girls. Also, Novik et al. (2009)[14] reported that girls with ADHD having problems on paying attention and are usually not hyperactive and disruptive as boys, that lead to under diagnosis and under treatment. Al Hariri and Faisal (2013)[3] who mentioned that the high incidence of ADHD is among school age children (4% to 12%). Welch (2015)[22] Who reported that 9.5 percent

of children in the United States (US) between the ages of 3-17 have ever gotten a diagnosis of ADHD; that's about 5.9 million kids.

Table 9. Relationship between studied children as regards symptoms of ADHD & their socio-demographic characteristics pre & post play therapy

Child's symptoms	Pre play therapy "Mean"				Post play therapy "Mean"			
Characteristics	**Inattention**	**Hyper Activity**	**Impulsivity**	***T&p* values**	**Inattention**	**Hyper activity**	**Impulsivity**	***T&p* values**
Age (years)								
3-< 6	18.73	24.08	16.95	3.94	14.73	16.26	10.60	0.38
6-12	20.43	24.12	18.06	.69	16.12	15.56	11.93	.70
Gender								
Boys	20.96	26.51	18.62	2.07	15.55	16.62	11.74	0.63
Girls	16.46	19.69	15.30	.04*	15.07	15.15	10.23	.52
Child's birth order								
First	19.14	19.57	19.14		12.71	14.42	8.85	
Second	17.60	24.80	26.80	1.70	15.40	16.50	12.10	0.54
Third	15.66	19.00	18.33	.18	15.50	16.66	12.83	.81
Fourth+	17.52	23.00	25.41		15.75	15.00	11.25	
Duration of the ADHD (years)								
1-< 3	21.35	25.85	18.65	0.97	14.62	25.85	11.16	0.10
3-< 6	17.66	22.16	16.22	.37	17.27	22.16	10.81	.90
6-9	17.50	28.00	18.50		15.00	28.00	12.60	
Child suffering from other chronic diseases								
Yes	19.91	25.41	18.82	2.01	14.00	11.66	5.50	2.01
No	17.16	18.00	10.33	.05*	15.64	16.94	12.26	.05*
Other siblings suffering from ADHD								
Yes	24.50	3.25	24.50	2.16	16.75	23.75	17.00	2.03
No	18.65	23.05	16.71	.03*	15.14	15.22	10.51	.04*

*p-value ≤ .05 statistical significant differences. p-value > .05 no statistical significant differences

Meanwhile, Jafari et al. (2011)[23] mentioned that before the age of 5 years, ADHD may be difficult to diagnosed accurately, because preschool children are over active, impulsive and easily distracted. As the preschool child becomes older, problems with inattention, hyperactivity and impulsivity tend to increase, more gaps in school performance, and learning. Floet et al. (2010)[24] reported that children younger than 6 years of age are diagnosed by a psychiatrist than older children. However, Siasalem (2011)[25] mentioned that before puberty, ADHD in males is more than females, but after that the same in both males and females.

On investigating the presence of other chronic diseases for the studied children and presence of siblings suffering from ADHD, the current study showed that the majority of children weren't having chronic diseases or their siblings suffering from ADHD. These results were contradicted with Adler et al. (2015)[2] who reported that ADHD is an inheritable condition, whereas ADHD is diagnosed 4-5 times more in first degree relatives of child than the general population , and there is more than 10 times risk among the siblings of children with ADHD. Siasalem (2011)[25] suggested that 28% of the genetic variation of ADHD involved in neural growth increases risk for ADHD. Additionally, Bahandri (2014)[26] founded that when children have disorders like ADHD there are often a variety of conditions that are co-occurring, at least one other condition at the same time e.g. chronic irritability.

