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Clonazepam as a Treatment of Excessive Infantile and Childhood Masturbation

Asmaa Ali Abdelaal Mohamed, Khalid Fathi Megahed, Bothina Mohamed Mohamed Hasaneen
Department of Pediatric, Faculty of Medicine, Mansoura University, Egypt
***Corresponding author:** Asmaa Ali Abdelaal Mohamed, **Mobile:** (+20) 01024847932, **Email:** drasmaa736@gmail.com

ABSTRACT

Background: Masturbation is a self-stimulating pleasurable behavior of the child, which occurs between the ages of 3 months and 5 years. Clonazepam was recorded to reduce the frequency of sexual behavior during sleep.

Objective: This study aimed to investigate the benefits of adding clonazepam to the general behavioral treatment of infantile and childhood masturbation.

Patients and methods: This was randomized controlled trails (RCTs) conducted on a total number of 52 infants and pre-adolescent children with masturbation attending the Neurology Outpatient Clinic in Mansoura University Children Hospital (MUCH). Patients were classified into 2 groups: Group on behavioral therapy and clonazepam and group on behavioral therapy only. The response was observed in both groups as regards the frequency after treatment and duration till complete response

Results: Masturbation was common among females, and cases with moderate socioeconomic level. Combined therapy was associated with a significant improvement in response compared to behavioral therapy only.

Conclusion: Combined behavioral therapy and clonazepam is more effective and superior to behavioral therapy alone in ameliorating masturbation phenomena in infants and children.

Keywords: Masturbation, Clonazepam, Behavioral therapy, Gratification.

INTRODUCTION

Masturbation could be described as self-stimulating pleasurable behaviors of the child. It occurs between the ages of three months and five years. It could be noticed in both genders, but is very common in girls. Children press their legs by stretching them while sitting or lying, their breathing speeds up, flushing happens, and the hands aren't frequently on the genital area contrasting to what is expected. The events last for a few minutes and could be affected by intervention [(1)].

Epilepsy has been considered as the most essential differential diagnosis. Video recording of the event, EEG and history taking are of great importance to rule out the diagnosis of epilepsy in the suspected children. It is noticed more frequently among children with lack of love and interest and with mental retardation[(2)].

A few researches have assessed the underlying factors, or its course. Certain studies have pointed out to the higher serum levels of hormones and some different studies have recorded therapy with medication, which includes risperidone, or its formation, after the consumption of olanzapine. In general, there is no need for medications in childhood masturbation unless it is very frequent and it interferes with their daily functionality. The therapeutic plan is composed of behavioral therapy and/or drug therapy. The drug therapy includes mainly atypical antipsychotic drugs. There uses are increasing owing to their low drug interactions and adverse events [(3)].

Clonazepam affects serotonin transmission and is the only benzodiazepine in the market for which additional serotogenic activity has been shown, an action that may contribute to its anxiolytic effects. Research shows that treatment with clonazepam may reduce the frequency of sexual behavior during sleep [(4)]. So, the aim was to test the benefits of adding clonazepam to the general behavioral treatment of infantile and childhood masturbation.

PATIENTS AND METHODS

This was randomized controlled trails (RCTs) conducted over a period of one year on a total number of 52 infants and pre-adolescent children with masturbation attending the Neurology Outpatient Clinic in MUCH.

Inclusion criteria: Boys and girls aged 0.5 year up to **7** years who were diagnosed with masturbation that was confirmed by videotape of the attacks obtained by parents. Also, patients doing masturbation as a daily habit that interfere with daily activity.

Exclusion criteria: Cases with any serious medical condition that would interfere with the study, cases with any current neurological or psychiatric disorder, children with chronic drug treatment and cases with infection of genitalia.

Methods:

Patients were classified into 2 groups (each group includes 26 participants): Group on behavioral therapy and clonazepam on dose according to FDA approval, (0.03 – 0.07 mg/kg/day).

Clonazepam was started based on child's body weight and continued for four weeks. A form was given to the parents to fill out the frequency and duration of masturbation daily by observation at home, during the 4 weeks period of the study. The children were assessed once a week for the drug adverse events. The data was collected and analysed to measure the drug efficiency.

