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The Effectiveness of Education Based on Sensory Integration on the Sensory Status and Sexual Knowledge of High-functioning Autistic Children

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Abstract

Introduction: Autism spectrum disorder is a neurodevelopmental disorder that is characterized by widespread deficits in social interactions as well as inflexible and repetitive behaviors and negatively affects the growth and function of individuals. The aim of this study was to evaluate the effectiveness of sensory integration training on the sensory status and sexual knowledge of high-functioning autistic children.

Methods: In this study, it was quasi-experimental with a pretest-posttest design with a control group. The statistical population of this study included all children with high-performance autism in Karaj in 1399, which was selected from the statistical population of 30 students by purposive sampling as sample size and in two groups of experimental (15) and control (15) were appointed. The training program was performed for 12 sessions of 90 minutes for the experimental group, but the control group did not receive training. In order to collect research data, an educational program based on sensory integration, Gilliam Autism Rating Scale - Second Edition, Sensory Profile Test, and Heidarizadeh Child Abuse Self-Report Scale were used. Research data were analyzed using an analysis of covariance.

Results: The results of this analysis showed that education based on sensory integration had a significant effect on improving sensory status (P = 0.0001, F = 46.41) and sexual knowledge of children (P = 0.0001, F.69.67 F). =) Has high-functioning autism.

Conclusion: According to the results of this study, it can be said that education based on sensory integration is an effective approach in improving the sensory status and sexual knowledge of children with high-performance autism.

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Introduction:

Autism spectrum disorder is a developmental neurological disorder characterized by widespread deficits in social interactions as well as inflexible and repetitive behaviors that negatively affect the growth and function of individuals. People with this disorder may experience symptoms with or without verbal and intellectual impairment (1). Approximately one in 59 children in the United States is diagnosed with autism spectrum disorder, according to the latest data from the Centers for Disease Control (CDC) and Prevention. This prevalence rate is present in all socio-economic classes and racial and ethnic groups (2). In terms of gender differences, this disorder is 4 times more common in men and boys than women (3). Childcare is challenging even in the best of working conditions, and sometimes in addition to childcare, conditions are imposed on the parent that adds to their challenges. In this regard, the disability of the family child is one of the conditions that increase the problems of parents and, consequently, the stress of parenting (4). Autism spectrum disorder causes a variety of deficits and problems for people with autism, including health problems (5), school-related anxiety (6), executive functioning (7), violence (8), and sexual abuse (9). Among these problems, some estimates indicate that more than 80% of children with autism have concomitant sensory processing disorders and that more or less response to sensory data is now recognized as one of the diagnostic criteria for the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM–5) (10). Children with autism who are hypersensitive to sensory stimuli may respond negatively to common sensory stimuli such as touch, movement, or sound. The response of autistic children who are hypersensitive to sensory stimuli is usually associated with stress, avoidance, and over-care. In contrast, children with autism who are hypersensitive to sensory stimuli usually do not respond to or perceive sensory stimuli (such as touch) (11). This relationship, study by Nesaeyan, Kazemi, Pishyare, Hashemi Azar, and Farrokhi showed that children with autism have different patterns of sensory processing. These children have potential differences in low recording patterns, sensory sensitivity, and sensitization, and definite differences in sensory avoidance (12). In their study, Jamshidian, Jalili, and Haghgoo concluded that weakness in sensory processing, especially sensory sensitivity, can be an important factor in limiting the participation of autistic children in activities (13). Another issue that has been most neglected in the domestic and foreign literature of autistic children is sexual abuse in these children. Estimates in this field show that currently, in the community of children with autism spectrum disorder, 1 in 3 girls and 1 in 10 boys are sexually abused (14). The prevalence of sexual

