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The Effectiveness of a Sexual Health Enhancement Strategy among Adolescents with Intellectual Disability and Autism Spectrum Disorder: A Field Study

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Abstract
The objective of this study is to assess the effectiveness of a sexual health strategy for individuals with intellectual and developmental disabilities (IDD), specifically intellectual disability (ID) and autism spectrum disorder (ASD). The sample consisted of 36 adolescents with ID and 44 adolescents with ASD, selected through purposive sampling from a special education institution in Jordan. The study found statistically significant differences in all experimental samples after the post-intervention phase. The results suggest reapplying the strategy to individuals with the poorest performance and recommend conducting a follow-up study to examine the impact of gender and age on the strategy's effectiveness in improving sexual health among adolescents with ID and ASD.
Keywords: Caregivers, Field study, Intellectual and developmental disabilities, Sexual health, Quality Education.

Introduction

The efficacy of a sexual health-focused approach is contingent upon the provision of informative resources and the facilitation of training opportunities that empower teenagers to improve their sexual well-being and foster a comprehensive comprehension of sexual matters. Recent studies have demonstrated that the provision of comprehensive sex education and health information yields positive outcomes in terms of sexual health promotion, disease and infection prevention, and the enhancement of social and interpersonal connections. According to Smith and Brown (2021), it is imperative that adolescents diagnosed with intellectual disabilities and autism spectrum disorder receive comprehensive training to address the diverse sexual issues they encounter. The provision of such training is widely recognized as appropriate and crucial for their well-being (Dewhirst & Stubbs, 2022).The maintenance of sexual health is a fundamental component of overall well-being. According to (Buzi and Smith, 2023); (Alawamleh & AlKasasbeh, 2024) the quality of life has the potential to impact several aspects of an individual's life, including personal, social, and educational interactions. Scholarly investigations have indicated the necessity of formulating educational initiatives and implementing strategies aimed at enhancing sexual health knowledge among individuals with intellectual and developmental disabilities. Additionally, it is crucial to furnish them with adequate emotional and social assistance (Fernandes & Costa, 2021).

The nature and consequences of sexual difficulties are contingent upon a multitude of elements, including but not limited to age, gender, health status, cultural background, social context, and psychological and environmental influences (Abdelbaky & Atalla, 2022). One of the prevalent sexual challenges encountered by adolescents with intellectual disabilities or autism spectrum disorder includes insufficient knowledge and proper sexual education, limited awareness of sexual health concerns, reticence, anxiety, and unease when discussing sexual matters, challenges in expressing sexual desires and needs, difficulties in comprehending and interpreting physical cues and facial expressions associated with sexual desires,

and an inability to adapt (Ayasrah et al., 2023). In addition to the typical sexual changes that accompany growth and development, individuals may also experience various challenges related to their sexual well-being. These challenges encompass exposure to sexual assault or exploitation, the contraction of sexual diseases and injuries, including fungal, bacterial, or viral infections, as well as psychological and emotional difficulties associated with sexuality, such as anxiety, depression, or gender identity disorders (Shindel & Parish, 2021).

This field study conducted in the domain of sexual health is considered a fundamental research methodology. This study serves the purpose of enhancing comprehension regarding the sexual issues encountered by adolescents. Additionally, it aims to identify the various factors that influence these problems. Furthermore, the study evaluates the efficacy of the strategies employed to address these issues by acquiring dependable data. Consequently, this study contributes to the enhancement of strategies designed to tackle the sexual challenges faced by adolescents (Dhawan & Haldar, 2021). The findings of this research can be utilized to enhance sexual education for both people and communities, as well as to formulate curriculum pertaining to sexual health. This aids in identifying and developing strategies and programs to enhance sexual awareness and education and in providing the necessary support for adolescents to realize their full potential in this area (Martin et al., 2020); (AlKasasbeh, & Akroush, 2024).

Study Problem

By conducting field visits to special education centers in Jordan and closely observing the sexual behaviors of adolescents with intellectual disabilities and autism spectrum disorder, as well as their modes of sexual expression within these centers, researchers would conceive the notion of formulating a sexual health strategy. This strategy aims to educate and promote appropriate and socially acceptable sexual behaviors among a specific group of adolescents with intellectual disabilities and autism spectrum disorder aged 11–18, while also enhancing their sexual awareness within their peer group. By conducting a comprehensive analysis of numerous prior studies pertaining to the sexual behavior exhibited by adolescents with intellectual disabilities and autism spectrum disorder, it has been ascertained that there exists a wide range of sexual difficulties that differ in terms of intensity and occurrence. These difficulties significantly influence their social interactions, educational performance, and overall development across various domains. Consequently, it is imperative to provide these individuals with appropriate guidance and support tailored to address their specific sexual challenges. The approach encompasses the provision of essential information and assistance, addressing these challenges, and enhancing their sexual well-being. Several studies have been conducted on this topic (e.g., Brown and L'Engle, 2009; Houck et al., 2016; Kann et al., 2018; Lefkowitz et al., 2013; and Peter & Valkenburg, 2016).

