Effect of selected play activities along with music therapy on social and stereotype behaviors among school age children with autism

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Abstract

Background: Children with Autism Spectrum Disorder (ASD) have problems in the social interaction, communication skills, repetitive and stereotyped patterns of behaviors, and interests of activities across multiple contexts**. Aim:** this study aimed to assess the effect of selected play activities along with music therapy on social and stereotype behaviors among school age children with autism. **Design**: one group pre and post quasi-experimental design was used in this study. **Sample**: A purposive sample of thirty school age children diagnosed with autism. **Setting**: this study was conducted at Center for Social and Preventive Medicine (Child Psychiatry Outpatient Clinic) Cairo University Hospital. **Data collection Tools:** data were collected using three tools: Socio-demographic and Medical Data Sheet, Autism Social Skills Profile (ASSP), Stereotyped Behavior Scale (SBS). **Results**: more than half of the studied sample (56.7%) suffers from low level of social skills interaction pre-intervention as compared to 3.3% post intervention, statistically significant difference were found between social skills and stereotype behaviors pre and post intervention. The study recommended that, music and play therapy should be integrated in treatment programs for those children.

Keywords: Play, Music, Autism, Social behaviors, Stereotype behaviors.

Introduction

Deficits in social communication and social interaction, as well as limited repetitive patterns of behaviour, interests, and activities, are the hallmarks of autism spectrum disorders (ASD) (American Psychiatric Association, 2013). Poor eye contact, a lack of joint attention, pedantic or strange speech patterns, difficulty starting and continuing conversations, a lack of social problem-solving skills, a lack of empathy, and difficulty reading body language are all signs of their social skill inadequacies (Schreiber, 2015). Children with ASD struggle to develop their language skills, comprehend what they hear, and engage in complex cognitive and behavioural interactions like identifying and interpreting social accuracy, taking context into account, and judging others' behaviour by paying attention to other people's reactions. These difficulties are linked to a number of limitations in these children (O'Reilly et al., 2014).

Children with autism respond to "Penny-Hiding Games" with less flexibility than their developing peers, pay less attention to and behave more stereotypically than children their age when playing games. Although stereotyped behaviours in children with ASD vary greatly in kind, frequency, and intensity, they tend to persist over time and are the best indicator of an early diagnosis; if these behaviours are not curbed, anxiety, protest, violence, and self-injury will develop (Murray & Healy, 2015).

The Diagnostic and Statistical Manual of Diagnoses, Fifth Edition (DSM-5) lists repetitive, seemingly pointless actions, obsessive, highly selective, and rigid interests as signs of autism (Sanchack, Thomas, 2016). Autism often exhibits repetitive actions as a symptom. In instance, when they observe their child repeatedly lining up toys, spinning things, or opening and closing drawers or doors, many parents worry that their child has autism. When stereotyped behaviours interfere with daily activities or make it difficult to complete tasks at work or school, they can become problematic. In rare situations, stereotyped behaviours can even be harmful (Ibrahim, et al. 2019).

After an ASD diagnosis, prompt and suitable therapy is strongly advised in order to assist children with autism. Children with autism who receive play therapy (PT) gain a flexible outlook and find solutions to their social-

communicational and restricted-stereotyped behaviour issues (Schweizer, Knorth, &Spreen, 2014). According to research, music therapy (MT) improves social interaction, communication, and speech development as well as abilities that are related to ASD, like the capacity to form and maintain relationships quickly (Geretsegger, Holck, & Gold, 2012). Additionally, James et al. (2015) and Simpson, Keen, and Lamb (2013) reported that MT significantly reduced unwanted behaviours, encouraged social contacts, and improved communication in their studies on the impact of MT on individuals with autism.