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harassment and abuse in children with developmental disabilities is twice as high as in normal children. Sexual abuse is a form of undesirable sexual behavior and a form of sexual discrimination that includes seductive, unwanted, and repetitive sexual offers that seek the sexual satisfaction of the other party (15). Sexual abusers are usually people whom children with autism spectrum disorder know and trust. To achieve their goals, these people try to gain the trust of autistic children (16). In the face of sexual abuse, some children with autism spectrum disorder after sexual abuse may not have enough skills to deal effectively with what has happened to them. Some children with autism may also lack the verbal skills needed to expose this sexual abuse. As a result, they typically try to combat sexual abuse or develop new behaviors (behavioral problems) that did not already exist. Some studies show that autistic children who do not have the ability to communicate verbally show more behavioral problems than children who have the ability to speak (children with high-functioning autism) (17). The manifestations and severity of autism spectrum disorder syndrome are very wide, and the treatment of this disorder typically focuses on the predominant features and symptoms of the disorder, including social or social interaction deficits, inhibited behaviors, developmental dysfunction, and sensory problems (18). There are several treatments for symptoms and disorders in children with autism spectrum disorders, but the most commonly used therapies are sensory integration, behavioral therapy, and social skills training (19). The treatment of sensory integration is controlled sensory stimulation in the form of self-directed and meaningful activities that emphasize the role of biological needs in motivating behavior. In the sensory integration approach, atrial and deep senses are used as a combination of both senses. Atrial and sensory sensations are not used individually for two reasons: Does not accurately enable them to distinguish between the role of the atrial system in motor functions and the role of the sensory system in this area (20). The sensory integration treatment approach seeks to provide opportunities for children to improve control of sensory input, with a special emphasis on in-depth and tactile input. During the intervention, the therapist facilitates an adaptive response that the child needs in order to integrate sensory information. The work of therapists takes great advantage of the sensory integration approach in treating and influencing children on the autism spectrum (21). In this regard, the results of various studies indicate the effectiveness of sensory integration training. Among these studies: Iwanaga, Honda, Nakane, Tanaka, Toeda, and Tanaka in a study showed that sensory integration therapy has a positive effect on motor coordination, nonverbal cognitive abilities, combined sensorimotor abilities, and cognition in children with high-functioning autism spectrum disorder (22). Nazare concluded in a study that the program of group and individual sensory-motor integration activities has an effect on the motor skills of autistic children (23). Jaberzadeh Ansari in a study concluded that sex education has increased mothers' sexual knowledge in the experimental group and the treatment of sensory integration and sensory-centered interventions will be effective for children with autism spectrum disorder (24). The results of Watling and Hauer's research showed that in general, the treatment of sensory integration and sensory-centered interventions will be effective for children with autism spectrum disorder (25). The results of Sadeghian showed that the effect of sensory-motor integration treatment on improving behavioral behavior, communication, social interaction, and general symptoms of

autism was high (26). In a study, Emad showed that the use of the sensory integration method has a positive and significant effect on emotional expression, non-verbal and physical language, social communication, and communication with objects and the environment (27). Pfeiffer, Koenig, Kinnealey, Sheppard, and Henderson in a study showed that group therapy based on sensory integration has a significant improvement in sensory processing, motor skills, socio-emotional factors, and social responsibility (28). Given the evidence that children with autism with high performance in sensory processing and sexual knowledge have defects and problems, on the other hand, solving the problems and limitations of sensory and sexual knowledge can improve many skills, including expressing emotions, social communication, and communication with objects and the environment. It should also be noted that sensory integration education can be effective in solving many of the psychological problems of people with autism. This study seeks to answer the question of whether education based on sensory integration is effective on the sensory status and sexual knowledge of high-functioning autistic children.

Method:

The method of the present study was quasi-experimental with a pretest-posttest design with a control group. The statistical population of this study included all children with high-functioning autism in Karaj in 2020. From among the statistical population, 30 children were selected by purposive sampling as sample size and assigned to two experimental (15) and control (15) groups. The training program was performed for 12 sessions of 90 minutes for the experimental group but the control group did not receive training. Inclusion criteria: having high-performance autism (the result of screening tests and psychiatrist diagnosis has been recorded in the file of each child), having the age of 6 to 9 years, having the level of autism in need of support, having comprehension language and intelligence 80 and in sensory evaluation Acquire the criterion of sensory disturbance (under-response or over-response). Exclusion criteria: history of head injuries, tumors, epilepsy, and other neurological disorders, learning disabilities and schizophrenia disorders, history of receiving training sessions based on sensory integration.

Data Collection tools

Gilliam autism rating scale (2 – GARS): The GARS scale is based on the definitions of the American Autism Association and the American Psychiatric Association, based on the Diagnostic and Statistical Manual (DSM)-IV of mental disorders meanings to help diagnose autism in people aged 3 to 22 in 1995. This scale consists of 42 questions that include three subscales (stereotyped behavior, communication, and social interaction). In addition, the scale has 14 questions about developmental disabilities that the score of this section is not considered because it remains constant in pre-test and post-test. At this scale, raw scores are converted to autism index scores in which scores above 90 with a higher-than-average probability and scores below 90 with a lower-than-average probability indicate autism. In fact, the severity of autism disorder is measured by this scale in which high scores indicate more severe disorder and low scores indicate a mild disorder. In Iranian society, based on the study of Ahmadi, Safari, Hemmatian, and Khalili,

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Cronbach's alpha coefficient in stereotypical behaviors is 0.74, communication 0.92, social interactions 0.73, and developmental disorders 0.80 (29). Cronbach's alpha coefficient of the GARS test was 0.89.