The insufficient attention given to sexual health among adolescents who have intellectual disabilities and autism spectrum disorder has necessitated the development of strategies that aim to enhance their sexual awareness and foster the acquisition of appropriate skills. These strategies should encompass a range of educational methods that cater to their diverse needs, provide clear instructions, and deliver content that is suitable for their level of comprehension and specific requirements. Individuals face numerous obstacles when it comes to effectively discussing and addressing matters pertaining to sexuality, as well as expressing sexual activity. These issues are influenced by the prevailing social and cultural milieu, further compounded by difficulties in communication that hinder the attainment of holistic sexual well-being. Consequently, the present investigation endeavored to address the subsequent two inquiries:

1. Are there statistically significant differences between the pre- and post-measurements of the experimental sample after applying the strategy to improve sexual health to a sample of adolescents with intellectual disabilities at the significance level ($\grave{\alpha} \leq 0.05$)?

Are there statistically significant differences between the pre- and post-measurements of the experimental sample after applying the strategy to improve sexual health to a sample of adolescents with autism spectrum disorder at the significance level ($\grave{\alpha} \leq 0.01$)?

Study Objectives

The objective of the study is to assess the efficacy of a technique designed to enhance the sexual behavior of teenagers diagnosed with intellectual disabilities and autism spectrum disorders. The method

effectively disseminates information and promotes education on sexual health, while also offering appropriate and secure assistance. The objective of the study is also to boost social ties among adolescents, bolster self-confidence and social engagement, and elevate overall quality of life (Ayasrah et al., 2023). It also aims to mitigate instances of sexual assault and sexual harassment among adolescents. This is particularly crucial due to the inadequate understanding of sexual health and the absence of appropriate guidance to address these matters in a responsible and secure manner. The study tries to identify the obstacles that may impede the implementation of the strategy centered on sexual health, as well as establish the necessary protocols and suggestions to be adopted. In order to optimize outcomes for adolescents diagnosed with intellectual disability and autism spectrum disorder, it is imperative to implement strategies that yield the most advantages.

Significance of the Study

The significance of this study rests in its potential to enhance educational and health programs for teenagers with intellectual disabilities and autism spectrum disorders. By utilizing the findings, complete support can be provided to address the various sexual issues they encounter. This study is regarded as a significant scholarly contribution to the field of scientific research pertaining to the sexual well-being of teenagers diagnosed with intellectual disabilities and autism spectrum disorder within the age range of 11 to 18. Moreover, it serves to enhance their understanding and awareness of sexual matters. The primary significance lies in offering efficacious methodologies and approaches to bolster sexual well-being and promote sexual consciousness among students with intellectual disabilities, specifically those diagnosed with autism spectrum disorder, who encounter challenges in comprehending and implementing sexual notions. Hence, the present study has the potential to enhance the overall sexual and health well-being of individuals in this particular age cohort (Ayasrah et al., 2022). Moreover, it may contribute to heightened levels of sexual and health contentment, as well as foster improved social engagement and integration within the broader societal context.

Definition of Terms

*Strategic:*This refers to the precise and methodical approaches employed to attain a particular objective within a designated domain (Martin et al., 2020). This study focuses on the concept of "strategy," which pertains to the all-encompassing approach designed to improve sexual knowledge and sexual health among students with intellectual disabilities and autism spectrum disorder. The strategy encompasses multiple components, including educational initiatives, awareness-raising campaigns, and cultural programs, as well as practical implementation plans and ongoing evaluation of their efficacy.

Sexual health is defined as a comprehensive state of well-being encompassing physical, intellectual, social, and emotional aspects of sexuality. It encompasses various dimensions such as sexual and reproductive function, sexual expression, sexual recovery, and sexual relationships. The ultimate goal of sexual health is to promote overall health, well-being, and the enjoyment of life (World Health Organization, 2010).