The primary objective of the pediatric and psychiatric nurse is to recognize issues and create an intervention plan to lessen the frequency and severity of a child's psychiatric complaints. The development of the nurse-child relationship, improving coping mechanisms for the child and family, detecting maladaptive responses, and reducing the detrimental effects of symptoms of hyperactivity, impulsivity, and inattention are all examples of interventions. The child psychiatric nurse also plays an important role in assessing the efficacy of treatment interventions and can serve as a liaison between the child and family and the other members of the treatment team, including the child's teachers (DeNisco, Tiago, and Kravitz, 2012).

Significance of the study

Children with autism deserve to have the best therapies and treatment known to allow them to develop the speaking and social skills they need to develop into productive and happy adults. Without these interventions many children would grow up without the ability to interact or relate with their peers thus becoming social outcasts in our society. Therefore, in this study, we aimed to find out whether training children with autism by using play therapy with music therapy leads to increase the appropriate social behavior skills and decrease inappropriate stereotyped behaviors.

In addition to the aforementioned strategy, compared to using only one method of treatment, the application of a mixture of music and play that includes playing, movement, and singing with music along with using a playing equipment increases eye contact and social interaction and decreases isolation, gaze aversion, and avoidance

behaviors in children with ASD (Whipple, 2012). In spite of research on using play and music therapy, few studies examine the mixture of music and play therapies with autistic children. So, this study may add to the pediatric pychatric nursing scientific body of knowledge how to apply two different therapies which will improve their social behaviors and decrease the undesirable behaviors. The pediatric pychatric nurse in a generalist role may work with child with autism in a variety of settings. Nurses working in mental health clinics, pediatrician's clinics, and schools have the most contact with these children.

Aim of the study

The aim of this study is to evaluate the effect of play along with music intervention program on social and stereotype behaviors among school age children with autism.

Research Hypotheses

H1. Children with autism who will attend the program will have higher score in social skills post intervention than pre.

H2. Children with autism who will attend the program will have lower score in stereotyped behaviors post intervention than pre.

Subjects and methods

Research design: quasi-experimental pre-post design was used in this research; pre test post test design is a form of quasi experimental research that allows for uncomplicated assessment of an intervention applied to a group of study participants.

Sample: a purposive sample of total of (30) school age children diagnosed with autism was selected for the current study according to the following criteria: both sexes**,** 6-12 years old, mild & moderate degree of autism**;** mentally retarded children, handicapped children and those with neurological disorder was excluded.

The sample size was calculated using power analysis, the sample size of (30) participants were calculated using a power analysis. A Power of .80(β = 1-.80 = .20) at alpha. .20(one-sided) was used as the significance level, because these levels have been suggested for use in the most

areas of behavioral science research (Ellis,2010), in addition, high effect size (.5) was used in this study.

Setting

Center for Social and Preventive Medicine (Child Psychiatry Outpatient Clinic) Cairo University Hospital affiliated to Cairo University. This is receiving children from all over Egypt. Includes five rooms and a waiting place for children and their parents, The clinic provides services for 20-30 children/day. The clinic works 6/days/week for behavioral disturbance, developmental delays, and follow up for psychiatric disorders in children.

Tools for data collection

1- Socio-demographic and Medical Data Sheet: was developed by the researcher. It included two parts: First part: child code, age, sex, place of residence and type of preferred reinforcement. Second part Medical data: diagnosis, degree of autism, and intelligence quotient, family history of autism, and duration of autism disability.

2- Autism Social Skills Profile (ASSP): this scale was developed by Bellini, (2006), it provides a comprehensive measure of social functioning including initiation skills. Social reciprocity, perspective taking and non verbal communication skills. Items on the ASSP are rated on a 4-point Likert scale ranging from (zero) never to (3) very often. The majority of items on the ASSP are written as positive behaviors (40 items) (e.g., "Joins in activities with peers"); some items, however, are written as negative behaviors (9 items) (e.g., "Makes inappropriate comments"). These "negative" items are reverse scored so that a response of very often would yield a score of 1.Scoring system including three categories (low from Zero to less than 72, average from 72 to less than 90 and high from 90 to 120).Reliability of the scale by using Cronbach's alpha .92.