Group on behavioral therapy, which contained spending more time with the children at home for more emotional support, distracting them from masturbation indirectly and a form is given to parents to fill out the

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frequency and duration of masturbation daily. Behavioral therapy was conducted on both groups. Treatment included teaching children different approaches of responding to conditions more positively. A main part of such therapy was rewarding adaptive behaviors that benefit a child's functioning and discourage maladaptive behaviors, or those that affect a child's best possible functioning. With time, patience, and focus on building trust, a child may warm up to the point of being able to fully express themselves. In addition, this is mainly dependent on the child's age.
The clonazepam dose that doctor prescribes is reliant on a lot of factors, which includes the type and severity of the disease, the child's age and weight and form of clonazepam [(Clonazepam (oral drops) (2.5mg/ml) (Brand: Revotril, Apetryl)] and other medical situations they may have. Typically, a doctor starts a subject on a low dose and adjusts it over time to reach the dose that's right for them.

Child dosage (ages 0.5 to 7 years or children who weigh 30 kg or less): Typical starting dose was 0.03 mg/kg of body weight daily. The dose didn't exceed 0.07 mg/kg per day (given in two divided doses). Dose increases: A doctor may increase a child's dose by 0.03 mg/kg every one or two weeks (max 0.07 mg/kg) until the condition is controlled. Maximum dose: 0.07 mg/kg daily taken in divided doses.

Ethical approval: Study protocol was approved by Institutional Research Board. Informed written consents were obtained from parents of participants sharing in the study. Confidentiality and personal privacy was respected in all levels of the study. Collected data was not used for any other purpose. The Helsinki Declaration was followed throughout the study's conduct.

Statistical analysis

The collected data were coded, processed and statistically analysed utilizing SPSS program version 24 for windows. The proper statistical tests were used when needed. Qualitative data were described using number and percent. Quantitative data were described using mean ± standard deviation for normally distributed data. The Chi square (X^2) test was utilized to compare two groups in terms of the distribution of different variables. P-value ≤ 0.05 was considered significant.

RESULTS

There were no statistically significant differences between both groups as regard baseline characteristics (Table 1).

Table (1): Comparison between combined therapy (behavioral therapy and clonazepam) and behavioral therapy as regards baseline characteristics

	Combined therapy group (n= 26)	**Behavioral therapy group (n= 26)**	**Test of significance**	**P value**
Age (years), Median (min, max)	3.95 (0.7, 9)	2.75 (0.9, 7)	U= 265.5	0.19
Sex No. (%) Male Female	 5 (19.2%) 21 (80.8%)	 7 (26.9%) 19 (73.1%)	X^2= 0.43	0.51
Mode of Delivery No. (%) Normal CS	 3 (11.5%) 23 (88.5%)	 4 (15.4%) 22 (84.6%)	X^2= 0.17	0.68
Admission to neonatal ICU No. (%)	4 (15.4%)	1 (3.8%)	X^2= 1.99	0.16
Feeding No. (%) Artificial Breastfeeding	 6 (23.1%) 20 (76.9%)	 8 (30.8%) 18 (69.2%)	X^2= 0.39	0.53
Time for weaning (months) Mean ± SD	6.4 ± 1.6	7 ± 1.9	t= -1.3	0.19
Maternal working No. (%)	2 (7.7%)	4 (15.4%)	X^2= 0.75	0.39
Sociodemographic status No. (%) Moderate Low	 18 (69.2%) 8 (30.8%)	 23 (88.5%) 3 (11.5%)	X^2= 2.88	0.09
Family history of neurological disorder No. (%)	2 (7.7%)	0 (0%)	X^2= 2.08	0.15
Siblings Median (min, max)	2 (0, 5)	2 (0, 5)	U= 323.5	0.79
Tanner stage No. (%) 1 2	 21 (80.8%) 5 (19.2%)	 25 (96.2%) 1 (3.8%)	X^2= 3.01	0.08

(U) Man- Whitney test; (X^2) Chi square test; (t) Student t- test; Level of significance < 0.05

There were statistically significant differences between combined therapy and behavioral therapy groups as regards response to treatment where most of children of combined group recovered completely (76.9% vs. 7.7% respectively), while most of children received behavioral therapy alone (50%) showed partial response in the form of decreased frequency of attacks in comparison with baseline. No cases showed no response to clonazepam while 42.3% of children who received behavioral therapy alone did not show any response **(p < 0.001).** There were statistically significant differences as regards median values and ranges of disease frequencies post-treatment with higher values among children who received behavioral therapy alone **(p< 0.001).** Duration till complete response was shorter in combined therapy group compared to children received behavioral therapy (28 days, **p= 0.001)** (Table 2).