Intellectual and developmental disabilities: This term refers to challenges in cognitive, social, and motor functioning. This encompasses challenges pertaining to learning, language acquisition, memory retention, attention span, and organizational skills, and is diagnosed within the framework of a child's typical developmental trajectory. Intellectual impairment pertains to a reduction in cognitive and intellectual capacities, which can be assessed and diagnosed according to specific criteria, including intelligence quotient, overall cognitive functioning, and everyday adaptive skills (American Academy of Pediatrics, 2020; American Association on Intellectual and Developmental Disabilities, 2020).

Caregivers: They are a varied set of specialists with a wealth of knowledge in the fields of rehabilitation, special education, and special education. They determine the students' unique educational and developmental needs and create specialized curricula to suit them. (Feungchan, 2023)

Limitations of the Study

- Limits in terms of time and space: the study was carried out between November 13, 2022, and May 5, 2023.
- Participants: It is exemplified by the methodology employed in selecting its members as well as the planned study sample of students with intellectual illnesses and autism spectrum disorders.

- Variables: data on demographics, sexual awareness, obstacles related to sexuality, and other factors used in this study.
- The study's instruments, their variables, and the degree to which the plan is being applied to the chosen subset of individuals with sexual issues as measured by the sexual behavior scale during the application process.
- Ethical procedures include obtaining prior consent from parents to maintain the confidentiality of information.
- The statistical analysis produced the study's findings.
- The field environment, which was at the heart of Jordan's firm actions, was specifically chosen to have the resources—both human and material—necessary to carry out the study successfully.

Theoretical Framework

Sexual challenges commonly experienced by adolescents within the age range of 11 to 18 are generally acknowledged, and it is important to emphasize that caregivers should exercise prudence when addressing the unique needs of each student, taking into account their developmental needs, environmental influences, socialization patterns, and health considerations (Casares et al., 2010). Upon conducting an extensive examination of the educational literature pertaining to the matter of sexual health among adolescents afflicted with intellectual disabilities and autism spectrum disorder, it becomes evident that distinct disparities arise in comprehending social norms and engaging in interpersonal interactions. Consequently, these disparities give rise to inappropriate social conduct, subsequently impeding effective communication. As a result, affected individuals tend to display repetitive behaviors and become ensnared in unfavorable behavioral patterns, such as publicly touching sensitive body parts and struggling to regulate their emotions. This, in turn, induces feelings of anxiety and fear within them (Beery & Zucker, 2011).

Consequently, this particular cohort necessitates specialized training and distinct approaches to addressing these sexual activities. These approaches mostly involve, firstly, addressing their low comprehension of sexual concepts, which entails extensive efforts to elucidate fundamental notions and enhance their understanding through appropriate means. Secondly, individuals may encounter challenges when it comes to effectively discussing and articulating their sexual wants and desires. According to Purvis and Sturrock (2019), enhancing therapists' communication abilities necessitates their proficiency in employing alternate communication approaches. Thirdly, it is imperative to prioritize individualized care by promoting regular medical check-ups to monitor and maintain their overall well-being, administering appropriate treatment when necessary, and creating a secure and comfortable setting (Schoen et al., 2004). Fourthly, sexual education encompasses educational initiatives that incorporate a comprehensive understanding of the physiological transformations that transpire during adolescence as well as the elucidation of fundamental principles pertaining to sound and wholesome sexual relationships (Santelli et al., 2006). Fifthly, psychological and social help is offered in the form of awareness-raising and psychological sessions. These sessions aim to provide teenagers who are experiencing sexual or other psychological difficulties with the necessary support and assistance (Pakpour et al., 2016). Sixthly, foster open communication between parents, educational counselors, and students to facilitate the exchange of experiences, emotions, and queries. This proactive approach serves to prevent various sexual issues that may arise due to lack of knowledge or reticence (Al Shehri, 2016). Seventhly, the implementation of recreational activities can serve as a means to mitigate instances of exploitation, sexual abuse, and diverse sexual behaviors. These behaviors encompass a range of types, frequencies, intensities, and underlying causes, including but not limited to sexual harassment, sexual indulgence, public nudity, sexual assault, and social isolation (Gupta, 2019).