On studying families' socio-demographic characteristics of studied children, the results indicated that the majority of children were from families with moderate socioeconomic condition. In addition to, half of both fathers' and mothers' age was between 35-45 years, and 25-35 years respectively. Also, three fourths of parents had consanguinity. These results were agreed with Schlack et al. (2014)[21] who mentioned that children from low socioeconomic condition families are

2.5 times more likely to be diagnosed with ADHD than children from high socioeconomic status, in addition to a growing number of preschoolers exhibit significant aggression, impulsivity, and other disruptive behavior. Children living in at risk environments, such as homes with maternal mental health problems, extreme poverty, and absence of social supports, the prevalence of neuropsychiatric problems is high.[4] Children growing up in traumatized environments have a combination of delays, functional problems, and strengths that are determined by the nature, timing, and intensity both of adverse and attenuating experiences.[25]

On assessing the prenatal, natal and postnatal histories of studied children, the current study demonstrated that nearly two thirds of children were delivered through NVD and the rest of them through CS. Also, the majority of children delivered as preterm and less than one fourth of them were low birth weight. Concerning the children's feeding and weaning technique, it was founded that slightly less than half of children took breast feeding and more than three fourths of children weaned suddenly. These results were supported by Barkley (2015)[4] and Siasalem (2011)[25] whom emphasized that there is significance evidence for association of prematurity with each gestational week and subsequent child's neurodevelopment and risk for ADHD.

In contrast, Adler et al. (2015)[2] and Brandt, M. (2009)[27] pointed out that there is an insignificant association between LBW and symptoms of ADHD, even when controlling for genetic and all environmental factors. There was insufficient evidence regarding mothers' psychological condition and drugs use during pregnancy, breastfeeding duration, and child deprivation.

On investigating the studied children's development, the present study showed that half of children controlled their bowel and bladder at normal age in comparison to half of them whom were delayed and some of them still uncontrolled. These results were supported by Siasalem (2011)[25] who stated that children with ADHD are more likely to suffer from chronic constipation and fecal incontinence than children without the neurobehavioral condition. Whereas, constipation nearly tripled and fecal incontinence increased six-fold among children with ADHD. This could be due to that parents devoting themselves for caring their children and over protecting them as a reaction toward their children diagnosis that leading to the child become more dependent. Also, Al Khashramy (2014)[8] stated that pre adolescents with ADHD were three times more likely to suffer from bedwetting and incontinence than their non ADHD peers. Furthermore, Bahandari (2014)[26] and Jackson and Henderson (2013)[28] stated that before appearance of the first ADHD symptoms some conditions may present as eczema and sleeping disturbance. With the development of ADHD symptoms other conditions may present such as: encopresis and enuresis.[29,33]

Regarding the children school performance, speech, their abilities in reading, writing and counting, the results of the present study clarified that most of studied children were having difficulty in both their school performance & speech development, also their abilities in reading, writing and counting were below normal. This could be a result of the ADHD symptoms, which make them hard to focus on things and finish their tasks. Accordingly, these results were consistent with Evance et al. (2014)[30] who emphasized that children having symptoms of inattention, hyperactivity, and impulsivity with or without formal diagnoses of ADHD, also suffering from learning disabilities, poor academic and educational outcomes. Also, ADHD can effect on quality of a child's life. Whereas, there are associations between untreated ADHD and lack of children's school performance, in addition to difficulty with socialization.[29,33]

As regards the effect of applying play therapy on studied children emotional and behavioral problems as reported by their parents, there were statistical significant differences pre and post applying play therapy concerning studied children emotional disturbances as regards, fear and anxiety, nervousness, crying and sleeping disturbances. Meanwhile, there were no statistical differences regarding depression, aggression and nails cutting, this could be due to the other diseases that were accompanied with ADHD. These results were supported by Nigussie (2013),[20] Welch (2015)[22] and Al Khateeb (2011)[31] who mentioned that with just a few sessions of play therapy especially in crisis settings, also child centered play therapy (CCPT) and story therapy have positive effect on symptoms related to ADHD and their emotional conditions such as difficult calming crying, extreme tension, fear and explosive anger. In contrast, Al Raminy (2010)[32] and Yehia (2013)[38] stated that play in itself not always produce behavioral and emotional changes.

As regards the results of the current study in analysis of parents' and teachers' responses for Conner's abbreviated rating scale related to studied children behavioral problems pre & post play therapy. The current study results clarified that, there were high statistical significant differences pre and post play therapy. These results were consistent with Barzegary and Zamini (2011)[1] who demonstrated that effect of play therapy ranges from moderate to high positive effects especially when there active parents' involvement, non-directive play therapy approaches were found to provide better outcomes than therapist-directed play therapy approaches.