Table (2): Response to treatment

	Combined therapy group (n= 26)	**Behavioral therapy group (n= 26)**	**Test of significance**	**P value**
Response No. (%): No response Partial Response Complete Response	0 (0%) 6 (23.1%) 20 (76.9%)	11 (42.3%) 13 (50%) 2 (7.7%)	X^2= 28.31	<0.001
Frequency after treatment mean ± SD	0 (0, 2)	2 (0, 10)	U= 69	<0.001
Duration till complete response (days)	18.88 ± 9.6	28 ± 0	t= 44.1	0.001
Clonazepam dose	0.046 ± 0.018			

(U) Man- Whitney test; (X^2) Chi square test; (t) Student t- test; Level of significance < 0.05

On comparison of the disease frequency before and after treatment, the frequency decreased significantly in combined therapy group **(p= 0.003)** while no statistically significant changes occurred in behavioral therapy group (Table 3)**.**

Table (3): Frequency changes before and after treatment

	Pre-treatment	**Post-treatment**	**P value**
Combined therapy group	3.5 (1, 7)	0 (0, 2)	**0.003**
Behavioral therapy group	3 (2, 10)	2 (0, 10)	0.09
P value between both groups	0.59	**<0.001**	

(U) Man- Whitney test; (X^2) Chi square test; (t) Student t- test; Level of significance < 0.05

There were no statistically significant differences between the studied groups as regards disease characteristics except the relation to child upset, which form higher percent of children in no response group (81.8% vs 27.3%) with statistically significant difference **(p= 0.002).** Higher percent of children in complete response group were maintained on clonazepam and behavioral therapy, while no patients in no response group received clonazepam with statistically significant differences **(p < 0.001).** Dose of clonazepam was higher among partial response group with statistically significant difference **(p= 0.012)**. Duration till recovery was longer among partial response group with statistically significant difference **(p= 0.013)** (Table 4).

Table (4): Effect of disease characteristics and medications on response to treatment

	Complete response Group (n= 22)	**Partial response group (n= 19)**	**No response (n= 11)**	**P value**
Age at 1st attack (months) median (min, max)	21.5 (1, 84)	11 (1, 36)	12 (2, 36)	0.33
Duration of attack (minutes), median (min, max)	4 (1.5, 20)	5 (1, 12.5)	5 (1, 8)	0.99
Frequency per day median (min, max)	3 (2, 7)	4 (1, 10)	3 (2, 10)	0.79
Timing No. (%): Anytime When alone Before sleep At morning	15 (68.2%) 1 (4.5%) 5 (22.7%) 1 (4.5%)	14 (73.7%) 0 (0%) 5 (26.3%) 0 (0%)	10 (90.9%) 0 (0%) 1 (9.1%) 0 (0%)	0.64
Relation to sleep No. (%)	15 (68.2%)	11 (57.9%)	7 (63.6%)	0.79
Relation to upset No. (%)	6 (27.3%)	4 (21.1%)	9 (81.8%)	**0.002**
Flushing No. (%)	17 (77.3%)	16 (84.2%)	9 (81.8%)	0.85
Sweeting No. (%)	5 (22.7%)	10 (52.6%)	2 (18.2%)	0.06
EEG No. (%): Not done. Normal Abnormal	12 (54.5%) 10 (45.5%) 0 (0%)	11 (57.9%) 7 (36.8%) 1 (5.3%)	5 (45.5%) 6 (54.5%) 0 (0%)	0.65
Antiepileptic No. (%)	5 (22.7%)	4 (21.1%)	1 (9.1%)	0.66
Received treatment No. (%): Combined therapy. Behavioral	20 (90.9%) 2 (9.1%)	6 (31.6%) 13 (68.4%)	0 (0%) 11 (100%)	**<0.001**
Clonazepam dose , median (min, max)	0.04 ± 0.01	0.06 ± 0.02		**0.012**
Duration of Clonazepam (days) median (min, max)	16.05 ± 8.1	28.3 ± 1.8		**<0.001**

(Kws) Kruskal- Wallis test; (X^2) Chi square test; Level of significance < 0.05

There were no statistically significant differences between responders and non-responders as regards disease characteristics except the relation to child upset, which form higher percent of children in no response groups (81.8% vs. 24.4%) with statistically significant difference **(p< 0.001).** Higher percent of children in complete response group were maintained on clonazepam and behavioral therapy, while no patients in no response group received clonazepam with statistically significant differences **(p< 0.001)** (Table 5)**.**