Regarding the origins of sexual difficulties within this particular age cohort, there exists a conspicuous behavioral manifestation of the onset of puberty and the subsequent transition into the pivotal phase spanning from late childhood to adolescence. This transitional period serves as the primary catalyst for the emergence of sexual challenges among individuals within this age group (Kotchick et al., 2015). Furthermore, numerous environmental factors also play a contributory role in augmenting these sexual challenges. This includes the consumption of pornographic content through visual communication

channels, particularly the Internet, which has the potential to influence and alter individuals' sexual behavior; the incapacity to engage in discussions surrounding sexuality, particularly among adolescents who experience feelings of shame and fear; individuals being subjected to various forms of pressure and non-consensual sexual activities, including instances of sexual harassment or sexual assault; a multitude of sexual disorders, including but not limited to erectile dysfunction, excruciating erections, delayed ejaculation, and rapid erections; concerns pertaining to sexual orientation, gender identity, and transgenderism); and unhealthy sexual relationships and challenges in emotional and social connections (Ali et al., 2019).

Previous Studies

Lunsky et al. (2022) found many methods and resources that effectively facilitate sexual health promotion and prevention of sexual abuse, specifically tailored for teenagers diagnosed with intellectual disabilities and autism spectrum disorder. The present study undertook a comprehensive literature evaluation pertaining to sexual difficulties. The research findings indicate that the implementation of targeted and structured training programs for both teenagers and educators, alongside ongoing community outreach initiatives, can serve as efficacious strategies in the prevention of sexual abuse among adolescents. The study additionally determined that the prevention of sexual abuse necessitates the creation of suitable educational initiatives and the formulation of assessment and surveillance mechanisms.

O'Conor et al.'s (2021) study highlighted the significance of employing diverse instructional approaches and strategies in the provision of sexual education to students with disabilities. They concluded that sex education programs tailored specifically for students with disabilities have the potential to effectively impact their sexual well-being and enhance their comprehension in this domain. Research indicated that the utilization of graphic teaching resources, along with the active involvement of students with disabilities' special education team members, instructors, and parents, contributes to the effective instruction of sexual health education.

The significance of delivering complete and suitable sexual education to children and adolescents with disabilities was examined by Nelson and Fogler (2020). The research examined various tactics and initiatives designed to enhance sexual health and awareness among individuals in this particular age cohort. These approaches encompassed the utilization of tailored educational resources, self-directed learning, and the provision of training for teachers and healthcare professionals. The findings of the study suggested that the implementation of sex education should be grounded in principles of rights, freedoms, and respect while also taking into consideration the specific needs and capacities of individuals engaged in sex education. The study proposed the imperative need to establish comprehensive and appropriate sexual education initiatives targeting children and adolescents, including those with disabilities. The objective is to improve their sexual well-being and reduce the prevalence of harassment and abuse.

Fontil , et al.'s (2019) study aimed to improve the sexual well-being of individuals with intellectual disorders. It has demonstrated positive outcomes in boosting awareness, knowledge, sexual skills, and correct behavior among people with intellectual disorders. It also highlighted the necessity of furnishing adolescents with comprehensive and unambiguous knowledge regarding sex and sexual health, as well as the importance of designing programs that are specifically customized to address their distinct requirements.

In a scholarly investigation conducted by Johnson et al. (2018), the focus was on the provision of sexual health education to individuals with intellectual disabilities, as well as the evaluation of their specific requirements in this domain. The research was undertaken on a cohort of 119 individuals diagnosed with intellectual disabilities, employing personal interviews and questionnaires as primary instruments for data collection. The research findings indicated that individuals with intellectual disabilities require age-appropriate and cognitively suitable sexual health education that is effective in addressing their unique needs. However, the present programs available are frequently inadequate for meeting these requirements. The study proposed the adoption of contemporary pedagogical approaches, such as video-based instruction and interactive engagement, as effective means to enhance the efficacy of sexual health education initiatives.

Based on prior research and relevant scholarly sources, empirical evidence suggests that educational strategies play a crucial role in enhancing sexual health outcomes among adolescents diagnosed with intellectual disabilities and autism spectrum disorder. The effectiveness of these strategies, however, is contingent upon the specific characteristics and developmental profiles of the adolescents in question. The existing literature has examined evidence suggesting that the implementation of educational initiatives can effectively improve the sexual health of teenagers and mitigate the risk of abuse. This outcome is contingent upon the implementation of comprehensive programs and the development of effective monitoring mechanisms.

There is evidence of the need to employ instructional graphics and for a multidisciplinary team to pay attention to sexual issues in their programs and support possibilities. This suggests that educational programs contribute to the development of comprehension and knowledge among teenagers, hence facilitating the enhancement of their healthcare competencies and the identification of their unique needs (Ayasrah et al., 2022).