Concerning the effect of applying play therapy on symptoms of ADHD for the studied children, the current study results showed that there were high statistical significant differences pre & post applying play therapy that confirmed hypotheses of this research as regards inattention, hyperactivity and impulsivity as reported by their parents and teachers. These results were consistent with Abdul Hadi, and Al Saheb (2012),[39] and Kaduson and Finnerty (2009)[40] whom concluded that cognitive behavioral and game play therapies are effective for ADHD children in improving attention, decreasing impulsiveness, and self-control. Play therapy reduce ADHD symptoms and it could be used as treatment method for children with ADHD.[3]

According to Barzegary and Zamini (2010)[1] who stated that watch ring play decreases the three basic features of ADHD symptoms including hyperactivity, attention deficit, impulsiveness and expend some their energies. Also, Bahrami (2012)[41] emphasized that ball games, have a positive effect in reduction of ADHD symptoms.

On studying the relationship between studied children's symptoms of ADHD in the form of inattention, hyperactivity & impulsivity and their age & gender pre and post play therapy, the current study results showed that there were no statistical significant differences pre and post play therapy as regards their age, meanwhile there was statistical significant difference pre play therapy as regards their gender but there was no statistical significant difference post play therapy. These results were similar to the finding of Brandt (2009)[27] who reported that play therapy may actually be a better approach than talk therapy for children between the ages of 3 and 10 years. Play therapy can be useful for four years child and more with ADHD. Child can learn how to be better at expressing emotions and regulating them through discovering what their strong and weak points, who they are, thoughts, needs, wishes and dreams in addition to training in social skills may help a child to have self-respect, become more self-confident and respect for others.[3]

Meanwhile, Welch (2015)[22] mentioned that the age of a child receiving play therapy was 7 years, and when it was conducted by para professionals this reduced to 6.7 years. Bahrami (2012)[31] founded that play therapy was effective intervention for kindergarten children and in reducing level of aggression in girls children aged 9-11 years. Al Raminy (2010)[32] and Choi (2012)[42] whom stated that individual or group play therapy increased maturity and improved classroom behaviors of Kindergartners children as reported by teachers.

In contrast, Nigussie (2013)[20] emphasized that age and gender weren't significant factors of treatment outcome, and suggested that play therapy is effective for all children with ADHD boys and girls of all ages equally. Hafez (2010)[43] and Novik et al. (2009)[14] pointed out that gender is a significant moderating factor in the assessment of core ADHD symptoms when using continuous performance test (CPTs).

Limitations of the study

Refusing some centers for applying play therapy sessions that leading to inability of carrying out this study for a larger number of children.

5. Conclusion

The current study concluded that applying play therapy had a positive effect on paying attention, decreasing hyperactivity and controlling impulsive behavior of children with ADHD. Also, there were statistical significant differences in children's emotional and behavioral disturbances as regards, fear and anxiety level, nervousness, crying and sleeping disturbances. Meanwhile, there were no statistical differences regarding depression, aggression and nails cutting pre and post applying play therapy sessions for children with ADHD.

5.1 Recommendations

(1) Encourage parents to cooperate actively when sessions of play therapy are held for persistency of treatment effects.
(2) Encourage parents to apply play therapy at home through using play therapy guidelines.
(3) Establishing pursuing programs for following up of children after 3 months to reassess the effect of play therapy.
(4) Providing in-service training/educational programs related to controlling of ADHD symptoms for both children's parents and teachers.
(5) Emphasizing on the importance for presence of school nurse in all schools settings to assist in dealing with of children suffering from ADHD.
(6) Providing school teachers with play therapy guidelines for management of children with ADHD.
(7) Replication of this study with necessary changes for children with other disorders seems beneficial.

5.2 For further research

Further researches should be carried out on the effectiveness of play therapy and use of other different kinds of therapies for children with ADHD are beneficial.

Conflicts of Interest Disclosure

The authors declare that there is no conflict of interest.

REFERENCES

[1] Barzegary L, Zamini S. The effect of play therapy on children with ADHD Procedia. Social and Behavioral Sciences. 2011; 30: 2216-2218.

[2] Adler A, Spencer J, Wilens E. Attention deficit hyperactivity disorder in adults and children. England, Cambridge University. 2015. 392 p. https://doi.org/10.1017/cbo9781139035491

[3] Al Hariri A, Faisal E. Effects of Teaching Art Activities by Using the Playing Method to Develop Skills in Preschool Children with Attention Deficit Hyperactivity Disorder. Journal of Developmental Disabilities. 2013; 19(1): 1-6.