3- Stereotyped Behavior Scale (SBS): it was developed by Aziz, (2020), it measure restricted, repetitive and stereotyped behaviors among children and adolescent with autism. Likert point ranging from 1 to 3 as (1) equal often, (2) equal sometimes and (3) equal always for the inverse statement and

the opposite scoring for the positive statement. The highest score equal (102), the lowest score equal (34) with cut point (68). The higher the score the more stereotyped behaviors the child have, and vice versa.

Reliability of the scale 0.87 by using Cronbach's alpha.

Procedure

- Review of the past and current Arabic and English related literature covering various aspects of the problem was done, using available textbooks, articles, periodical, magazines and internet search to get acquainted with the research problem and construct the program.

- The researchers interviewed children and their parents to select the study sample and to obtain agreement to participate in the study program.

- Individualized interview was held for about 30-45 minutes with the selected sample in order to fill the required baseline assessment data.

- The researcher's co-ordinate with music therapist in clinic to be involved in program implementation by selecting the appropriate music to be applied in each session in order to achieve the aim of each session in addition the researchers select the playing aids which suitable for the age and achieving the aim of each session along with suitable music.

- The program was 12 implementation sessions in addition to two assessment sessions and one evaluation session.

- During the assessment sessions the researchers divided the sample into three subgroup (10) participants in each group.

- Implementation phase: it included 12 sessions six of them related to social skills (initiation skills, acceptance of others, listening and non verbal communication skills), two sessions for co-operation and collaboration, two sessions for measures of reducing stereotyped behaviors and two sessions for reviewing previously learned skills.

- Evaluation phase: include one session to collect post assessment data and evaluate the effectiveness of the program.

- Data were collected within a period of three months from the beginning of September 2018 to the end of December 2018.

Ethical Consideration

An official permission was obtained from the director of Center of Social and Preventive Medicine. After that all parents of children was informed about aim, nature of the study and its significance. The researcher emphasized that participation in the study is voluntary and they could withdraw from the study at any time. Anonymity and confidentiality were assured through coding of data. Informed consent also obtained from all parents who accepted to participate in the study.

Statistical Design

Statistical Package for Social Science (SPSS) version 21 was used for statistical analysis of data. The qualitative data were described in number and percent, for quantitative data were described in Mean and Standard Deviation. Paired T-test and ANOVA were used to assess the difference between study variables pre and post intervention.

Results

The current study results revealed that, two thirds of the studied sample aged 10 years and more with mean age 8.30 and standard deviation 1.44. Moreover, around two thirds of them were male and more than half (56.7%) from urban areas. In addition, more than half of the studied sample (53.3%) suffer from the autism less than one year ago, and around one thirds (30%) of the study sample suffer from autism from 3 to 7 years with mean duration 2 years and 1.4 years standard deviation.

Moreover, the results indicated that, more than two thirds of the study sample (70%) have moderate degree of autism and around one third (30%) have mild degree of autism. Meanwhile, more than half of them (53.3%) have borderline IQ and near half (46.7%) have

average IQ level. Only 13.3% of the studied samples have family history of autism.

As illustrated in figure (1) more than half of the studied sample (56.7%) suffers from low level of social skills interaction pre-intervention as compared to 3.3% post intervention. Most of the studied sample (80%) expresses average level of social skills interaction post intervention as compared to 43.3% pre-intervention. Moreover, 16.7% of the study sample expresses high level of social skill interactions post intervention as compared to 0% pre-intervention.

Figure (2) illustrated that, near half of the studied sample (46.7%) suffers from stereotypy behaviors pre-intervention as compared to 43% post intervention. More than half of the studied sample (57%) has no stereotypy behaviors post intervention as compared to 43% pre-intervention.

As indicated in table (1), there is a highly statistically significant difference in relation to social skill interaction score pre and post intervention where t= 8.946 at p=.000. Also, there was a highly statistically significant difference in relation to stereotypy behaviors total score pre and post intervention where t= 3.230 at p=.003.