Table (5): Predictors for response as regards disease characteristics and medications

		Responders (n= 41)	**Non-responder (n= 11)**	**P value**
Age at 1st attack (months) median (min, max)		18 (1, 84)	12 (2, 36)	0.72
Duration of attack (minutes), median (min, max)		4 (1, 20)	5 (1, 8)	0.98
Frequency per day median (min, max)		4 (1, 10)	3 (2, 10)	0.94
Timing No. (%):	Anytime	29 (70.7%)	10 (90.9%)	
	When alone	1 (2.4%)	0 (0%)	
	Before sleep	10 (24.4%)	1 (9.1%)	0.58
	At morning	1 (2.4%)	0 (0%)	
Relation to sleep No. (%)		26 (63.4%)	7 (63.6%)	0.98
Relation to upset No. (%)		10 (24.4%)	9 (81.8%)	**<0.001**
Flushing No. (%)		33 (80.5%)	9 (81.8%)	0.92
Sweeting No. (%)		15 (36.6%)	2 (18.2%)	0.25
EEG No. (%):	Not done	23 (56.1%)	5 (45.5%)	
	Normal	17 (41.5%)	6 (54.5%)	0.68
	Abnormal	1 (2.4%)	0 (0%)	
Antiepileptic No. (%)		9 (22%)	1 (9.1%)	0.53
Received treatment No. (%)				
Combined therapy		26 (63.4%)	0 (0%)	
Behavioral		15 (36.6%)	11 (100%)	**<0.001**
Clonazepam dose, median (min, max)		0.03 (0.03, 0.07)	0	
Duration of Clonazepam (days) median (min, max)		21 (7, 35)	0	
Frequency after treatment per day Mean ± SD		0.53 ± 0.12	4 ± 2.02	**<0.001**

(U) Man- Whitney test; (X^2) Chi square test; Level of significance < 0.05

There were no statistically significant differences between responders and non-responders as regards disease characteristics. Partial response group received higher doses of clonazepam with statistically significant difference **(p= 0.012).** Duration till recovery was longer among partial response group with statistically significant difference **(p= 0.013)** (Table 6).

Table (6): Predictors for complete response in combined therapy group as regard disease characteristics and medications

		Complete response (n= 20)	**Partial response (n= 6)**	**P value**
Age at 1st attack (months) median (min, max)		21.5 (1, 84)	15 (4, 36)	0.6
Duration of attack (minutes), median (min, max)		4 (1.5, 20)	5 (2.5, 12.5)	0.6
Frequency per day median (min, max)		3.5 (2, 7)	3.5 (1, 5)	0.57
Timing No. (%),	Anytime	14 (70%)	3 (50%)	
	When alone	1 (5%)	0 (0%)	
	Before sleep	4 (20%)	3 (50%)	0.49
	At morning	1 (5%)	0 (0%)	
Relation to sleep No. (%)		14 (70%)	4 (67.7%)	0.87
Relation to upset No. (%)		14 (70%)	3 (50%)	0.37
Flushing No. (%)		16 (80%)	6 (100%)	0.23
Sweeting No. (%)		4 (20%)	2 (33.3%)	0.49
EEG No. (%)	Not done	11 (55%)	1 (16.7%)	
	Normal	9 (45%)	5 (83.3%)	0.09
	Abnormal	0 (0%)	0 (0%)	
Antiepileptic No. (%)		5 (25%)	3 (50%)	0.47
Clonazepam dose, median mean ± SD		0.04 ± 0.01	0.06 ± 0.02	**0.012**
Duration of Clonazepam (days) median (min, max)		16.05 ± 8.1	28.3 ± 1.8	**0.013**
Frequency after treatment per day Mean ± SD		0 (0, 0)	0.37 (0.01, 2)	**< 0.001**

(U) Man- Whitney test; (X^2) Chi square test; Level of significance < 0.05

Combined therapy group was divided according to starting dose of clonazepam into 3 groups. 19 children received starting dose of 0.03, 5 children received starting dose of 0.06 and 2 children received starting dose of 0.07. There were statistically significant differences between the 3 groups as regards treatment response as higher percent among children who received dose of 0.03 showed partial response, while higher percent of children who received 0.06 or 0.07 doses achieved complete response **(p= 0.03)**. Thus, 20 children (76.9%) did not achieve complete response by the 1st week (Table 7).

