

Review

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Review

Sexuality, Gender Identity, Romantic Relations and Intimacy Among Young Adults and Adolescents with Autism Spectrum Disorder: A Narrative Review of the Literature

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Abstract: Sexual health is a vital aspect of overall well-being, yet individuals with autism spectrum disorder (ASD) face significant stigma and discrimination, affecting self-esteem, relationships, and sexual expression. This review examined recent literature (2020–January 2024) on intimacy and sexuality among adolescents and young adults with ASD, incorporating 32 studies. Findings highlight poorer sexual health among autistic individuals compared to the general population, with difficulties in forming romantic relationships and navigating sexual interactions due to hypersensitivity. Autism is also linked to non-conforming gender identities and asexuality, exposing individuals to dual stigma within the LGBTQ+ community. Autism-related traits hinder sexual health knowledge, increasing risks of victimization, abuse, and sexually transmitted infections. Comprehensive sexual education and inclusive support are crucial to address these challenges and promote sexual well-being for autistic individuals.

Keywords: autism spectrum disorder; autism; sexuality; intimacy; romantic relations; young adults; adolescents

1. Introduction

Sexuality encompasses a broad spectrum of human experiences, including aspects such as sexual orientation, gender identities, and eroticism, as well as reproduction, as outlined by the World Health Organization (WHO) in 2006 [1]. Gender, on the other hand, encompasses a variety of identities, expressions, and societal roles. The WHO emphasises the importance of sexual health, noting its close connection to overall well-being and its significance for individuals, families, and communities in terms of social and economic development.

Recognizing the importance of accurate information and supportive healthcare environments, people must have access to resources concerning gender and sexuality. These rights, including freedom of expression, equality, and privacy, are integral to ensuring the well-being of individuals across diverse sexual and gender identities [1].

Attitudes toward autism, sexuality, and gender have undergone a transformative process over time, evolving from a disregard for the sexual experiences of autistic individuals to a recognition of the diverse spectrum of sexual and gender identities. Despite progress, many rights pertaining to sexual and gender diversity remain unfulfilled for autistic individuals [2–4].

Autism is characterised by challenges in social communication and repetitive behaviours [5]. Language preferences within the autistic community vary, with a preference for the term “autistic” commonly observed [6,7]. Research on sexuality and gender in autistic individuals has expanded significantly over the past decades, emphasising the importance of supporting healthy sexual development [8].

Romantic relationships play a vital role in providing social support and resources, which are linked to better mental and physical health outcomes [9–11]. Despite having similar levels of interest, autistic individuals are less likely to engage in romantic relationships [12–15]. Research indicates higher levels of non-heterosexual attraction among autistic individuals and their vulnerability to sexual coercion [8,16]. Moreover, there is greater in gender identity within the autistic population, with a suggested link between autism and gender dysphoria [17,18]. Sex differences have also been observed, with higher rates of gender variance reported in individuals assigned female at birth [18–20]. However, studies examining children with gender dysphoria have shown comparable levels of autism symptoms between genders [21].

A frequent finding in studies of sexuality indicates a greater incidence of non-heterosexual orientations among individuals on the autism spectrum. Sexual orientation encompasses a multifaceted construct, primarily involving sexual identity, sexual attraction, and sexual behaviour [16]. These aspects span a spectrum and signify a person's inherent sexual preferences [22]. Commonly, sexual orientation is categorised under labels such as ‘heterosexual’ and ‘homosexual’ [23,24], but individuals may also adopt other identifiers such as ‘lesbian’, ‘gay’, and ‘bisexual’ [24]. Research comparing autistic individuals to their non-autistic peers has shown a greater alignment with non-heterosexual orientations [16,25] and increased non-heterosexual interests in autistic individuals [13]. Another critical aspect influencing autistic individuals' sexuality includes their sexual experiences, particularly the heightened sexual risks and vulnerabilities noted among autistic females. These risks are often compounded by inadequate sexual knowledge [27] and challenges in social interactions [28], leading to a spectrum of negative sexual experiences, including victimisation and abuse [27,28]. Despite these unique challenges, autistic individuals frequently receive less comprehensive sex education than their neurotypical counterparts. According to the UN Convention on the Rights of Persons with Disabilities (2006) [29], everyone, including those with disabilities, deserves the opportunity to explore and express their sexuality to lead a fulfilling life. The convention and subsequent literature emphasise the importance of providing individuals with disabilities access to accurate sexual information [30]. Adequate sex education can enhance the quality of life for people with disabilities and reduce their risk of negative sexual experiences, such as exploitation and abuse [31,32]. For autistic students, a sex education program covering appropriate sexual behaviour and socialisation is beneficial, as these students often struggle with sexual behaviour, knowledge, and self-esteem and recognize the nuances of privacy, personal boundaries, and safety [33]. The absence of proper sex education and knowledge can also heighten the risk of sexually transmitted infections (STIs), which remain a significant public health concern due to their potential for long-term physical health issues. However, some studies have suggested a lower risk of STIs among autistic people, intellectual disabilities, and other developmental disorders [34].

Our study aims to provide a comprehensive review of the latest research, from 2020 to 2024, on sexuality and affectivity in autistic individuals. In this direction, we chose to focus on the post-COVID period specifically to investigate whether the pandemic has affected the psychosexual well-being of individuals with autism spectrum disorder (ASD). The range of studies from 2020 to 2024 allows us to capture research conducted during and after the COVID-19 pandemic, which may have introduced new dynamics in the lives of autistic individuals, particularly in their intimacy and sexuality. Given the unique challenges posed by the pandemic, such as increased isolation and changes in social

interactions, we believed it essential to explore whether these disruptions have had a lasting impact. While our review does not directly compare pre- and post-COVID data, we aimed to reflect on how the post-pandemic context might have influenced the sexual health and relationships of autistic individuals.

In particular, this review focuses on the specific challenges faced by autistic individuals in developing and maintaining romantic relationships, as well as in experiencing intimacy and sexuality. Identifying the elements that both aid and hinder successful romantic and sexually fulfilling relationships for autistic individuals is crucial. Investigating these challenges is essential for devising specific psychosocial interventions to improve the well-being and social integration of this group. Recognizing the significance of sexuality and romantic relationships as essential components of human existence emphasises the need to approach these issues with compassion, knowledge, and inclusiveness.

2. Materials and Methods

2.1. Study Selection and Exclusion Criteria

We excluded case studies, books, letters, opinion papers, commentaries, and articles with no focus on the target perspective, as well as articles about medical or juridical issues where the psychological impact is only marginal. Additionally, we excluded studies that were not published in English or that did not focus on young adults or adolescents with autism spectrum disorder (ASD). The reference sections of the included articles were reviewed for additional relevant publications that may have been missed. The selection process involved MB, CE, EDA, VG and DV who independently screened the titles and abstracts of the identified studies. In cases of disagreement, an ALA author was consulted to resolve any discrepancies. All authors then reached a consensus on the inclusion of the final studies by discussing the relevance and quality of each article. This collaborative process ensured consistency in the selection criteria and helped minimise bias in study selection.

2.2. Search Strategy and Databases Used

This review included literature on intimacy and sexuality among young adults or adolescents with autism spectrum disorder, focusing on the perspective of the young people themselves. We chose only articles published in English between 2020 and January 2024 to capture the most current information, a time range that allowed us to have an overview of studies conducted during the COVID-19 and post-COVID era, with the aim of reflecting on whether or not the COVID-19 pandemic may have influenced the psycho-sexual well-being of this segment of the population in some way. This specific time frame was selected to account for the potential disruptions caused by the pandemic on the social and sexual experiences of autistic individuals. The limitations in available data from the pre-pandemic period and the varying methodologies across studies conducted before 2020 made a direct comparison with the pre-COVID era challenging. Our aim was to focus on the more immediate and ongoing effects of the pandemic, acknowledging the need for future research to explore longitudinal comparisons. However, a few studies from 2019 were included after reviewing records' abstracts, given their particular relevance to the review's aims and contributions to the understanding of our topic of interest.

This review follows a narrative methodological framework, which allows for the synthesis of diverse studies exploring various aspects of sexuality, intimacy, and romantic relationships in autistic individuals. The narrative approach was chosen to provide a comprehensive overview of the existing literature, drawing connections across studies that utilise different methodologies and research designs.