As revealed in table (2) there is a statistically significant difference between different age groups in relation to social skills intervention post intervention where f= 6.050 at p= .007. Meanwhile, there are no statistically significant difference between different age groups, onset of disease in relation to stereotype behavior pre and post intervention.

As observed in table (3) there is a statistically significant difference between onset of the disease and stereotype behavior post intervention where f= 2.632 at p= .040. Meanwhile, there is no statistically significant difference between onsets of the disease in relation stereotypy behaviors pre-intervention.
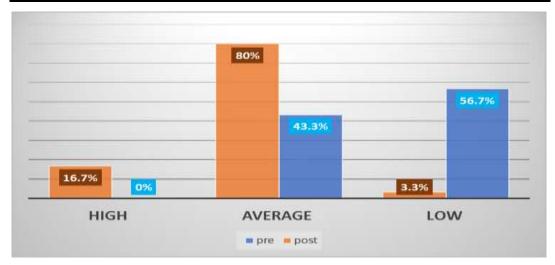
Figure (1): levels of social skill interactions among the studied sample pre-intervention as compared to post intervention (n=30)
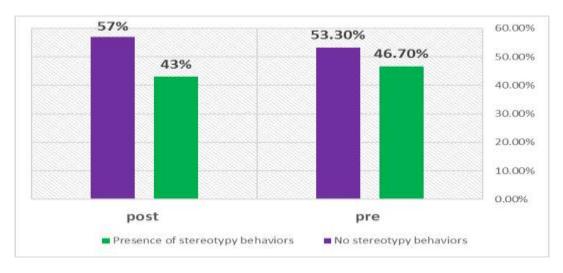

Figure (2): Distribution of stereotypy behaviors among the studied sample pre-intervention as compared to post intervention (n=30)

Table (1): Difference between pre and post intervention in relation to social skill interaction and stereotype behavior score among the studied sample (n=30)

Study variables	Pre-intervention		Post intervention		Paired t-test	p-value
	Mean	**SD**	**Mean**	**SD**		
Social skill interaction score	117.66	19.64	155.06	24.02	8.946**	0.000
Stereotypy behaviors score	78.06	22.85	72.53	15.67	3.230*	0.003

** Significance level at p<.05

**highly significance level at p<.001

Table (2): difference between social skills interactions pre and post intervention in relation to age and duration of disease among the studied sample (n=30)

Study variables	Age in years			Duration of disease in years		
	6 > 8	8>10	10 and more	>1	1>3	3-7
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Social skill interaction pre-intervention	115.18±23.6	122.0 ±18.4	116.5 ±17.1	117.12±17.8	120.20±25.4	117.22±21.6
F / p-value	F= .309	P=.737		F= .047	P= .954	
Social skill interaction post-intervention	155.4±24.9	137.4±16.9	170.5± 18.3	158.5±24.8	149.4±16.6	152.0±27.1
F / p-value	F= 6.050*	P= .007		F= .365	P=.697	

* Significance level at p<.05

Table (3): difference between stereotypy behaviors pre and post intervention in relation to age and onset of disease among the studied sample (n=30)

Study variables	Age in years			Onset of disease in years		
	6 > 8	8>10	1 0 and more	>1	1>3	3-7
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Stereotypy behaviors pre-intervention	75.3±19.6	72±17 .7	85.7±29.5	84.3±22.3	68.6±22.2	72.2±23.1
F / p-value	F= .857	P= .436		F= 1.353	P=.257	
Stereotypy behaviors post intervention	70.2±15.02	70.1±14.2	77.02±18.02	78.31±15.37	64.40±13.75	66.77±14.4
F / p-value	F= .649	P= .531		F= 2.632*	P=.040	