Sensory profile test: A sensory profile test is a standard tool that assesses the likelihood of sensory processing disorders in children 3 to 10. This tool is based on the Sensory Profile Test (Dan, 1999) and has 38 items that have the most power of differentiation. This questionnaire is completed by parents (caregivers) based on a 5-point Likert scale. Always (1), Frequently (2), Occasionally (3), Rarely (4), Never (5) and includes seven sections: Touch Sensitivity, Sensitivity Taste/smell, motor sensitivity, sensory craving/poor sensory recording, auditory filtering, low energy/weak, auditory/visual sensitivity.

The raw score of each section can be in three ranges (normal performance, probable difference, or definite difference) and the total score can be classified into three ranges (41-138 definite difference, 142-154 probability difference, -155). 190 normal function). High scores in each section indicate normal performance. In the study of Mirzakhani, Pourjabbar, Rezaee, Dibajnia, and Akbarzadeh Baghban in Iran (normal children in Tehran), Cronbach's alpha coefficient for all parts was obtained between 0.45-97.97 (30). Content validity was reported to be above 0.90 and Cronbach's alpha coefficient was reported to be 0.83.

Child Abuse Self-Report Scale (CASRS): This scale was prepared by Hedarezadeh and has 38 items and measures and evaluates the range from sexual harassment to emotional harassment and negative atmosphere of the house, physical harassment, and neglect of the child. 8 questions of this scale are intended for physical abuse of a child, 5 questions for sexual abuse, 14 questions for emotional abuse, and 11 questions for negligence. Each of the questions on the above scale is rated on a 4-point Likert scale with the word never indicating any harassment, sometimes, most of the time, always indicating persistent harassment. Due to the fact that the test measures 4 categories (physical, sexual, emotional, and neglect), so 4 scores related to 4 subscales are also determined. Hedarezadeh obtained a Cronbach's alpha coefficient for his child abuse report scale of 0.92 (31). Cronbach's alpha coefficient in the present study was 0.80 and the subscales of sexual, physical, emotional, and psychological abuse and neglect were 0.78, 0.81, 0.72, and 0.74, respectively.

The sensory integration training program was conducted for 12 sessions of 90 minutes for 3 months. In order to evaluate the validity of this protocol, the researchers who had used this training program in their research were consulted and their point of view was used to better implement this training.

Table 1. A summary of the goals and steps of the intervention program

Activity	Touch	Auditory	Visual	Balance	Depth	Olfactory	Taste

Meetings	Vibrating Massage (Electric)	Listen To the Recorded Sound	Use Bile Tube to Increase Focus and Clean Colors	Swinging	Sitting On a Fitness Ball and Pressing on Different Parts of The Foot	Smell The Perfume with Your Eyes Closed	Familiarity with different flavors (bitterness, salinity, sweetness, fear)
Session 1	Rolling On a Fitness Ball	Play Animal Sounds Which Animal Sounds	Use The Wall Cube	Lee Lee To Go	Play With Fit Balls and Jump	Smelling Fresh Bread with Your Eyes Closed	Familiarity with the taste of salinity and taste threshold
Session 2	Immerse Yourself in The Ball Pool	Listen To the Sound of Broken Dishes, The Sound of The River ... You Are	SI Panel Uses Flashlight Light in The Dark	Play With the Balance Board	Jumping On a Trampoline	Use Incense In (Sandalwood Scent)	Familiarity with the taste of sweets and the taste threshold
Session 3	Sanding Room Uniform and Continuous Stimuli to The Sense of Touch	Repeating Sounds, The Sound of Rain	Use Fiber Optics to Visually Clean Colors	Jump Off the Rope	Butterfly Flying and Walking	Giving Hair Such as Alcohol, Vinegar, Fragrances	Familiarity with the bitter taste and taste threshold
Session 4	Tunnel For Awareness of Environmental Body Sense	Listen To the Sounds of Animals and Imitate Them	Move On Color Panels on The Ground to Recognize Colors	Game Batop Fitness	Lee Lee And the Bear Walking	Repeat With Your Eyes Closed and What It Smelled Like	Familiarity with a sweet taste and taste threshold