Various studies have demonstrated the imperative nature of ongoing sexual health education across various age groups following the onset of puberty. These studies advocate for the implementation of contemporary approaches, such as the utilization of videos and direct education, specifically tailored for adolescents with intellectual disabilities and autism spectrum disorder. It is crucial to consider the unique developmental stages and cognitive abilities of these individuals when designing and delivering educational interventions.

Methods

The present study employed a quasi-experimental approach, which was deemed appropriate for the research objectives. The selection of the experimental sample was intentional and accessible, as previously stated. The identification of sexual problems among the participants was then conducted, followed by the implementation of a strategy aimed at addressing these issues. Subsequently, a post-measurement was carried out to assess the potential impact of the strategy, which is implemented on many samples, including those consisting of teenagers with intellectual problems or adolescents diagnosed with autism spectrum disorder. The experimental procedure for this study involves implementing a specific strategy with a sample of participants. Two measurements, namely the pre-test and the post-test, were conducted to assess the impact of the strategy on the observed differences between the two measurements.

The Sample of the Study

The sample was chosen from a group of adolescents diagnosed with autism spectrum disorder who were attending the Steady Steps Center in Jordan. These individuals were subsequently subjected to a sexual problem identification test, as described by Al-Maliki and Al-Zarai (2021). Indeed, a total of 36 adolescents were purposefully chosen from a larger pool of 72 individuals to participate in the administration of a measure designed to assess sexual difficulties among individuals with intellectual disorders. The study also included a sample of 44 adolescents diagnosed with autism spectrum disorder out of a total of 88 adolescents. The selection process for both groups followed a simple intentional sampling method, ensuring that participants met the criteria of continuity throughout the implementation of the sexual health strategy and demonstrated high performance to effectively achieve the intended goals of the strategy.

Study Tools

To achieve satisfactory results with statistical and scientific significance, two tools were used:

A Strategy Aimed at Enhancing Sexual Health

The strategy was formulated by conducting a comprehensive literature review on prevention and sexual education for adolescent children, drawing upon the principles underlying cognitive behavioral therapy aimed at enhancing the sexual well-being of adolescents and promoting their access to healthcare services during the period from November 13, 2022, to May 20, 2023. The validity of the strategy was confirmed through the researchers' experimental validity of some of its techniques. The strategy was presented to several arbitrators in the fields of psychological counseling and special education—up to a total of nine

arbitrators—to ascertain whether the strategy was appropriate for the objective it sought with regard to the age range covered by the study.

The strategy encompasses a series of techniques that were implemented in a rigorous manner over twelve sessions during the aforementioned time frame, pertaining to:

- Gaining comprehension of sexual concepts.
- Employing alternate modes of communication and actively enhancing communication proficiency. Administering medical evaluations and providing therapeutic interventions.
- Ensuring a secure and pleasant setting.
- Educating people about sexuality by outlining the physical changes that happen during puberty
- Explaining the fundamentals of safe and healthy sexual relationships.
- Providing teenagers with social and psychological support.
- Promoting conversation with parents in order to ask questions, share sentiments, and prevent sexual issues stemming from shyness or ignorance.
- Establishing and promoting athletic activities that mitigate the risk of sexual exploitation and abuse, sexual harassment, public nudity, sexual assault, and social isolation.

The center's hall was utilized to execute the strategy because it was a suitable and adequately equipped space. In order to accomplish this, a data display device was employed, supplemented with images and video snippets. The provision of support from caregivers present at the center facilitated the delivery of consultations and guidance to the teenagers subsequent to their training on themes pertaining to the strategy. The strategy encompassed several procedures that were derived from therapeutic approaches rooted in cognitive-behavioral theory, with particular emphasis on one technique deemed most significant. The most important of which

Modeling: Adolescents can learn more positive and sound skills by training instructional models that include numerous pictorial representations that consider the appropriate use of health care resources (Makransky & Petersen, 2021).

Skill analysis: This approach examines how teenagers acquire skills through a series of sequential phases that provide guidance on how to convey any sexual problems they may be experiencing (Morrison et al., 2019).

Positive reinforcement: Since this method helps to reinforce positive conduct, the plan includes words of encouragement, attention, and praise for teenagers in order to increase the likelihood of positive behavior (Brenner, 2022).

Relaxation exercises: Teenagers can benefit from learning how to breathe deeply, how to relax, and how to lessen their negative emotions. This will increase their motivation to handle problems calmly and without becoming furious (Zhang et al., 2021).