[4] Barkley A. Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment,4th. ed. United States, New York: The Guilford Press; 2015; 567-569 p.

[5] Trawick-Smith J, Dziurgot T. Good-fit' teacher–child play interactions and the subsequent autonomous play of preschool children. Early Childhood Res. Journal. 2011; 26: 110-123. https://doi.org/10.1016/j.ecresq.2010.04.005

[6] National Institute of Mental Health, Attention deficit/hyperactivity disorder. Available from: http://www.nimh.nih.gov/health/publications/ADHD/index.shtml

[7] American Academy of Pediatrics, Subcommittee on attention-deficit/hyperactivity disorder committee on quality improvement, Clinical Practice Guideline: treatment of the school-aged child with attention-deficit/hyperactivity disorder. 2015; 122(4): 1033.

[8] Al Khashramy S. Treatment and education for family of hyperactivity disorder and distraction: Teachers and family guide. Riyadh, Saudi Arabia: Al Masmak Publisher; 2014. 157-159p.

[9] Nasrin D, Nastaran A, Burhanoddin V. Prevalence of DSM-IV TR Psychiatric Disorders in Children and Adolescents of Paveh, a Western City of Iran, Iran Red Crescent Med J. 2014 July; 16(7): e16743.

[10] American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V). 2013.

[11] World Health Organization (WHO). The ICD-10 Classification of Mental and Behavioral Disorders. 2015. Available from: http://www.who.int/entity/classifications/icd/en/bluebook.pdf.Lastupdated2015.;31-263

[12] Larsson H, Asherson P, Chang Z. Genetic and environmental influences on children attention deficit hyperactivity disorder symptoms: a large Swedish population-based study of twins. Psychol Med. 2013; 43: 197-207. PMid:22894944 https://doi.org/10.1017/S0033291712001067

[13] Willcutt E. The prevalence of DSM-IV attention-deficit/hyperactivity disorder: a meta-analytic review. Neurotherapeutics. 2012; 9: 490-499. PMid:22976615 https://doi.org/10.1007/s13311-012-0135-8

[14] Nøvik T, Hervas A, Ralston S. Influence of gender on attention-deficit/ hyperactivity disorder in Europe–ADORE. Eur Child Adolesc Psychiatry. 2009; 15 Suppl 1: I15-I24. PMid:17177011 https://doi.org/10.1007/s00787-006-1003-z

[15] Frame K, Kelly L, Bayley E. Increasing perceptions of self-worth in preadolescents diagnosed with ADHD. J Nurs Scholarsh. 2003; 35: 225–9. PMid:14562489 https://doi.org/10.1111/j.1547-5069.2003.00225.x

[16] Krueger M, Kendall J. Descriptions of self: an exploratory study of children and adolescents with ADHD. J Child Adolesc. Psychiatr Nurs. 2011; 14: 61-72. https://doi.org/10.1111/j.1744-6171.2001.tb00294.x

[17] Evans S, Schultz K, Sadler M. Psychosocial interventions used to treat children with ADHD: Safety and efficacy. Journal of Psychosocial Nursing and Mental Health Services. 2008; 46(8): 49-57. https://doi.org/10.3928/02793695-20080801-04

[18] Ghanizadeh A. Explaining the Nurse's Role in ADHD Treatment, Journal of Psychosocial Nursing and Mental Health Services. February 2009; 47(2): 13-14. PMid:19271307

[19] Robaie E, Malekian F. The effect of exploratory play therapy method on the reduction of the level of combined type /adhd in 9 to 11 years old boys. Magnt. Research Report. 2015; 3(4): 14-22.

[20] Nigussie B. Efficacy of play therapy on self-healing and enhancing life-skills of children under difficult circumstances: The case of two orphanages in Addis Ababa, Ethiopia Ethiop. J. Educ. Sc. 2013; 6(2): 52-57.

[21] Schlack R, Mauz E, Hebebrand J, et al. Has the prevalence of parent-reported diagnosis of attention deficit hyperactivity disorder ADHD in Germany increased between 2003-2006 and 2009-2012? 2014.