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Session 5	Play What Is Inside the Bag	Listen To Recorded Sounds	Use Bubble Tube	Jumping On a Trampoline	Standing On One Foot	Clean Pungent Odors and Mild Odors	Banmak taste threshold
Session 6	Play Dough	Listen To Different Sounds and Hear Clearly	Use The Visual Cube to Clean the Tones	Walking On a Treadmill	Walk On a Straight Path Back and Forth	Smell The Perfume with Your Eyes Closed	Taste threshold with lemon juice
Session 7	Immerse Your Hands in The Rice Bowl	Repeating Sounds, The Sound of Rain	SI Panel for Focus Detection	Jumping On a Trampoline	Lying And Leaking and Horizontal	Smell The Bread	Sensory awareness of tastes
Session 8	Sand Play Uniform Stimuli	Listen To Recorded Sounds	SI Panel	Jumping On a Trampoline	Pressing On the Fitness Ball	Smelling Bread with Your Eyes Closed	Taste threshold with lemon juice
Session 9	Vibrating Massage (Electric)	Listen To Animal Voices and Imitate Sounds	Use Of Fiber Optics	Swinging	Leaning And Walking	Clean Spicy and Gentle Odors	Taste threshold with salt
Session 10	Tunnel For Physical Sensory Awareness and Increased Concentration	Listen To Sounds Like Broken Dishes and The River	Use Bubble Tube	Walking On a Treadmill	Butterfly Flying	Use Recurrence	Awareness of tastes (salinity, sweetness, bitterness, sourness)
Session 11	Immerse Yourself in The Ball Pool	Repeat Sounds and Clean Hearing	Use Visual Cube and Clean Colors	Use The Excellence Board	Lie Down and Go and Fix The Load	Smell The Perfume with Your Eyes Closed	Taste threshold test

Results:

Table 2 shows the mean and standard deviation of sensory status and sexual knowledge scores in the experimental and control groups in the pre-test and post-test stages.

Table 2: Mean and standard deviation of the variable of sensory status and its sexual knowledge in the pre-test and post-test stages in experimental and control groups

Variable	Groups	Pre-test		Post-test	
		Standard deviation	Mean	Mean	standard deviation
Sensory	Experiment	48.40	1.59	46.87	1.40
	Control	49.47	2.02	48.87	2.16
Emotional reaction	Experiment	11.87	0.91	8.60	1.12
	Control	12.40	1.40	8.27	1.48
Low muscle strength and endurance	Experiment	26.20	1.74	25.40	1.66
	Control	27.13	1.99	30.53	1.35
Sensitivity of the mouth	Experiment	30.07	1.66	29.73	1.53
	Control	30.53	1.40	30.53	1.35
Inattention and distraction	Experiment	11.40	1.95	9.13	1.64
	Control	12.67	2.22	44.67	2.49
Weak sensory recording	Experiment	18.93	5.89	11.60	4.23
	Control	23.47	5.46	16.80	4.90
Sensory sensitivity	Experiment	27.20	3.14	22.20	3.02
	Control	27.60	3.18	27.80	3.02
Lack of Movement	Experiment	27.60	1.92	27.40	2.19
	Control	27.80	1.82	27.33	1.44
Subtle movements / perception	Experiment	28.20	1.37	28.40	1.35
	Control	28.07	1.03	28.47	1.30
Overall score of sensory status	Experiment	229.87	13.29	209.33	11.13
	Control	239.40	12.54	226.87	12.07
Sexual knowledge	Experiment	28.07	3.41	34.93	1.66
	Control	28.60	4.76	27.27	3.34

As you can see in Table 2, the mean of pre-test and post-test sensory status and its sub-components include sensuality, emotional response, low muscle strength and tolerance, oral sensitivity, inattention, and senses. Party, weakness of sensory recording, sensory sensitivity, inactivity and fine movements/ perception, respectively, 229.88, 48.40, 11.88, 26.20, 30.07, 11.40, 18.93, 27.20, 27.60 and 28.20, the total score scores of the sensory state and its subcomponents in the control

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group, respectively, 239.40, 49.67, 12.40, 27.13, 30.53, 12.67, 23.47, 27.60, 27.80 and 27.07. Also, the mean of the student variable in the experimental group in the two stages of pre-test and post-test are 28.07 and 34.93, respectively, and in the control, group are 28.60 and 27.27, respectively.