The electronic databases used were Web of Science and Scopus. Searches were performed using the Boolean operators AND/OR with the following search string on titles, abstracts and keywords: (autism OR asd OR "Autism Spectrum disorder" OR neurodiverse) AND (adolescence OR "young adult" OR "teenager") AND (sexuality OR intimacy OR love OR romance OR romantic).

We selected Web of Science and Scopus for their comprehensive coverage of multidisciplinary studies, including psychology, social sciences, and health sciences, which were key areas for our review. These databases provided access to a wide range of peer-reviewed articles relevant to the intersection of autism, sexuality, and intimacy. PubMed and EBSCO were excluded as they primarily focus on medical and clinical studies, which do not fully capture the psychosocial and behavioural dimensions of our topic. Given the focus of our review on the psychosocial aspects of sexual health and relationships in autistic individuals, Web of Science and Scopus offered the most relevant and diverse literature. After an initial search of each database, a total of 92 potential records were identified and exported to Zotero, and 16 sources were eliminated as duplicates. The titles and abstracts of the remaining 76 articles were screened. The search results are presented in a flow chart (see Figure 1).

2.3. Relevance Assessment, Qualitative Analysis, and Review Type

The relevance of the studies was determined by their examination of intimacy, sexuality, and romantic relationships among autistic individuals. Priority was given to research that provided an in-depth exploration of these themes, particularly from the perspectives of adolescents and young adults with autism. A qualitative analysis was conducted to synthesise the key themes and insights across the selected studies, offering a nuanced understanding of the challenges faced by autistic individuals in the realms of sexuality and relationships. This qualitative approach was essential for identifying patterns and differences among the studies, enabling a comprehensive narrative synthesis. This review employs a narrative methodological framework, which facilitates the integration of diverse studies investigating various dimensions of sexuality, intimacy, and romantic relationships in autistic individuals. It synthesises and interprets findings from a wide range of qualitative and quantitative research without adhering to a systematic methodology. No formal protocol was registered for this review, as the narrative approach did not necessitate compliance with a predefined protocol, allowing for a more exploratory examination of the literature.

Moreover, to provide a comprehensive synthesis of the findings, a summary table (Table 2) was incorporated at the conclusion of the Results section. This table systematically presents essential details from the included studies, such as authorship, publication year, participant demographics, methodologies, and key outcomes. The inclusion of this table aims to facilitate cross-study comparisons and underscore significant patterns and divergences within the literature. This structured overview supports the thematic analysis and deepens the contextual understanding of the review's findings.

2.4. Synthesis Process and Themes

The synthesis of the selected studies followed a thematic analysis approach. Key findings from each study were extracted, and common themes were identified through repeated readings. This process enabled the organisation of results into core themes that underscore the unique challenges faced by autistic individuals in their intimate and romantic relationships. The qualitative approach provided a comprehensive narrative synthesis, drawing patterns from the diverse methodologies employed across the studies. The main themes identified include: (1) intimacy, sexuality and relationships among autistic people, (2) gender identity and sexual orientation, and (3) challenges. Table 1 shows the themes and sub-themes identified at the end of the process.

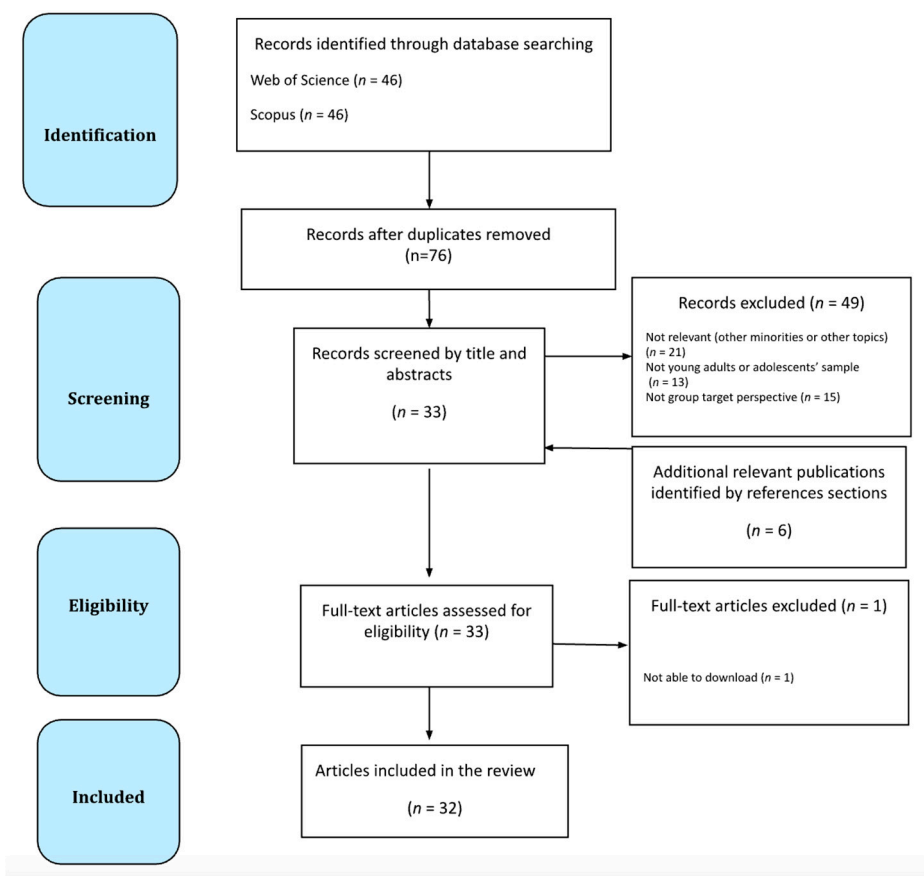


Figure 1. Flowchart of the search results.

Table 1. Themes and sub-themes for thematic analysis.

Themes	Sub-themes
Intimacy, sexuality and relationships among autistic people.	1.1. Experiences of intimacy: similarities and differences between autistic and non-autistic participants.
	1.2. Sensory processing and sexuality
	1.3. Insights from long-term relationships involving autistic individuals.
Gender identity and sexual orientation.	2.1. Gender identity
	2.2. Sexual orientation
	2.3. Asexuality.
Challenges	3.1. Hypothetical explanations.
	3.2. Heightened risk and harsh realities: addressing sexual abuse and victimization in autistic individuals.
	3.3. Rethinking sexual health risks in the autistic population.
	3.4. Sexual health and autism: navigating challenges and promoting inclusive education and support.
	3.5. Barriers to effective sex education.
	3.6. Facilitators for improved sex education.
	3.7. Innovative strategies for sexual education and relationship skills in autistic individuals.

3. Results

From the analysis of the results of the selected studies, several themes and sub-themes emerged, which will be explored in more detail in the following paragraphs.

In reviewing the results, we intermittently used the term “ASD” (Autism Spectrum Disorder). This choice has been made in reference to individuals formally diagnosed under DSM-5 criteria; however, we recognize that autism is not a disorder but rather a form of neurodiversity. As a form of neurodiversity, autism highlights the inherent diversity in human cognition, social interaction, and sensory processing and emphasises that autistic experiences are variations within the spectrum of human neurology rather than pathological deviation.

3.1. Intimacy, Sexuality and Relationships Among Autistic People

3.1.1. Experiences of Intimacy: Similarities and Differences Between Autistic and Non-Autistic Participants.

Many autistic adults have fewer friendships and fewer romantic relationships than their neurotypical counterparts [35]. Although autistic people have difficulties with social-emotional reciprocity, most still desire intimate romantic relationships. Sala, Hooley and Stokes [36] found that both autistic and non-autistic participants were interested in romantic relationships, with most having prior relationship experience or expressing interest in future relationships. Research on the general population has shown that adolescent social competence is positively linked with various adult outcomes, including job status, relationships, and mental health. These associations appear to be similar for autistic young adults. A study conducted by Clarke and Lord [35] revealed that the likelihood of ever having been in a romantic relationship was only predicted by nonverbal IQ at the age of 9, highlighting the influence of cognitive abilities on social and romantic involvement for autistic individuals.

Dewinter et al. [37] indicated that the timing of puberty generally does not differ between autistic and non-autistic adolescents. Many autistic adolescents show an interest in sexuality and relationships, engaging in both solo and partnered sexual activities around the same age as their non-autistic counterparts. However, a notable proportion of autistic individuals, particularly males, tend to initiate partnered sexual activities later than their non-autistic peers. Autistic individuals with no partnered sexual experiences have reported higher levels of sexual anxiety, along with a diminished interest in sexuality and sexual desire [37].