[22] Welch A. More kids getting diagnosed with ADHD at young ages. 2015. Available from: http://www.cbsnews.com/news/more-kids-getting-diagnosed-with-adhd-at-young-ages

[23] Jafari N, Mohammadi M, Khanbani M, et al. Effect of Play Therapy on Behavioral Problems of Maladjusted Preschool Children. Iran J Psychiatry. 2011; 6: 37-42. PMid:22952519

[24] Floet A, Scheiner C, Grossman L. Attention-deficit/hyperactivity disorder. Pediatrics in Review. 2010; 31(2): 56-69. PMid:20124275

[25] Siasalem K. ADHD: Characteristics, causes, methods of treatment. Al Ain, United Arab Emirates: The University Book Publisher; 2011; 19-23.

[26] Bahandri S. ADHD and Other Medical Conditions in Children. 2014. Available from: http://www.webmd.com/add-adhd/childhood-adhd/conditions-childhood-adhd

[27] Brandt M. An investigation of the efficacy of play therapy with young children, thesis prepared for the degree of doctor of philosophy. 2009.

[28] Jackson S, Henderson K. Teaching children with Attention Deficit Hyperactivity Disorder: Instructional strategies and practices. 2013. Available from: http://www.ed.gov/rschstat/research/pubs/adhd/adhd-teaching.html

[29] Nasser A. Introduction in education, 15th. ed. Amman, Jordan: Aamar Publisher; 2014. 23-27p.

[30] Evans S, Owens J, Bunford N. Evidence-Based Psychosocial Treatments for Children with Attention-Deficit/Hyperactivity Disorder. J Clin Child Adolesc Psychol. 2014; 43(4): 527-551. PMid:24245813 https://doi.org/10.1080/15374416.2013.850700

[31] Al Khateeb J. Modify the behavior of children with disabilities: Guide for parents and teachers (3rd. ed.). Amman, Jordan: Hanen Publisher; 2011. 46-49 p.

[32] Al Raminy F. The psychology of playing in the kindergarten stage. Al Ain, United Arab Emirates: The University Book Publisher; 2010. 34-37 p.

[33] Abdul Rahman M, Hassan M. Training of children with behavioral disorders, developmental skills: Guide for parents and therapists. Cairo, Egypt: Arabic Thoughts. 2013. 35-37 p.

[34] Arffa S. Test review of the Conners 3rd. Edition™ (Conners 3™). From K. F. Geisinger, R. A. Spies, J. F. Carlson (Eds.), The eighteenth mental measurements yearbook [Electronic version]. 1969.

[35] Mohammad-Esmaeil E. Investigating of reliability, validity, and determine cut off points in disorders of children symptom inventory (CSI-4) on 6-14 year old elementary and guidance school students in Tehran city. Tehran: Research Institute of the Exceptional; 2004.

[36] Gadow K, Sprafkin J. Child Symptom Inventory–4 screening and norms manual. Stony Brook, NY: Checkmate Plus. 2002.

[37] Wolraich M, Feurer I, Hannah J. Obtaining systematic teacher reports of disruptive behavior disorders utilizing DSM-IV. Journal of Abnormal Child Psychology. 1998; 26(2): 141-152. Available from: http://peds.mc.vanderbilt.edu/VCHWEB_1/ra

ting~1.html PMid:9634136 https://doi.org/10.1023/A:1022673906401

[38] Yehia K. Behavioral and emotional disorders (3rd. ed.). Amman, Jordan: Al Feker. 2013. 34-39 p.

[39] Abdul Hadi N, Al Saheb F. The psychology of children in nurseries and preschools. Amman, Jordan: Al Shoroq Publisher; 2012; 15-19 p.

[40] Kaduson H, Finnerty K. Self-control game interventions for attention – deficit hyperactivity disorder. International Journal of Play Therapy. 2009; 7(5): 17-19.

[41] Bahrami A. The Effectiveness of ball and non-ball games on improvement of Attention Deficit Hyperactivity Disorder in the 9-11 year old male students in Arak. Arak Medical University Journal (AMUJ). 2012; 15(64): 1-9.

[42] Choi J. Literature review of play therapy intervention for children with ADHD. 2012; 50(5): 125.

[43] Hafez N. Learning difficulties and educational therapy. Cairo, Egypt: Zahraa Al Sharg Publisher; 2010. 17-23p.