Table (7): Association of starting dose of Clonazepam and response to treatment

Starting dose	0.03 (19 patients)	0.06 (5 patients)	0.07 (2 patients)	P value
Decreased	16 (84.2%)	3 (60%)	1 (50%)	**0.03**
Stopped	3 (16.7%)	2 (40%)	1 (50%)	

DISCUSSION

There are no well-designed clinical trials to explore appropriate treatment strategies for childhood gratification habits in the literature. A few existing studies have explored the management of self-gratification habits.

The current study included 52 children with median age 3.9 years in combined therapy group and 2.75 years in behavioral therapy group and ranged from 0.9 to 9 years with no statistically significant difference. In concordance with the present study, median age for gratification phenomena was 3 years and ranged from 0.75 to 10 years in a recent study done by **Elafifi *et al.*** [5]**.** Similarly, in a study done by **Zarin *et al.*** [6], mean age for gratification phenomena was 3.5 years. Moreover, in a study done by **Askari *et al.***[7], the mean age of children with masturbation was 4 ± 3.31 years with a range from 0.5 to 12 years. This could be explained by the findings of a study done by **Fan *et al.*** [8] who demonstrated that children between 3 and 4 years have sexual curiosity including exploring their own bodies, which might include masturbation. In contrast to our findings **Omranifard *et al.*** [3] demonstrated older mean age of children with gratification disorder in his study (5.3 ± 1.1 years). While, **Dudipala *et al.*** [9] reported younger age of presentation in his study (1.6 years).

Most of the included children in combined therapy and behavioral therapy groups were females (76.9%) with no statistically significant difference between both groups. **Martijin *et al.*** [10] reported increased attraction of female children to explore their external genitalia during age of 3 to 6 years. Studies done by **Elafifi *et al.*** [5]**, Dudipala *et al.*** [9] and **Izadi-Mazidi *et al.***[11] demonstrated female predominance among children with masturbation. These results can be explained by the anatomical differences as more females had urethral infection and vulvovaginitis, which caused irritation to this region and precipitate the occurrence of gratification [12]**.** On the other hand, **Pelin and Aksu** [2] reported that masturbation behavior is more common in males in adulthood, while girls seem to be affected more frequently than boys in childhood.

According to the present study, artificial feeding had lower incidence among gratification phenomena children with no statistically significant difference between both groups. In agreement with the current study, **Elafifi *et al.*** [5] reported no significant positive relation between gratification and type of feeding. On the other hand, **Ibrahim & Raymond** [13] demonstrated presence of significant correlation between masturbation action and lack of breastfeeding. The difference can be related to the different sample size between the two studies.

Mean age of weaning of the included children was 6.4 ± 1.6 months in combined therapy group and 7 ± 1.9 months in behavioral therapy group with no statistically significant difference between both groups. On contrary, **Elafifi *et al.*** [5] demonstrated that lower mean age for weaning was associated with higher incidence of gratification phenomena. Also, **Askari *et al.*** [7] showed that masturbation is less in children who were breastfed for 2 years. **Gulec *et al.*** [1] in his study on 90 children reported significant relation between gratification action initiation and weaning. The results of multiple studies showed that masturbation in children is a mechanism that reduces negative emotions. Also, masturbation occurs in children who are suffering from a severe lack of external stimuli, such as children with emotional problems or some orphans [7].

In the present study, the number of working mothers is less than non-working mothers in both groups with no significant difference. Of note, maternal employment may form a sort of familial stress, which positively correlates with childhood masturbation and self-gratification behavior [14].

Most of children had moderate socioeconomic status (69.2% in combined therapy group and 88.5% in behavioral therapy group). Likewise, **Elafifi *et al.*** [5] showed that most of gratification phenomena children had moderate socioeconomic status (84%). On contrary, **Pelin and Aksu** [2] did not report statistically significant effect of socioeconomic status on incidence of gratification phenomena.

In the current study, only 2 children had positive family history for neurological disorders. On contrary, **Pelin and Aksu** [2] demonstrated significant difference as regards neurological and psychiatric disorders. He explained his results by presence of a genetic predisposition shared with different psychiatric disorders.

In our study, EEG was done for 24 children out of 52 and abnormal EEG was present only in one patient, while the rest showed normal EEG. Similarly, **Elafifi *et al.*** [5] showed that most of his studied children had normal EEG. In a study by **Jan *et al.*** [15], all children had normal EEG pattern. On contrary, **Zarin *et al.*** [6] showed that 201 out of 359 children included in his study had epileptic changes in EEG. This could be explained by the fact that more than 10% of normal population has nonspecific EEG abnormality and approximately 1% may have epileptiform paroxysmal activity without seizures. The prevalence of these abnormalities is higher in children [16]. Misdiagnosis is mostly due to the non-specificity of the presentation of masturbation as there may be merely repeated adduction of thighs or episodes of staring and shaking.