Other differences between autistic individuals and neurotypical individuals are related to sexual cognitions and, although sexual cognitions are an important aspect of sexual well-being for all individuals, little is known about the sexual cognitions of autistic individuals [38]. Therefore, García-Barba and colleagues [38] conducted a study to examine the range, content, and frequency of positive and negative sexual thoughts among autistic individuals. The results showed that both autistic men and women have a wide variety of both positive and negative sexual cognitions, though these are less varied compared to those of neurotypical individuals. Possible reasons for this reduced diversity and frequency include lower sexual desire, sensory issues making sexual activity uncomfortable, and a preference for familiar routines which may limit the exploration of new experiences. Autistic individuals might also find it challenging to imagine themselves in unfamiliar scenarios, and breaking from routine can cause anxiety, further reducing the motivation to seek new sexual experiences and fantasies. Common positive sexual cognitions among autistic individuals included intimacy and specific sexual activities, such as having intercourse with a loved partner or kissing passionately, which show their sexual interest and desire. In contrast, the least frequent positive sexual cognitions reported by participants, such as harming a partner or becoming aroused by watching someone urinate, align with earlier studies on neurotypical individuals and typically signify a breach of social norms. Rarely reported were paraphilic interests, challenging the stereotype that many autistic people have such interests [38]. Moreover, Sala et al. [36] noted that they shared similar understandings of intimacy, such as sharing and mutual respect, but there were differences in how they approached and maintained intimacy. Non-autistic participants emphasised attachment, mental health, and identity in their relationship functioning. Autistic individuals faced specific difficulties with communication and courting behaviour, which could be reinforced by stereotypes

and concerns from parents and caregivers. Limited exposure to diverse relationships and sexualities may contribute to uncertainties about romance and relationship structures among autistic individuals [36]. Despite communication difficulties, autistic individuals made adaptations to navigate relationship challenges, such as clear communication and self-understanding, while non-autistic participants relied more on implicit understanding and familiarity. Enabling intimacy for both groups included communication, sharing and similarity, respect and safety for oneself and others, and working on the relationship. Barriers for both groups included intra- and interpersonal conflicts; autistic people specifically highlighted uncertainty about relationships and communication. As also confirmed in a study by Dewinter et al. [37], autistic adults reported valuing aspects of intimate relationships similar to those of their non-autistic peers, such as the importance of communication and a dedication to working on the relationship. This indicates that, despite potential challenges, autistic individuals hold similar ideals and values regarding intimate partnerships. Moreover, findings suggest that autistic and non-autistic people have similar notions of intimacy but have different challenges in experiencing it [39].

3.1.2. Sensory Processing and Sexuality

People on the autism spectrum often perceive sensory inputs differently, which can significantly influence their sexual and relational engagements [40]. These autistic sensory features can include heightened sensitivities and a proclivity for seeking intense sensations. Gray and colleagues [40] conducted an analysis grounded in Dunn's model of sensory processing, which categorises sensory experiences based on low or high neurological thresholds. This model suggests that individuals with low thresholds are more sensitive to sensory inputs, while those with high thresholds may seek more intense sensory experiences. Participants reported that their sensory sensitivities could lead to feelings of confusion, distress, or frustration during sexual encounters, often resulting in the avoidance of sexual activities. For instance, the typical sights, sounds, smells, and textures associated with dating and sexual activities could be overwhelming for individuals with heightened sensory sensitivities. Conversely, the study also revealed that some autistic individuals seek more intense sensory experiences in their sexual relationships or prefer intimate interactions that provide calming and regulatory sensory input. Another study that shed light on these difficulties was conducted by Lewis and colleagues in 2021 [41]. In this study, 67 autistic people were described through online interviews as having varying experiences with stressors such as anxiety, sensory overload, and social pressures that inhibited their ability to comfortably engage in sexual intimacy. Several participants viewed genitals and sexual intercourse as "gross," "disgusting," and "repulsive." For some, this sex repulsion existed regardless of their own sexual drive and interest in sex in general. Many participants also described the impact of hypersensitivity to physical touch and sensory overload as complicating factors during sexual activities.

Participants described concerns about hygiene and cleanliness that affected their enjoyment of sexual activities. Autistic people explained that sensory and hygiene concerns were particularly difficult and even guilt-inducing when she wanted to be intimate with a partner [41]. Autistic people described various strategies and adaptations they employed to navigate their sensory preferences and needs in sexual contexts, such as open communication with partners or the use of substances to mitigate overwhelming sensations. Other people indicated that they avoided sexual activity because of their sensory features [40].

3.1.3. Insights from Long-Term Relationships Involving Autistic Individuals

Autistic individuals report similar levels of interest in romantic relationships to their non-autistic peers but experience greater challenges with the initiation and maintenance of these relationships [42]. Physical attractiveness, as perceived by partners and observers, was found to facilitate relationship opening, potentially compensating for social challenges initially [42]. Financial resources also seemed to provide an advantage in relationship initiation but may not benefit all autistic individuals due to high rates of under- or unemployment. Challenges in initiating romantic

relationships were associated with low social and peer functioning, reflecting difficulties in understanding social interactions. Autistic people try to act as a function of the other person (e.g., trying to have similar interest, give them something nice), non-autistic people tease them to receive attention; a greater proportion of autistic girls compared to their non-autistic peers would say things about themselves that they think the other person would like to hear [40]. An overall lower level of romantic functioning, more “stalking-type” or persistent courting behaviours, and more inappropriate courting behaviours were observed (but the differences were not statistically significant) [43]. No significant gender differences were found in terms of knowledge, experience, or courting behaviours. Autistic individuals have fewer resources available for learning how to acquire romantic dating skills and knowledge compared to their typically developed peers. They say they haven’t learned how, they don’t initiate, some use trial and error; it is difficult to understand and communicate because of problems with verbal and non-verbal communication (know when a conversation should be ended, misunderstand signals, social cues, hard to see when they aren’t interested) [43]. They did not understand how relationships work, so it is difficult to recognize unhealthy or inappropriate behaviour when courting or being courted or how to handle dating situations in a healthy manner [43]. Analysis revealed that neurodiverse relationships progressed along pathways similar to neurotypical ones, such as honeymoon, defining, and establishing [44]. The honeymoon phase, marked by initial excitement and discovery, involves positive communication and tolerance of partner faults. In particular, autistic people tend to value more implicit characteristics than extrinsic or social status (trustworthy, nice, funny vs. good looking, popular, rich). They both look for similar people who are similar in intrinsic status and less similar in social status; autistics seek nicer people than neurotypical people. want someone who is closer to their characteristics than neurotypical people; they adapt their desires to their own capabilities. On the other hand, they see themselves as being less of a good partner; autistics have lower self-esteem, and they believe that they are less suitable partners, possibly because of their awareness of their social difficulties [45]. As shown by an analysis by Smith et al. [44], when relationships progress, conflict and communication challenges emerge, particularly during the defining phase, characterised by increased intimacy and assertiveness. Neurodivergent couples face unique challenges in establishing mutual understanding and expectations due to differing communication styles and perspectives. While some autistic partners may initially use camouflaging techniques to navigate social interactions, maintaining this strategy long-term becomes challenging. Nonetheless, participants reported developing strategies to overcome communication barriers and strengthen their relationships, often with neurotypical partners playing a significant supportive role. Facilitators included the strength-based roles that each partner took on and the genuine support and care for each other. The establishment phase signifies increased stability and commitment, accompanied by positive communication strategies and reduced conflict. Receiving an autism diagnosis, often occurring later in the relationship, aids partners in understanding each other's differences and seeking appropriate support. Viewing neurodiverse relationships through an intercultural lens highlights the need for cultural awareness and adaptation to intercultural couples. However, participants noted a lack of adequate support and resources tailored to neurodiverse couples, emphasising the need for health professionals to undergo further education to better assist these couples in navigating their unique challenges [44]. Participants have difficulty carving out quality time for connection, sometimes feeling that they are not a priority or that their partner makes unreasonable requests [46]. Insecurity can also create distance, as individuals may avoid adopting a partner's bad habits or struggle to negotiate their needs effectively. The fear of a partner losing interest further complicates matters. These anxieties manifest in different ways. For example, some individuals experience a lack of awareness regarding their fears or uncertainty about appropriate ways to express themselves, or they may hesitate to introduce certain topics or communicate their needs directly. Consequently, autistic individuals have reported lower satisfaction in their romantic relationships than non-autistic individuals. Yew et al. [47] explored this topic to establish whether the barriers to relationship satisfaction identified in the literature (i.e., personality factors, poor social