* Significance level at p<.05

Discussion

In this study, the researchers evaluate the effect of selected play activities along with music therapy on increasing social behavior skills and controlling stereotyped behaviors of children with autism. The studied sample were aged between 6 to less than 12 years old, with disease onset ranged between less than one to 7 years, most of them shows low social skills pre-intervention as compared to high social skills post-intervention. These results may be explained as, one of the core symptoms of autism is social skills deficit. Moreover, music therapy increases the precision of auditory information processing in children with autism. People with autism are not cable enough to respond appropriately to stimuli; therefore, the researchers believe that their feelings, attention, interactions and communication should be strengthened through music

These finding is supported by Ghasemtabar et al. (2015) and Vaiouli et al. (2015) who showed increase in social skills in the group that was offered music therapy post intervention as compared to pre-intervention. In the opposite direction Bieleniniket al. (2017)stated that, no statistically significant difference was found between the experimental group, which was offered music therapy, and the control group, which only received standard care. Broder-Fingert, Feinberg, and Silverstein (2017) argued that the lack of effect in Bieleninik et al.'s RCT could be attributed to the highly heterogeneous sample and the wide range of different music therapy techniques used by therapists in different countries.

Regarding stereotype behaviors, the current study showed that, near half of the studied sample suffers from stereotypy behaviors pre-intervention as compared to less than half post intervention. This result could be explained as music is a selective method in treatment of autistics' behavior. Due to very limited verbal communication and stereotypes, autistic children respond to the common psychiatric treatments very hard. Music with a varying world of rhythms as an influential method and by creating non-verbal, rhythmic and musical relations can establish relationship with autistic children very well and provoke their responds. This finding is consistent with study conducted by Khanzadeh & Imankhah (2017) has shown that music therapy can promote ASD children to concentrate on participating in interaction, thereby increasing appropriate social behaviors and reducing inappropriate repetitive stereotyped behaviors.

Moreover, a study done by Srinivasan, et al., (2015) who examined the effectiveness of music therapy on the combination of autistic adults' dance. The findings showed that if the music therapy was continuous and regular, it could be effective in improvement of the autistic signs especially self-stimulatory behaviors. Inconsistent with this results study conducted by James et al. (2015) who emphasized the need for longitudinal studies of the long term effect of music therapy on improving autistic children repetitive behaviors.

The current study results also revealed that, there is a statistically significant difference between different age groups in relation to social skills post intervention. This can be explained as the more the age of children the best the results of improving social skills as the high mean score of social skill was appeared in the children with 10 years and more. This result is supported by Thompson, McFerran and Gold, (2014) who found that, music therapy has a positive effect on social interaction skills among young people with ASD. These finding emphasize the importance of using music and play therapy as an early intervention strategy to help younger children with autism reduce inappropriate behaviors. Inconsistent with this result Venuti et al., (2017) failed to find a relationship between age, presence of repetitive behaviors and social interaction skills.

Moreover, the current study results indicated that, there is a statistically significant relation was found between stereotypy behaviors and onsets of disease and no relation was found between stereotypy behaviors and age. In the same line with this results Bishop et al., (2016) stated that, restricted repetitive behavior pattern did not show age related relations. In contrast with this results Esbensen et al., (2018) showed that, restricted, repetitive behaviors were less frequent and less severe among older than younger individuals and may have unique age related patterns and do lessen in severity across the lifespan .

Conclusion:

The study concluded that, using play activities along with music therapy with children with autism improve their social skills especially with those age group 10 years and more and decrease their repetitive behaviors. Using this type of treatment of children with autism, will help them to regulate their emotions, develop adaptive behaviors, improve their quality of life, and integrate those children into society as soon as possible.

Recommendations

- Treatment programs for children with autism must be supported with play and music activities to decrease repetitive behaviors.

- Play and music therapy for autistic children should be integrated into nursing curriculum and practice

- Furthermore, research is needed on the use of music therapy for children with different co morbidities and different levels of ASD.

- Training program including play and music techniques should be provided for nursing staff who deal with those children.

- More research is needed on assessment tools that can appropriately capture social skills in music therapy interventions and the generalization of these skills to other settings.

Acknowledgment

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