Using the F-test as a parametric test requires some statistical assumptions, including; the distance or relative scale of the dependent variable, random assignment of subjects, normality of data, homogeneity of variance, homogeneity of variance-covariance matrix, and homogeneity of regression slope is a significant level to establish this assumption (P <0.05) according to the level of significance obtained in the present study, these assumptions have been observed, therefore, the use of F-test as a parametric test to evaluate the effect of sensory integration program training on sexual knowledge and sensory status of children with autism is unobstructed. Multivariate analysis of covariance was used, the results of which are presented in Table 3.

Table 3. Results of multivariate analysis of covariance to investigate the overall effect of sensory integration training on sensory status variables

Variable	Test	Value	F	Sig.
	Effect of piling	0.775	41.46	0.001
Group	Wilks's lambda	0.245	41.46	0.001
	Hotelling's law	3.077	41.46	0.001
	Roy's Largest Root	3.077	418.46	0.001

As can be seen in Table 3, according to the rate of F = 41.46 and the level of significance observed (P <0.001), sensory integration training in general on the variable of sensory status and its sub-components and sexual knowledge is effective. In order to accurately evaluate the effect of this training on each of the sub-variables, univariate analysis of covariance was used, the results of which are presented in Table 4.

Table 4. Results of univariate analysis of covariance to investigate the effect of sensory integration training on the variability of sensory status and sexual knowledge of high-functioning autistic children

Variable	References	Degree of freedom (df)	Mean square	F statistic	Significance level	Effect size
Sensory	Group	1	13.241	4.867	0.03*	0.15
Emotional reaction	Group	1	1.528	0.893	0.35	-

Low muscle strength and endurance	Group	1	3.125	3.127	0.08	-
Sensitivity of the mouth	Group	1	1.136	3.739	0.06	-
Inattention and distraction	Group	1	27.108	7.133	0.01*	0.20
Weak sensory recording	Group	1	30.268	4.424	0.04*	0.14
Sensory sensitivity	Group	1	204.919	198.773	0.001	0.88
Lack of Movement	Group	1	0.427	0.475	0.4	-
Subtle movements / perception	Group	1	0.065	0.037	0.8	-
Overall score of sensory status	Group	1	649.037	19.645	0.001	0.43
Sexual knowledge	Group	1	398.246	69.67	0.001	0.72

As you can see in Table 4, the value of F is the effect of the independent variable (based on sensory integration) on the subscales of sensuality, inattention and distraction, poor sensory recording and sensory sensitivity, and the total score of the sensory state ($p<0.05$), because the significance level is smaller than the set alpha level. As a result, the difference between the groups at the 95% confidence level is significant when the effect of the pretest is removed from the post-test results for the groups. Therefore, it can be concluded that education based on sensory integration has an effect on the subscales of sensuality, inattention and distraction, poor sensory recording, and sensory sensitivity. In addition, as you can see, according to the F value of sexual knowledge in

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the post-test stage is 69.67 and at a significant level (0.001), so it can be concluded that education based on sensory integration on the sexuality of children with autism is also influential.

Conclusion:

The aim of this study was to determine the effectiveness of education based on sensory integration on the sensory status and sexual knowledge of high-functioning autistic children. In order to achieve the research findings, hypotheses were developed which are analyzed in the following: Findings of the first hypothesis of the study showed that education based on sensory integration has a significant effect on the overall score of sensory status and the components of sensuality, inattention and distraction, poor sensory recording and sensory sensitivity of autistic children. On the other hand, the results showed that the program did not have a significant effect on the components of emotional response, the sensitivity of the mouth, immobility, and fine movements. The results of this study are consistent with the research of Iwanaga et al. (22), Nazare (23), Watling and Hauer (25), Sadeghian (26), Emad (27), and Pfeiffer et al. (28). Explaining this finding, it can be said that the treatment of sensory integration flows on the child's inner desire or intrinsic motivation to interact with the environment and produce its use. Children are absorbed in activities that organize sensory inputs and present achievable challenges. Sensory integration therapy is a neurological process that requires the organization of emotions from key receptors for use in daily activities. In addition, one of the main elements of sensory integration treatment interventions is the development of sensory capacities that lead to sensuality in children with autism (32-29). The findings of the present study showed that education based on sensory integration improves inattention and distraction. Explaining this finding, it can be said that since sensory integration training programs improve the interaction of the cerebral cortex, this leads to improved cognitive skills such as attention. The Sensory Integration Program increases cognitive organization, including attention, by teaching how to control irrelevant information. In addition, in another parallel mechanism, it increases the retention time of visual and auditory signs and symbols, which in turn reduces the interference of irrelevant information and, as a result, increases attention and concentration (2). Therefore, by enriching the environment through sensory integration training, the level of attention and concentration in children with autism will improve, because these skills are developed only through experience, education, and learning. Also, the results of this study showed that sensory integration training improves sensory recording weakness and sensory sensitivity in children with high-functioning autism. Sensory learning is the source of all perceptions and learning, and higher mental processes occur after the development of sensory and perceptual systems and the connection between learning, feeling, and perception. Proper functioning of the human brain requires stimulation through environmental stimuli. The importance of these stimuli for sensory development in childhood has been well established in various studies; therefore, it can be said that training based on sensory integration can play a stimulating role for the nervous system and improve sensory recording weakness and sensory sensitivity (33). As a result, it seems that due to the weakness of children with autism in terms of sensory processing, the inclusion of an approach based on sensory integration in the treatment