and communication skills, social loneliness, low partner support and low sexual satisfaction) are experienced by autistic people in long-term relationships. Autistic participants reported higher levels of social loneliness and scored lower on each of the Big Five personality traits than did non-autistic participants, consistently with previous research. Surprisingly, autistic participants reported greater perceived sexual and relationship satisfaction than non-autistic participants did, contrary to expectations based on sensory sensitivities and communication differences. Interestingly, some autistic individuals express greater satisfaction in relationships where their partner is also autistic [37]. This suggests a level of mutual understanding and shared experiences that might contribute to relationship satisfaction. Autistic participants also reported shorter relationships, possibly due to challenges in relationship maintenance or the younger age of the autistic group. In fact, those who do not perceive positivity from the relationship struggle to maintain the relationship as they struggle to connect with the partner. Consequently, bad relationship experiences produce loss and create deep concerns that influence all life aspects; they need to “fill the gap” created by the partner who left [46]. It is shown that partner responsiveness significantly predicted relationship satisfaction for both autistic and non-autistic partners, while personality traits were not significantly associated with relationship satisfaction in long-term relationships involving autistic individuals, suggesting that personality effects may be masked by partner accommodation or other factors [47]. Furthermore, found that communication differences, including responsiveness to partners, were linked to reduced relationship satisfaction, consistent with qualitative reports [42]. In contrast to these findings, another study by the same author reported that communication skills, social skills, and social loneliness were also not significantly associated with relationship satisfaction [47].

3.2. Gender Identity and Sexual Orientation

3.2.1. Gender Identity

Several studies have reported an interesting link between the autistic spectrum and a non-conforming gender identity. Autistic people, especially those who are assigned female at birth, have significantly greater rates of gender dysphoria and are less likely to identify with the assigned gender at birth [36,37,48–50]. Autistic women are also less likely to report heteronormative interests and identities, indicating a significant prevalence of gender diversity within the autistic population [37]. Autistic adolescents generally have a greater desire to belong to a different gender, and there are higher rates of autism diagnosis in transgender and gender non-conforming adults than in their peers [51], significant correlation between autism and gender variance has been observed in both adolescents and adults; autistic-like characteristics are also highly present among gender variant children and adolescents compared to their peers [52]. This growing body of evidence on the link between autism and gender variance and/or gender dysphoria has sparked interest in the issue. A 2020 study [39] hypothesised that this relation might be due to different factors, including prenatal testosterone levels, difficulties with implicit social learning about gender, rejection from one’s gendered group, and a rigid thinking style that interprets gender roles as inflexible. Interestingly, Pecora et al. [52] reported that while non-autistic transgender individuals reported more regretted sexual encounters than did their cisgender counterparts, transgender status did not correspond with an increased likelihood of negative sexual experiences among autistic females identifying as transgender.

3.2.2. Sexual Orientation

Several reviews show an ongoing debate on whether a non-heterosexual sexual orientation is more prevalent in autistic people, with some studies suggesting that there are no differences in sexual orientation and others observing higher rates of non-heterosexuality among the autistic population [49,51,52]. A 2022 review [51] found one study stating a higher prevalence of homosexuality, bisexuality, and asexuality among both autistic men and women. However, several studies suggest a trend between autistic women who identify as bisexual more often than autistic men [51,52]. Age

has an interesting impact on sexual orientation experiences and expressions. Older autistic men tend to identify as bisexual, while younger men identify as homosexual more often than their non-autistic peers. This observed difference in sexual orientation identification between older and younger autistic individuals may be due to social attitudes toward sexuality becoming more open and accepting, encouraging autistic individuals to explore and express their sexual identities [53]. Sexual orientation also influences sexual experiences: autistic homosexual women experience a greater risk of unwanted sexual behaviour and regretted sexual activities than both autistic heterosexual women and non-autistic women. Conversely, autistic bisexual women have a lower risk of regretting sexual behaviour than non-autistic heterosexual women [52].

3.2.3. Asexuality

Recent studies suggest a connection between being on the autism spectrum and being identified as asexual [53]. However, research on this link is complex and ongoing. A 2020 study [54] revealed that a significant number of participants were identified within the asexual spectrum, including those who identified as asexual, questioning, gray-asexual, or demi-sexual. Interestingly, those on the asexual spectrum expressed greater sexual satisfaction, possibly because their gratification does not depend on sexual activity with a partner. They also show lower generalised anxiety: while autistic people may face obstacles in fulfilling their sexual desires, leading to greater anxiety, those on the asexual spectrum might not experience such barriers, contributing to lower anxiety levels and greater satisfaction. Maggio et al. [51] highlighted similarities between asexuality and autism, with both sharing a particular understanding of romantic and sexual dimensions and sexual desire not necessarily oriented toward one's partner. Another study [55] found that some autistic people who identify as asexual may actually experience some level of sexual attraction; their identification might be more linked to a lack of desire or difficulty with interpersonal relationships than to a complete absence of attraction. The authors highlight the importance of a multi-faceted approach to accurately assess sexual identity.

3.3. Challenges

Autistic individuals who identify as part of the queer community, due to their sexual orientation and/or sexual identity, face different challenges stemming from feelings of being different and experiences of stigmatisation about gender expression [37]. Hillier et al. [56] investigated this double minority status through a focus group with queer autistic individuals to identify multiple minority stresses. The LGBTQ+ community was reported to be unaware of different autism spectrum aspects and to have stereotypical views about autism, leading to isolation and exclusion from the queer community. Some people also attributed the participants' sexual identity to their autism. This issue of double minority status is further complicated by the notable prevalence of autism among transgender adolescents [57]. Both autism and gender diversity independently elevate the risks of mental health issues. Autistic-transgender adolescents exhibit markedly heightened internalising symptoms compared to their allistic-transgender and autistic-cisgender counterparts. Alongside stigma-related mental health associations, cognitive/neurodevelopmental factors linked to autism, such as poorer executive function (EF) and heightened social symptoms, are correlated with worse mental health outcomes. Specifically, social symptoms and EF-related gender barriers are associated with increased internalising symptoms and EF problems, while EF-related gender barriers with heightened suicidality [57].

Disclosing sexual identity as an autistic person presents a specific set of challenges. Most participants felt that they lacked the necessary communication skills to effectively express their identity. Additionally, they struggled with anticipating how others would react to their coming out, fearing negativity and homophobic comments. A few shared the opposite perception, stating that their autism made them less concerned about others' reactions to their disclosing. These findings align with another study by Genovese [49] that highlighted the challenges faced by autistic queer

individuals in expressing themselves due to the stigmatisation of gender expression and autism-related social and communication skills.

Another interesting conclusion drawn from the research of Hillier and colleagues [56] concerns the difficulties faced by autistic LGBTQ+ individuals in finding services and/or health professionals who understand the interaction between autism and queer identity; many participants reported experiences of misgendering, lack of support, and intrusive questions. Exploring the experiences of autistic people who identify as a sexual minority, Lewis et al. [41] found that many autistic queer people process these identity aspects separately, often feeling more comfortable with one than the other, with one of the two bringing shame. Many participants felt that being autistic impacted their sexual identity by challenging them to recognize sexual feelings and attractions, complicating their overall sexual understanding. Moreover, autism-related social challenges complicate the possibility of having romantic and/or sexual experiences, hindering their ability to imagine being in a sexual situation. Despite perceiving autism's impact on their sexual identity understanding, most participants felt that their sexual orientation was not related to their autism and resented when others assumed these were connected. One autistic woman linked her romantic attraction to her autism, explaining that she did not want to be in any intense relationship. Most of the participants emphasised the significance of negative reactions from others, leading them to feelings of isolation and pain, increasing confusion and preventing them from fully accepting themselves. Often, autistic individuals feel isolated from both the LGBTQ+ and autism communities; they especially struggle to understand dating norms since they lack a queer model to mirror. These findings concerning isolation by both communities align with those from the previously mentioned Hillier and colleagues' study [56].