Imagination: To create a better, more rational stance and shed any illogical beliefs about engaging in sexual activity that is not appropriate for society and displaying degrees of social rejection, imagination plays a significant role by focusing on disproving many of the illogical beliefs about their sexual health. It also helps adolescents become more socially acceptable and aware of the times and locations where they can engage in sexual activity in a safer and more acceptable manner (Wilson & Conyers, 2020).

Psychodrama: A diagnostic and therapeutic approach, psychodrama is also known as psychological dramatic acting. With the use of this technique, it is possible to ascertain the severity of sexual difficulties that teenagers face and the best course of action for their age group (Muñoz-Bellerín & Guijarro, 2022).

Group education: This approach involves the assembly of adolescents exhibiting sexual behavioral issues, whereby they are provided with opportunities to engage in artistic, sports, movement, and guidance activities. This phenomenon has a discernible impact on adolescents. Rather than engaging in negative conduct, the individuals involved now exhibit good behaviors towards one another, fostering a sense of collaboration and competition during various activities (Loh & Ang, 2020).

Self-awareness: It refers to the capacity to discern one's emotions with precision and to choose the most suitable means of articulating them via alternative modes of communication. In this context, it fosters greater acceptance and empowers the student to address his sexual issues, acquire knowledge about them,

and collaborate with caregivers to identify the most suitable method of relief (Schunk & Zimmerman, 2023).

Problem-solving approach training: It teaches students how to solve problems, how to identify them, and how to give alternatives to make their sexual expression more suitable and respectful of themselves and their qualities (Pieiro et al., 2022).

A Measure of Puberty-Related Sexual Behavioral Difficulties

It was chosen because it possesses psychometric qualities that are relevant to the Jordanian context. The scale has a total of 23 items. Each item is evaluated from 1–3, with (3) indicating agreement to a high degree, (2) indicating agreement to a moderate degree, and (1) suggesting agreement to a low degree. It has promising validity indicators and was published in the Journal of Special Education and Rehabilitation (Al-Maliki & Al-Zarai, 2021).

Table 1. The internal consistency results: sexual and behavioral problems associated with puberty among adolescents with intellectual disabilities and autism spectrum disorders

No.	Statements	Pearson Correlation	P-value
1	Engaging in excessive physical displays of affection towards others	0.712	0.000*
2	Proclivity to employ signs and gestures that possess sexual overtones.	0.657	0.000*
3	Stimulating erogenous zones and other reproductive organs.	0.624	0.000*
4	Struggle to adjust to the physiological transformations associated with the onset of puberty.	0.711	0.000*
5	Engaging in covert acts of self-stimulation	0.698	0.000*
6	Difficulty in accurately discerning the distinctions between genders and their respective societal functions.	0.748	0.000*
7	The act of disrobing in the presence of others	0.666	0.000*
8	Engaging in self-stimulation of the sexual organs in the presence of others (autoeroticism).	0.681	0.000*
9	Experiencing challenges in attending to and maintaining the hygiene of his genitalia and other delicate regions of his physique.	0.674	0.000*
10	Inability to differentiate between their own physical attributes and those of others.	0.698	0.000*
11	Difficulty in safeguarding oneself against sexual assault and exploitation	0.663	0.000*
12	Difficulty in the comprehension and recognition of the potential risks associated with engaging in prohibited sexual relationships.	0.701	0.000*
13	Intentional engagement in sexual physical contact with other individuals.	0.744	0.000*
14	Sexual harassment with his colleagues that necessitates continuous surveillance.	0.735	0.000*
15	Engaging in sexual play with dolls and toys.	0.730	0.000*
16	Difficulty in discerning the anatomical structures and physiological roles of his reproductive organs.	0.632	0.000*
17	The inclination to gratify the sexual drive by means of tactile interactions and engaging in physical proximity with others.	0.667	0.000*
18	Persistent sexual activity without identifiable stimuli.	0.788	0.000*
19	The inclination to consume explicit adult content in the form of pornographic films.	0.700	0.000*
20	The utilization of online platforms for the consumption of explicit sexual content.	0.741	0.000*
21	The replication of sexual practices learned from sources external to the educational institution.	0.758	0.000*
22	The acquisition of sexual conduct occurs through the observation of sexual activity within one's household.	0.773	0.000*
23	The act of engaging in sexual conduct as a means of evading classroom activities through the harassment of others.	0.724	0.000*

Table 1 shows the correlation coefficient between each item of the scale and the total score of the scale, which shows that the correlation coefficients shown are significant at the significance level (ὰ≤0.05), and thus the items of the scale are considered valid. The reliability of the scale was as shown in Table 2.