In the present study, most of children in combined therapy (80.8%) and behavioral therapy groups (96.2%) were Tanner stage 1. Likely, **Elafifi *et al.*** [5] found that all gratification phenomena children were Tanner stage 1. This is attributed to small median age of children in the studied groups.

According to the present study, median age of the 1st attack was 21.5 months in combined therapy group and 12 months in behavioral therapy group. In agreement with the present study, **Elafifi *et al.*** [5] reported similar median age for the 1st attack. On the other hand, **Askari *et al.*** [7] and **Dudipala *et al.*** [9] reported younger mean age for starting this action (17.6 months). The mean age at which masturbation onset was 10.4 months in a study by **Nechay *et al.*** [17]**.** In a study by **Rodeo *et al.*** [18] on 31 children, diagnosed with masturbation, the youngest age of symptom onset was 2 months and the oldest age of showing these symptoms was 60 months. Also, the average age of these symptoms were 12 months.

Clonazepam affects serotonin transmission and is the only benzodiazepine in the market for which additional serotogenic activity has been shown, an action that may contribute to its anxiolytic effects. Research shows that treatment with clonazepam may reduce the frequency of sexual behavior during sleep [4].

The current result showed statistically significant difference between both groups as regards response to treatment as the follow: higher percent of children showed complete response to treatment in combined therapy group (76.9%) than behavioral therapy group (7.7%), while higher percent showed partial response in the form of decreased frequencies of attack in behavioral therapy group (50%) than combined therapy group (23.1%) ($p< 0.001$).

Also this study showed that the duration till complete response was significantly reduced in combined therapy group (18.88 ± 9.6 days) than in behavioral therapy group (28 ± 0 days) ($p< 0.001$). To the best of our knowledge, this is the first study to evaluate the efficacy of adding clonazepam in treating childhood masturbation in comparison with behavioral therapy alone. However, some studies compared between behavioral treatment and other lines of treatment such as typical and atypical antipsychotics. **Kul *et al.*** [19] showed that behavioral therapy was comparable to aripiprazole in his case-series on 5 girls with childhood masturbation. A dose of 4 mg aripiprazole resolved their masturbatory behavior after three months. **Omranifard *et al.*** [3] compared the efficacy of respiredone to behavioral therapy and reported that by the 4th week of treatment the frequency of the action decreased significantly in respiredone group than in behavioral therapy group. On the other hand, **Gulec *et al.*** [1] demonstrated that behavioral therapy was sufficient in treating 72% of cases who achieved complete response. While, respiredone was associated with complete response in patients who did not respond to behavioral therapy.

In our study mean values of clonazepam was higher among partial responders than complete responders and this could be explained by the trials to achieve complete response in partial responders by titration of clonazepam doses. As shown in the results, higher starting doses was associated with better response rates. In agreement with the present study, **Nardi and Perna** [20 reported that higher starting clonazepam doses were associated with better response to treatment in patients with psychiatric disorders. On contrary, in status epilepticus, titration of clonazepam dose was not associated with better outcome and the best efficacy was reported with the lowest dose [21].

In terms of social anxiety disorders in children, **Barkowski *et al.*** [22] and **Knijnik *et al.*** [23] reported that clonazepam showed superior effect over behavioral therapy in their studies. **Canton *et al.*** [24] evaluated use of clonazepam versus behavioral therapy in treating social phobia and reported presence of significant improvement in clonazepam group.

Advantages and limitations: The study had some advantages, being randomized controlled trial, it allowed better reliability and generalizability of the data especially in presence of relatively large sample size in comparison with other studies. Limitations of the study included short duration of follow up of children and lack of assessment of the drug safety profile such as side effects and drug withdrawal.

CONCLUSION

Combined therapy including behavioral and clonazepam is more effective and superior to behavioral therapy alone in ameliorating masturbation phenomena in infants and children.

RECOMMENDATIONS

Further large sample size studies are needed to confirm the results. More studies are needed to assess the drug safety profile and evaluate the child after the drug withdrawal. Longer follow up studies' duration are recommended for evaluation of optimal duration needed for treatment.

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- **Conflict of interest:** None.

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