3.3.1. Hypothetical Explanations

The broader range of gender and sexual diversity within the autistic community is likely influenced by a combination of neurobiological factors and social factors [53]. Pecora et al. [52] explore different possible theories. From a neurobiological point of view, there might be a link between prenatal exposure to testosterone, autistic traits, and neural masculinization, leading to the development of more typically male traits and preferences in assigned female at birth autistic individuals. A more psychosocial framework hypothesises that certain autistic traits might cause autistic individuals to hold rigid views on gender roles, making it difficult for them to understand how social influences shape these roles; consequently, autistic individuals who do not conform to these stereotypical expectations may identify transgender. Additionally, social interactions and reduced awareness of societal norms play a crucial role since they make the assigned gender at birth less relevant in connecting with a potential partner.

3.3.2. Challenges and Risks in Sexual Behaviour for Autistic Individuals

Findings reveal a growing awareness of the desire for sexual and intimate relationships in autistic individuals. However, autism-related challenges complicate the acquisition of knowledge and skills necessary for healthy sexuality and relationship building, leading to difficulties in initiating sexual interactions and relationships. In this vein, research has shown that autistic adolescents display fewer behaviours, have less knowledge about privacy rules, receive less sex education and are more likely to engage in inappropriate sexual behaviours than their neurotypical peers. This lack of privacy awareness means that autistic individuals might not fully understand or adhere to societal norms regarding sexual situations, putting them at greater risk of inappropriate or even abusive behaviour [51]. However, they generally have less sexual experience due to delayed development in relationship skills. Difficulties in understanding appropriate behaviour in different settings can result in problematic courting behaviours and challenges in sexual experiences due to sensory sensitivities [52]. Despite these challenges, the sexual behaviour of autistic individuals is often not adequately addressed. Some individuals with high-functioning autism exhibit a strong interest in relationships and can engage in age-appropriate sexual behaviours. Studies have shown that a significant portion

of autistic people are in romantic relationships and that sexual activity among autistic males can occur at rates similar to those among non-autistic males. However, autistic young adults may seek more privacy and exhibit more typical sexual behaviours but also face greater risks of sexual victimisation than those reported by their parents [51]. Research by Joyal et al. [50] showed that certain variables, such as gender, age at first diagnosis, self-reported knowledge about sexuality and sexual behaviours, and the desire to have sex with others, play significant roles in predicting both positive and negative sexual experiences among this population. This duality suggests an intricate interplay between these factors and how autistic individuals navigate and interpret their sexual experiences. The similarity in predictors for both positive and negative sexual experiences might suggest that autistic individuals who are more likely to engage in sexual activity (due to older age at diagnosis, which could imply a later understanding and perhaps less stigma or a different type of socialisation about sexuality; greater knowledge about sexuality; and a stronger desire to have sexual experiences) are also more exposed to the full spectrum of sexual experiences, including both positive and negative experiences. This exposure could be a double-edged sword, offering opportunities for fulfilling experiences but also risks for negative ones. Specifically, autistic individuals present with an increased risk of engaging in hypersexual or problematic sexual behaviours such as deviant masturbation, which includes compulsive masturbation and the use of peculiar masturbation techniques that include objects but also paraphilic sexual fantasies, paedophilia, and fetishism, particularly in males [51,52]. In particular, autism could be associated with zoophilia in a number of ways. For instance, autism could be associated with sexual interest in animals as a highly restricted fixated interest that is abnormal in intensity, which is related to criteria three in the second domain of the diagnostic criteria associated with autism: restricted, fixated interests that are abnormal in intensity or focus [5]. Additionally, autism could be associated with zoophilia due to difficulties in social relationships, leading to alternative forms of sexual expression. Comorbid intellectual disability and sensory profiles may also play a role. It is also important to consider that having highly restricted interests and having sensory peculiarities in autistic individuals may set the stage for developing fetishism and other paraphilias in individuals with certain sensory profiles, among other factors [58]. Due to these inappropriate behaviours, autistic individuals face a greater risk of encountering the criminal justice system. This includes offences that may be classified as "counterfeit deviance," where the behaviour is not driven by sexual deviance per se but by other factors related to autism [52], such as social skills and a lack of sexual knowledge and experience [56]. A specific area of concern is the viewing of child exploitation material, driven by isolation, social anxiety, and inadequate sexual education.

3.3.3. Heightened Risk and Harsh Realities: Addressing Sexual Abuse and Victimization in Autistic Individuals

Studies on sexual experiences in autistic individuals have highlighted a greater risk of sexual victimisation and abuse, which is prevalent among both young people and adults [52], with a risk more than four times greater than that faced by non-autistic individuals [37,49]. This heightened vulnerability necessitates a nuanced understanding of the unique consequences and needs of autistic survivors of such victimisation, which may differ from those in the general population. The adverse effects of sexual victimisation on autistic individuals can be further intensified by prior negative experiences, social exclusion, and a lack of appropriate responses or support from others when they seek help [37]. There are sex differences in victimisation, with autistic females facing a greater risk of negative sexual experiences, such as regret and unwanted encounters, than their male counterparts. Several factors contribute to heightened vulnerability in autistic females, including a tendency toward naïve promiscuity to form desired relationships and poor partner choices that may lead to abusive situations. Additionally, homosexual females with ASD might experience increased vulnerability to regretted sexual experiences, possibly due to the added challenges of being a sexual minority. The same factors that contribute to an increased risk of offending in autistic individuals, such as deficits in social understanding, communication challenges, and impaired theory of mind,

are also believed to increase the risk of sexual victimisation. These deficits can make it difficult for autistic individuals to interpret others' intentions correctly and to distinguish between safe and unsafe people and situations. A lack of sexual knowledge exacerbates these issues, limiting their ability to protect themselves from risky situations and practices [37].

3.3.4. Rethinking Sexual Health Risks in the Autistic Population

Recent studies have challenged the prevailing assumptions about sexual activity and health risks among autistic individuals. Contrary to the belief that autistic individuals might engage in less sexual activity and thus have a reduced risk of contracting sexually transmitted infections (STIs), research findings reveal no significant differences in the age of onset for sexual activity or the rates of STI contraction between autistic and non-autistic groups. This indicates that the relative lifetime risk of contracting STIs is similar across both populations. Interestingly, the study points out that, while there are high rates of asexuality and a lack of sexual activity among some autistic individuals, these factors only partially mediate the risk of STIs. This suggests that those who are sexually active within the autistic community face similar risks to those of their non-autistic counterparts [53]. Furthermore, an investigation of sexual health revealed that individuals with a disability or neurodiversity, including autism, might experience fewer and delayed sexual relationships. However, they are more prone to engage in risky sexual behaviours, elevating their risk for STIs. A longitudinal study underscores this concern by showing that autistic individuals had a greater prevalence of STIs than did neurotypical individuals in a control group [51]. These findings underscore the urgent need for targeted sexual education and the promotion of protective measures specifically designed for the autistic population [53]. Tailoring sexual health resources and information to meet the unique needs of autistic individuals is crucial for mitigating their risk for STIs and ensuring their overall well-being. This approach calls for a re-evaluation of sexual health strategies to include comprehensive and accessible education and support services for the autistic community, recognizing their similar risk profiles and addressing the specific challenges they face [51].