Table 2. Cronbach's alpha coefficient used to measure the reliability of the scale

Scale	No. of statements	Cronbach alpha
The sexual behavioral challenges that arise during puberty among teenagers diagnosed with intellectual disabilities and autism spectrum disorder.	23	0.92

Table 2 presents the results indicating a high value of Crombach's alpha coefficient, specifically reaching 0.912 for all items included in the scale. This indicates that the level of reliability is substantial and possesses statistical significance.

Statistical Analysis

In order to accomplish the goals of the research and validate the two research inquiries, descriptive analysis was employed to extract arithmetic means and standard deviations. In order to assess the statistical significance of the disparities between the means of the participants in the experimental groups during the initial and subsequent measurements, the "t" test was employed. Additionally, one of the established effect size measures, namely eta square, was utilized to evaluate the efficacy of the strategy aimed at enhancing sexual health within the experimental sample.

Ethics

The researchers took measures to uphold the confidentiality of the data obtained from the sample of teenagers diagnosed with intellectual disability and autism spectrum disorder. They exercised caution in limiting access to the data, ensuring that only individuals with a direct connection, such as parents and caregivers at the center, were granted permission to view it. The parents and the center were also apprised of the adolescents' entitlement to voluntarily discontinue their participation in the study at any time and to abstain from receiving instructional sessions on the employed strategy's procedures. Individuals own the prerogative to conceal their identities within the amassed data. Furthermore, the study instruments employed in this research did not necessitate the divulgence of any personal data from the individuals comprising the sample. The study placed a strong emphasis on scientific integrity when transferring and documenting data in order to obtain accurate results regarding the efficacy of the strategy designed to enhance sexual behaviors that were observed within the population under investigation.

Results

To answer the first question, which states, "Are there statistically significant differences between the pre- and post-measurements of the experimental sample after applying the strategy to improve sexual health to a sample of adolescents with intellectual disabilities at the significance level (ὰ≤0.05)?" The means and standard deviation were calculated as illustrated in Table 3.

Table 3. The experimental sample after applying the strategy to improve sexual health on a sample of adolescents with intellectual disabilities.

Participants with intellectual disabilities	Arithmetic mean	Standard deviation	No. of individuals in the sample	t-stat	Degree of freedom	Effect size "eta square"	Significance level
Pre	67.72	7.36	36	3.44	35	0.41	0.05
Post	73.52	6.30					

It can be noticed that the difference between the pre- and post-measurements among participants with intellectual disabilities is estimated at (3.44), and this difference is statistically significant at the significance level (ὰ≤0.05).

To answer the second question which states, "Are there statistically significant differences between the pre- and post-measurements of the experimental sample after applying the strategy to improve sexual health on a sample of adolescents with autism spectrum disorder at the significance level (ὰ≤0.01)?" the means and standard deviation were calculated as illustrated it Table 4.

Table 4. The experimental sample after applying the strategy to improve sexual health on a sample of adolescents with autism spectrum disorder

Participants with autism spectrum disorder	Arithmetic mean	Standard deviation	No. of individuals in the sample	t- stat	Degree of freedom	Effect size "eta square"	Significance level
Pre	65.2273	6.79899	44	4.962	43	0.62	0.01
Post	71.4545	4.34797					

The value of the difference was estimated at 4.962, and this difference is statistically significant at the significance level (ὰ≤0.01).

Discussion

With respect to the outcomes of the first question, the findings indicate a statistically significant difference ($p \leq 0.05$) in the pre- and post-measurements of adolescents with intellectual disabilities, specifically in relation to the improvement of sexual health. The estimated difference was 3.44, favoring the strategy employed to enhance sexual health. This difference is further elaborated upon in the subsequent analysis. The researchers ascribed this outcome to the effectiveness of the techniques employed in this approach and its compatibility with the specific traits of adolescents with intellectual disabilities and autism spectrum disorder. Furthermore, the effectiveness of the sessions with the adolescents was facilitated by ample interaction. The researchers additionally ascribe this outcome to the influence of the participation center, which encompasses the administrative personnel and caretakers, and their commitment to effectively instructing teenagers on appropriate sexual activities. Furthermore, the approach employed for selecting the sample of high-performing adolescents yielded favorable outcomes in terms of their receptiveness towards the implemented strategy. This is because the approach facilitated effective communication, interaction, and active participation among the adolescents during the training sessions. Consequently, this enhanced their compatibility and willingness to accept the strategies, as opposed to the sexual difficulties that previously hindered their acceptance by others and limited their social interactions. The success of this technique and its shown usefulness serves as a motivating factor for adolescents, facilitating their academic integration within integration classes they may be enrolled in.