program of these children is necessary. The results of the analysis of the second hypothesis of the research showed that education based on sensory integration has an effect on the sexual knowledge of high-functioning autistic children. A review of the research background shows that no study was found that examined the effectiveness of sensory integration education on sexual knowledge. However, in a way, the findings of this study can be considered in line with the results of Nazare (23), Jaberzadeh Ansari (24), and Watling and Hauer (26). Explaining this research finding, it can be said that children with autism have difficulty understanding social norms or recognizing dangerous situations. On the other hand, they may engage in high-risk behaviors such as substance use that make them vulnerable to predators. For this reason, autism spectrum disorder causes many defects and problems for people with autism, such as sexual abuse (9). Sexual abusers are usually people whom children with autism spectrum disorder know and trust. To achieve their goals, these people try to gain the trust of autistic children (16). Some studies in the research literature claim that in people who are sexually abused due to sensory processing problems, the method of sensory integration can be a useful step in their recovery process (34). The method of sensory integration improves the processing and organization of sensory information by providing opportunities to actively absorb the input of different senses, and ultimately prevents sexual harassment; Because of the basic defects in receiving, recording, and organizing the atrial, deep, and tactile senses at different levels of the central system and the connection of these senses with other senses cause deficiencies in psychological neurological skills (35). In addition, in explaining these findings, it should be noted that improving sexual knowledge requires increasing non-verbal intelligence and sensory integration program by increasing spatial thinking, visual memory, enhancing image recognition, and enhancing long-term visual attention and range. Spatial visual spacing improves the performance of nonverbal intelligence. It also improves the progress of information decoding by increasing the rate of listening and the speed of reaction (37, 36). As a result, with the improvement of nonverbal intelligence resulting from sensory integration intervention, sexual knowledge also increases in children with high-functioning autism. Due to the need to increase sexual knowledge to prevent sexual harassment in children with autism, it is necessary to include this intervention as a complementary approach along with other methods in the educational program for these children.

Limitations of the research:

But like any research, the present study was not without its limitations, the existence of these limitations requires its generalizations to be more careful. Among them: The researcher's inability to control many disturbing variables, the only statistical population of this study was limited to high-functioning autistic children and boys, who were cautious in generalizing the results to other exceptional students. According to the results of the present study, which showed that sensory

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integration training has a significant effect on improving the sensory status and sexual knowledge of high-functioning autistic children, it is suggested that while conducting this research on other exceptional students, it is recommended that counselors and Therapists of schools and rehabilitation centers should provide the necessary training to autistic children in the field of sensory abilities and sexual knowledge.

Ethical considerations:

This article is taken from the doctoral dissertation of Islamic Azad University, Ahvaz Research Sciences Branch. The purpose of the study was explained to autistic students and families participating in this study and their informed consent was obtained. By providing a form of informed consent, measures such as informing the statistical community about the purpose of the study, explaining that the statistical community is free to participate in the study and their identity information remain confidential, the questionnaire was distributed among the entire statistical community and delivered after the questionnaire.

Application of research:

One of the objectives of this study was to develop a program and determine its effectiveness on the sensory status and increase sexual knowledge. Mothers, educators, and almost anyone who deals with and educates their children can benefit from the Mothers' Attitude Questionnaire and the Children's Sexual Awareness Training Program. This educational program can be used in kindergartens, schools, and children's education centers. . Therefore, it is recommended to use questionnaires and educational packages in kindergartens and child-related educational centers and child education centers.

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