3.3.5. Sexual Health and Autism: Navigating Challenges and Promoting Inclusive Education and Support

Sexuality is a fundamental aspect of human identity and well-being, yet for individuals on the autism spectrum, navigating sexual health and relationships can present unique challenges. Several recent studies have shed light on the intersection of autism, sexual orientation, and sexual health, advocating for more inclusive approaches to education, healthcare, and support tailored to the needs of autistic individuals. This research underscores the significance of sex education in fostering the development of a healthy sexual identity and relationships, particularly highlighting the disparities faced by students diagnosed with intellectual disabilities and/or ASD in receiving comprehensive sex education compared to their neurotypical peers. One key finding is that autistic individuals report significantly less learning about sex-related topics from their friends than non-autistic individuals [12]. This trend is especially pronounced among boys, highlighting a gendered dimension to how sexual education is received [41]. This disparity in learning from peers contributes to the broader social engagement challenges faced by autistic individuals. These challenges are compounded by the fact that autistic individuals and their families frequently report experiences of social rejection, especially in school settings, which continue into adulthood. Misunderstanding and ignorance about autism often result in avoidance behaviours and isolation, though many find comfort in solitude [59]. The difference in social engagement may be partly attributed to differences in informal sexual education among peers [12]. Furthermore, communication and social interaction difficulties inherent to autism decrease opportunities for obtaining sex-related information, leading to significant gaps in knowledge [59]. Strnadová and colleagues' review [59] aimed to gather insights from parents, teachers, and students on sex education for high school-aged students diagnosed with intellectual disabilities and/or ASD, revealing a noteworthy gap: the direct involvement of students in shaping and evaluating sex education curricula is minimal. Specifically, students diagnosed with intellectual

disabilities and/or ASDs reported fewer formal opportunities for sex education, highlighting a gap in the accessibility and inclusivity of sex education programs tailored to their needs [41,59]. There were reported gender differences in the levels and types of sexual health knowledge among students, with young men with intellectual disabilities having fragmented knowledge about certain aspects of sexuality but lacking comprehensive understanding and opportunities to apply this knowledge in real-world contexts. Moreover, a study by Weir et al. [53] highlighted disparities in healthcare satisfaction and self-efficacy among the autistic population, especially concerning LGBTQ+ individuals who face compounded risks. This research also highlights specific areas of concern, such as lower rates of cervical cancer screening among autistic females and a similar rate of STI contraction between autistic and non-autistic adults. Moreover, this work sheds light on the importance of healthcare professionals adopting affirming language and approaches to address the specific needs and risks of autistic individuals in sexual health contexts. This includes heightened vigilance regarding the risks of sexual victimisation and abuse, especially among autistic females and those with diverse sexual orientations. Effective communication about relationships, sexual contact, and health is essential for ensuring the well-being and safeguarding of vulnerable groups within autistic communities.

3.3.6. Barriers to Effective Sex Education

Several barriers were identified, including the absence of high-quality, accessible sex education curricula tailored for students with intellectual disabilities, the need for specialised training for educators, and a general lack of confidence among teachers and parents in delivering sex education due to their own limited knowledge [59]. Dewinter et al. [37] showed that teachers and parents generally held positive attitudes toward the necessity of sex education for students diagnosed with intellectual disabilities and/or ASD. However, they also acknowledged the critical need to balance protecting students' autonomy and rights to participate in sexual relationships with preventing victimisation. Parents of autistic children often express concerns about their children's sexual well-being and show a desire to support their sexual development. Despite this, there is hesitation among some parents to provide comprehensive sexuality education, highlighting a perceived need for professional guidance in these discussions. In contrast, professionals do not always address or support issues of sexuality consistently in their interactions with autistic youth and their families. This gap between parental concern and professional support underscores a significant area of need within autism care and education. Broader community and cultural barriers also pose challenges, including societal stigmas and the trauma some students may have experienced [59].

3.3.7. Facilitators for Improved Sex Education

The research identified several enabling factors for better sex education, such as starting education at puberty, adopting a whole-school approach, ensuring that all staff are trained, and aligning teaching at school with discussions at home. The importance of clear, explicit communication and resources that are personalised, developmentally appropriate, and considerate of the individual's strengths and needs was also emphasized [59]. Dewinter and colleagues [37] further advocate for enhanced education, clinical practice, research, and policy focusing on promoting well-being in autistic youth and adults through a positive lens on sexuality and gender diversity. Their recommendations are organised around three main themes:

- Theme 1: education and information
It is advised to provide autistic individuals and their families with education and information regarding sexuality, relationships, and gender diversity. This initiative aims to ensure that autistic people have access to the knowledge necessary to understand and navigate their sexual and relational health and gender identity confidently.
- Theme 2: Healthcare expertise and accessibility
The recommendations call for improvements in healthcare professionals' expertise in, and the accessibility of, services related to sexuality, relationships, and gender diversity. This includes a

specific focus on preventing sexual victimisation and offering support to those who have experienced it, acknowledging the heightened vulnerability within the autistic population.

- Theme 3: Research

There is a strong emphasis on the meaningful inclusion of the autism community in future research projects that explore well-being in the context of sexuality, relationships, and gender diversity. This ensures that the research is relevant, inclusive, and respectful of the experiences and needs of autistic individuals.

The ultimate goal of these recommendations is to promote a supportive environment that fosters the health and overall well-being of autistic individuals, respecting their diverse experiences and needs in the domains of sexuality and gender.

3.3.8. Innovative Strategies for Sexual Education and Relationship Skills in Autistic Individuals

Pecora et al. [52] emphasised the importance of tailored sex education programs for autistic individuals. Innovative teaching strategies that cater to the diverse learning needs of students with diagnosed intellectual disabilities and/or ASD can include using diagrams, easy-to-understand language, pictures, auditory stimuli, role-playing, and practical demonstrations to make learning material more accessible and comprehensible. The necessity for group discussions with parents regarding the sex education their children receive, along with practical guides and workshops that involve both parents and their children, was highlighted. Such initiatives could foster open discussions about sexuality, enhancing trust and understanding between parents and children [59]. A 2022 review [60] explored different intervention programs focused on the sexual life of young autistic people. Findings highlight how interventions that consist solely of teaching sessions improve the knowledge of autistic youth, but these programs actually demonstrate observable behavioural effects when they also incorporate direct approaches or homework assignments. These interventions tend to be more effective when they involve daily continuity and are implemented during early adolescence.

Intervention programs targeting school-based workers show mixed results: some workers achieve positive outcomes with youth, while others see no significant changes. On the other hand, interventions aimed at health professionals do not yield conclusive results. Several factors might explain why combining instruction with homework and professional interventions is more effective. The regular exposure to information may help youth integrate what they learn more thoroughly and interventions that blend direct approaches with homework can be tailored to address the specific challenges and needs of individual participants. Additionally, autistic youth often struggle with generalising information across different contexts, which may limit the effectiveness of teaching sessions alone. The review also highlights the necessity of guiding parents in supporting their children. Many parents are uncertain about how to approach discussions with their youth but are willing to learn: parent-focused interventions slightly enhance parents' comfort levels and their ability to interact effectively with their children, demonstrating a potential for significant improvement in parents' ability and confidence to engage effectively with their children on these topics. Overall, findings from this literature review suggest that sexuality interventions can successfully support personal, environmental, and occupational development in youth.

Evidence-based programs such as PEERS for young adults offer promising avenues for teaching the social skills necessary for establishing and maintaining relationships [62]. PEERS for young adults is an evidence-based program aimed at teaching the social skills needed to establish and maintain close relationships, including friendship and romantic relationships. Specifically, Platos et al. [62] conducted a randomised controlled trial of the PEERS program adapted for autistic young adults, demonstrating significant improvements in social skills, cognition, and knowledge among participants. It consists of 16 weekly sessions led by mental health professionals or educators, with a focus on cognitive-behavioural principles and behavioural rehearsal exercises. Participants are supported by a "social coach," typically a parent or another adult, who undergoes parallel training to facilitate skill acquisition and homework completion [62]. Rothman et al. [63] explored the feasibility

of an online class, HEARTS (Healthy Relationships on the Autism Spectrum), designed to improve relationship skills among autistic individuals. This collaborative effort involved autistic self-advocates and non-autistic professionals. Participants showed significant improvements in various areas, including decreased hostile thoughts and increased awareness of resources related to domestic violence. Participants appreciated interacting with other autistic students, having an autistic co-teacher, and found activities and content valuable. Despite the promising outcomes of interventions, challenges remain, including the gap between skill acquisition and real-world application and the need for post-treatment support [62]. Additionally, some participants expressed dissatisfaction with traditional approaches to social skills training, highlighting the importance of incorporating neurodiversity perspectives into interventions. Pedgrift and Sparapani [64] developed the Social-Sexual Education program to address the educational gap for adults with neurodevelopmental disabilities, including intellectual disabilities and autism. This program aims to empower these individuals by teaching them how to build safe and healthy relationships, recognize, and prevent abuse. The curriculum is inclusive of sexual and gender diversity and is based on input from individuals with disabilities. The program's effectiveness was noted by educators and facilitators, although challenges included dealing with younger participants' immaturity and older clients' strong emotional reactions due to past trauma. Addressing sexual orientation and gender diversity also posed challenges, requiring facilitators to maintain neutrality and handle sensitive discussions. Despite these challenges, the program has shown to be a valuable tool for professionals, increasing awareness and understanding of safe relationships and equipping participants with the knowledge to prevent abuse. To address sexual-related challenges in the autistic population, Picard-Pageau and collaborators [61] developed a toolkit aimed at supporting sexuality, sexual health, and sustainable sexual practices in autistic youth. This toolkit, created using a multimethod, co-creation approach, involves input from autistic youth, practitioners in specialised settings, and school-based practitioners. It aims to bridge the knowledge gap and provide accessible education on sexuality for young autistic people, starting as early as age 12. The toolkit's teaching methods include visual aids, which are particularly appreciated by both the youth and specialists, helping convey essential information about sexuality in a way that is easy to understand and retain. The toolkit covers basic knowledge about sexual activities, consent, STI, pregnancy prevention, sexual orientation, and gender identity, therefore addressing the primary areas in which autistic youth face difficulties. By providing a structured and accessible way to learn about sexuality, the toolkit helps prevent the development of inappropriate behaviours and supports the healthy sexual development of young autistic people. It also eases the burden on practitioners, many of whom may not feel comfortable teaching these topics. The toolkit serves as a valuable resource for both specialised and school-based practitioners, facilitating a more consistent and comprehensive approach to sexual education for autistic youth.