This finding aligns with the assertions made by Sun et al., (2018) which emphasized the significance of sexual health education in safeguarding young individuals against vulnerabilities that may arise during this developmental period. Their research findings indicated that enhancements in the sexual health knowledge among the participants resulted in increased self-efficacy, positive behavioral modifications, and a heightened degree of engagement. It also demonstrated that interventions targeting individuals have a notable effect on enhancing their knowledge and modifying their behavior in situations that cause embarrassment.

This finding contrasts with the conclusions drawn in the study conducted by Leung et al. (2019), which focused on the program of action of the international conference on population and development. The latter study highlighted the responsibilities of governments in delivering sexual education to young individuals as a means to promote adolescent health. It revealed that the initiatives implemented in various countries and their practices related to sexual education are ineffective on a global scale.

Regarding the response to the second question, the estimated difference between pre- and post-measurements for adolescents diagnosed with autism spectrum disorder was 4.962. This difference is statistically significant at the 0.01% level, supporting the approach intended to enhance sexual health. The researchers explicate this result by utilizing techniques that take into account adolescents who have been diagnosed with autism spectrum disorder. These techniques encompass alternative modes of communication, visual aids, expressive movements, interactive exercises, role models, and self-care guidelines, all of which contributed to their further improvement. It can be noted here that the difficulty of dealing with adolescents with autism spectrum disorder made implementing the strategy a challenge that researchers and caregivers at the center face in order to achieve better results with this group. The involvement of parents in the participation process is crucial and essential, as it entails regular and intensive communication to ensure the consistent implementation of instructions and approaches for adolescents, thereby preventing any potential lapses or stagnation in the application procedures. The aforementioned outcome aligns with the conclusions drawn in Davies et al.'s (2022) study, which posited the necessity of developing educational initiatives and curricula aimed at instructing children and adolescents with autism spectrum disorder (ASD) about sexuality within the Canadian school system. The study emphasized the significance of addressing three key areas, namely puberty, relationships, and gender and sexual diversity, while acknowledging that a singular curriculum is insufficient for individuals with ASD. This underscores the importance of implementing diverse programs and providing comprehensive training, as they have a notable impact on adolescents with ASD.

This finding contradicted the conclusions drawn in the research conducted by Houtrow et al. (2021), which emphasized the significance of caregivers in imparting sexual knowledge rather than strategies and in instructing adolescents directly on how to manage emotions, desires, relationships, and social pressures, particularly given the limited education and guidance available to them regarding their development.

Conclusions

The study indicates that the developed sexual health strategy had a positive impact on addressing sexual health challenges among adolescents with common intellectual and developmental disorders (IDD), particularly intellectual disabilities (ID) and autism spectrum disorder (ASD). Statistically significant improvements were observed across all experimental samples, including adolescents with intellectual disabilities and those diagnosed with autism spectrum disorder, during the post-assessment phase.The study focused on a sample of high-functioning individuals with intellectual disabilities and autism spectrum disorder targeted in Jordan. These individuals exhibited sexual challenges, as identified through the results of the sexual health problem identification scale used in this research. The study also highlighted the need for the reimplementation of the strategy, especially for individuals with intellectual and developmental disabilities who showed lower performance. This underscores the importance of specifically designed and ongoing interventions to meet the needs of this population.Additionally, the study suggests conducting an investigation to explore the impact of gender and age on the effectiveness of the strategy in promoting sexual health among adolescents with intellectual disabilities and autism spectrum disorder. This points to recognizing the diverse factors influencing sexual health outcomes among adolescents. Finally, this study holds significant importance for field studies in special education institutions.

Recommendations

The study recommends re-implementing the method in the categories of intellectual and developmental disorders with the lowest performance level in light of these findings. Further research based on this study's findings will clarify any disparities that might arise due to gender variation and determine if men or women are more successful in utilizing this method to enhance sexual health. Imparting knowledge of the effects of this strategy on males and females, as well as adolescents with intellectual disabilities and autism spectrum disorder, at other age levels, while understanding its effects on both genders.

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