Table 2. Summary table.

Authors	Year	Population	Demographics	Methods	Key Findings
Allely	2020	Individuals with Autism Spectrum Disorder (ASD)	No specific age or gender data provided	Systematic PRISMA review	Limited research on zoophilia and bestiality in ASD individuals. ASD may be associated with deviant sexual behaviour due to restricted interests or impaired social skills. Importance of sex education for ASD individuals.
Ronis et al.	2021	561 individuals with High-Functioning ASD	21-72 years old, majority Caucasian	Online survey assessing sexual and gender identity	5.1% self-identified as asexual. Variability in sexual attraction. Asexual identity is linked to social difficulties rather than purely lack of sexual attraction. Researchers should use multidimensional approaches to assess sexual identity.
Platos et al.	2023	15 young adults with ASD	18-32 years old	Randomised controlled trial of PEERS for Young Adults curriculum	Significant improvement in social cognition and social skills through the PEERS program. Limited improvement in social engagement and dating skills, suggesting need for continued post-treatment support.
Rothman et al.	2022	55 autistic individuals	18-44 years old	Feasibility test of online HEARTS program	Improvement in coping, motivation for socialising, and positive thinking. Interpersonal competence and loneliness did not significantly improve. Participants appreciated having an autistic co-teacher.
Sala et al.	2020	Autistic individuals	No specific demographics provided	Review of literature	Autistic individuals show higher rates of non-heterosexual attraction, more inappropriate sexual behaviours, and greater gender dysphoria. Issues like courtship and flirting are major challenges.
Sala et al.	2020	31 autistic and 26 non-autistic individuals	No specific demographics provided	Online survey with thematic analysis	Both groups desire intimate relationships. Autistic individuals face specific communication difficulties and stigma. Adaptations like clear communication can help overcome barriers.
Yew et al.	2023	95 autistic and 65 non-autistic individuals in long-term relationships	No specific demographics provided	Online survey assessing relationship satisfaction factors	Autistic participants reported higher satisfaction in relationships than non-autistic participants. Social loneliness and partner responsiveness were important factors influencing relationship satisfaction.
Yew et al.	2021	Autistic individuals	No specific demographics provided	Systematic review of romantic relationship initiation and maintenance	Social and communication challenges are the main barriers to relationship satisfaction. Partner support plays a critical role in relationship success.

Smith et al.	2021	13 neurodiverse couples	One partner diagnosed with autism	Phenomenological interviews	ND couples experience similar relationship phases as non-ND couples but face unique communication challenges. Support from neurotypical partners is critical. Lack of adequate resources for ND couples was highlighted.
Pecora et al.	2020	Individuals with Autism Spectrum Disorder (ASD)	Primarily Western, without intellectual disability	Literature review	ASD individuals face difficulties in forming relationships, with increased risks of victimisation and inappropriate sexual behaviours. There's a high prevalence of non-heterosexuality and gender variance among ASD individuals.
Bush et al.	2020	Young women with ASD, 18-30 years	No specific demographics provided	Comparative study on asexual spectrum vs. other orientations	Women with ASD on the asexual spectrum report lower generalised anxiety. Sexual satisfaction varies, with asexual individuals finding satisfaction outside of partnered sex. Highlights asexuality as a non-pathological identity.
Strnadová et al.	2021	High school students with intellectual disability and/or ASD	No specific demographics provided	Scoping review	Limited access to comprehensive sex education for ASD students. Barriers include lack of tailored curricula and societal stigma. Recommendations include early and explicit communication, parent involvement, and practical workshops.
Dewinter et al.	2023	Autistic youth and adults	No specific demographics provided	Literature review and community-driven recommendations	Emphasis on education, healthcare access, and research for ASD individuals to promote healthy sexual and gender identities. Recommendations to prevent victimisation and increase healthcare professional awareness.
Gray et al.	2021	120 autistic individuals	Various sensory profiles	Qualitative analysis	Sensory processing differences affect sexual and relationship experiences for ASD individuals. Sensory sensitivities lead to adaptations in intimacy. Recommendations for targeted support and education on managing sensory aspects in relationships.
Weir et al.	2021	2,386 adults, including 1,183 autistic individuals	Age range 16-90	Anonymized online survey	Autistic individuals display a wider range of sexual orientations and experience similar STI risks. Higher likelihood of non-heteronormative orientation. Need for inclusive sexual health education and healthcare accessibility.
Pecora et al.	2020	295 female participants (134 autistic, 161 non-autistic)	Mean age: 26.2 (autistic), 22.0 (non-autistic)	Online survey with Sexual Behaviour Scale-III	Autistic females, especially non-heterosexual, face higher rates of unwanted sexual experiences. Highlights vulnerabilities and the need for tailored interventions for gender-diverse and sexual minority groups within ASD.
Clarke & Lord	2020	253 individuals with ASD	Ages 2-26	Longitudinal cohort study	Social competence in adolescence predicts adult outcomes (employment, independence, friendships). ASD adults face

					significant barriers in employment and relationships. Suggests the need for personalised success measures for individuals with ASD.
Hillier et al.	2020	4 autistic individuals (male, transgender; agender/nonbinary; agender; queer)	Ages 20-38	Qualitative Analysis	Main themes are experiencing dual identities, autism spectrum, and LGBTQ+; multiple challenges experienced minority status; isolation caused by lack of understanding; lack of service provision.
Picard-Pageau & Morales	2022	Individuals, with an ASD diagnosis or in regular contact with them (family, therapist, teacher)	Age < 23 years old	Systematic review	Interventions focusing solely on knowledge transfer may not be sufficient to improve behavioural outcomes in youth with ASD. Combining direct intervention with homework or targeting parents may yield better results. School-based interventions show mixed results, while health professional interventions lack conclusive evidence.
Dekker et al.,	2023	38 male adolescents divided in neurotypical or autistic groups	Age 14-19	Comparative study	There are no significant differences between groups concerning to what extent partners' characteristics were desired. Autistic adolescents desire similar characteristics as TD adolescents in their romantic partners and friends.
García-Barba et al.	2024	332 participants (57.5% women; 42.5% men)	Age 21-73	Online Survey and data analysis	In autistic individuals, sexual cognitions are less diverse and occur slightly and frequently than their neurotypical peers; nonetheless, their positive content may be indicative of sexual well-being.
Hancock et al.	2019	459 individuals (232 diagnosed with ASD)	Age 5-17	Online Survey and data analysis	Individuals with ASD experience similar levels of interest in relationships compared to neurotypical peers, but face more challenges in initiating and maintaining them. This is due to difficulties in social interaction and anxiety in social situations.
Genovese	2021	no participants	Age 10-21	Narrative review	Autistic adolescents face unique challenges during a developmental period marked by increased social and emotional demands. Their difficulties in social interaction and emotional regulation can hinder their ability to navigate these challenges, potentially leading to emotional distress and behavioral problems.
Joyal et al.	2021	194 participants	Age 16-22	Exploratory study	Individuals with ASD share similar romantic desires and expectations as neurotypical peers, but often have fewer opportunities for sexual experiences. They may also experience difficulties in understanding and navigating

					sexuality due to limited knowledge and social skills. Early diagnosis and comprehensive sex education can positively impact their sexual experiences.
Lewis et al.	2020	67 individuals who identified as autistic sexual minorities	Age >18	Theme analysis of online interviews	Main themes: self-acceptance as a journey; autistic traits complicate identification of sexual orientation; social and sensory stressors affect sexuality; feeling isolated; challenges in satisfying relationships; difficulty recognizing and communicating sexual needs; a “double minority” status that increases vulnerability in sexual relationships.
Maggio et al.	2022	11 articles	Not applicable	Scoping Review	Individuals with ASD may experience atypical sexual development, including higher rates of gender dysphoria and inappropriate sexual behaviours. They often have reduced sexual awareness and a higher prevalence of diverse sexual orientations. Comprehensive sexual health education and support are crucial for improving their quality of life and reducing risky behaviours.
Mogavero & Hsu	2019	134 participants, 46 with ASD and 88 without ASD	Age 18-57	Qualitative Study	Autistic individuals can form successful romantic relationships, but struggle with initiating and maintaining them due to challenges in social skills and communication. Many lack adequate knowledge about romantic relationships. The prevalence of minority sexual orientations and gender identities is higher among autistic individuals, highlighting the importance of inclusive sex education.
Noble et al.	2023	124 participants	Age 18-25	Data Analysis	Autistic students experience both positive and negative aspects of romantic relationships. While they share similar desires for relationships as neurotypical peers, they face challenges due to social communication difficulties and rigid thinking patterns that can lead to increased anxiety, fear of rejection, and difficulties in maintaining relationships.
Pedgrift & Sparapani	2022	46 participants	Age 18-29	Testing of a Sexual Education program	This sexual education tool is a promising program for professionals to use with their adult clients with neurodevelopmental disabilities.
Picard-Pageau et al.	2023	not specified	Age >18	Toolkit Design	The tool developed in this study seems to be more relevant for providing support to school-based workers than to specialised clinicians.

Strang et al.	2023	93 participants, evenly divided between autistic-transgender, autistic-cisgender, and allistic-transgender groups	Age 13-21	Data Analysis	Autistic transgender adolescents experience higher levels of internalising symptoms compared to their allistic transgender and autistic cisgender peers. Social difficulties, executive function deficits, and female gender identity contribute to these increased mental health challenges.
Torralbas-Ortega et al.	2023	8 participants	Age 14-27	Qualitative Analysis	Communication and social interaction problems are barriers for young adults in developing affective/sexual relationships, leading to negative feelings and experiences that reinforce avoidance behaviours. Families have poor perception of their ability to provide guidance on the matter. There are reports of poor sex education and lack of support.

4. Discussion

This article offers a comprehensive and updated synthesis of the unique challenges faced by autistic individuals in the realms of sexuality and intimacy. Despite the expectation that studies from the 2020-2024 period might directly address the effects of COVID-19, the selected research does not specifically focus on how the pandemic influenced the sexual health or relationships of autistic individuals. Instead, it provides valuable insights into the ongoing barriers these individuals encounter, such as social isolation, difficulty in communication, and lack of proper sexual education. This work builds on the existing literature by consolidating recent findings that explore the broader context of intimacy and sexuality in the autism spectrum, making it a relevant and timely contribution. The findings from various studies shed light on the complexities of intimacy, sexuality, and relationships among autistic individuals, highlighting both similarities and differences compared to their neurotypical counterparts. Understanding these nuances is crucial for providing tailored support and interventions to enhance the well-being and relational experiences of autistic individuals. First, regarding experiences of intimacy, it is evident that despite facing challenges in social-emotional reciprocity, many autistic individuals desire and engage in romantic relationships. Studies have indicated that autistic adults, similar to their non-autistic peers, value communication, mutual respect, and dedication to relationship maintenance [37,39]. However, autistic individuals may encounter specific difficulties in communication and courting behaviours, influenced by stereotypes and limited exposure to diverse relationship models³⁹. Moreover, cognitive abilities, such as nonverbal IQ, play a significant role in shaping romantic involvement in autistic individuals [35]. Interestingly, while both autistic and non-autistic individuals share similar notions of intimacy, they may approach and maintain intimacy differently. Autistic individuals tend to rely more on explicit communication and self-understanding, while non-autistic individuals may rely on implicit understanding and familiarity. Despite these differences, both groups identify communication, sharing, similarity, and respect as essential components of intimacy [39]. Second, differences in sensory processing significantly influence autistic individuals' sexual and relational experiences. Autistic individuals may exhibit heightened sensory sensitivities, leading to feelings of distress or avoidance of sexual activities. Conversely, some autistic individuals may seek intense sensory experiences or prefer intimate interactions that provide calming sensations [40]. However, sensory sensitivities, including hypersensitivity to touch and concerns about hygiene, can complicate sexual intimacy and lead to avoidance of sexual activities [41]. Furthermore, long-term relationships involving autistic individuals face unique challenges, particularly in terms of their initiation and maintenance. Autistic individuals may struggle with social interactions and communication, which can impact relationship initiation [42]. Moreover, while autistic individuals report similar levels of interest in romantic relationships as their non-autistic peers, they may experience lower levels of relationship satisfaction, possibly influenced by social loneliness and communication differences [47]. Interestingly, some autistic individuals express greater satisfaction in relationships with autistic partners, indicating the importance of shared experiences and understanding [37]. The relationships among gender identity, sexual orientation, and autism are multifaceted and complex, as highlighted in recent studies. Individuals on the autistic spectrum, particularly those assigned female at birth, have shown significantly greater rates of gender dysphoria and a lower likelihood of identifying with their assigned gender at birth [36,37,49,50,52]. This deviation from normative gender identities is not limited to gender dysphoria but extends to a broader range of non-heteronormative interests and identities, suggesting a prevalent diversity of gender within the autistic community. The intersection of autism with sexual orientation also presents an interesting narrative. While the debate continues regarding the prevalence of non-heterosexuality among autistic individuals, several studies suggest a higher frequency of homosexuality, bisexuality, and asexuality within this population [49,51,52]. The impact of age on sexual orientation, particularly among autistic individuals, suggests a dynamic landscape influenced by changing societal attitudes toward sexuality, encouraging a more open exploration and expression of sexual identities over time [53]. Moreover, the discourse around

asexuality within the autistic community unveils another layer of complexity. The linkage between autism and identifying as asexual suggests unique experiences and perceptions of sexual and romantic attractions, where sexual desires are not necessarily partner-oriented [51,53]. Interestingly, those on the asexual spectrum within the autistic community reported greater sexual satisfaction and lower generalised anxiety, highlighting the diversity and range of sexual experiences and orientations within this population. However, autistic individuals, especially those identifying as part of the queer community, face multifaceted challenges. These problems range from stigmatisation and feelings of difference due to gender expression and sexual orientation [37] to difficulties in expressing sexual identity and finding supportive services that understand the interplay between autism and queer identity [41,49,56]. The dual identity of being autistic and being part of the LGBTQ+ community often leads to additional minority stress, compounded by stereotypical views and a lack of awareness within both the autism and LGBTQ+ communities.

Furthermore, autistic individuals' sexual behaviours and experiences are complex and often fraught with risks and challenges. The difficulty in acquiring the knowledge and skills necessary for healthy sexual relationships, combined with heightened risks of inappropriate or even abusive behaviour, underscores the need for tailored sex education and support⁵¹. Moreover, the review highlighted the disturbingly high rates of sexual victimisation among individuals with ASD [37,48,49]. These individuals face challenges such as deficits in social understanding and communication, which significantly increase their risk of being abused or exploited. The nuanced impact of these experiences calls for specialised support and interventions tailored to the autistic community's specific needs.

Contrary to assumptions that lower sexual activity in autistic individuals might imply reduced STI risks, research has shown no significant difference in STI rates between autistic and non-autistic populations [51,53]. This revelation underlines the urgent need for comprehensive sexual education and health services that cater specifically to autistic individuals, recognizing their similar risk profiles while addressing their unique challenges.

This review further explored the disparities in sexual education between autistic individuals and their neurotypical peers [12,50,59]. A significant finding is the lack of peer-based sexual education for autistic individuals, which contributes to gaps in their sexual knowledge and understanding. This research calls for inclusive sex education that actively involves autistic students in the development and evaluation of curricula, aiming to bridge these educational gaps. The identified barriers to effective sex education include the lack of tailored curricula and the need for specialised educator training [59]. However, the review also points to facilitators such as starting education at puberty and adopting a whole-school approach, highlighting the importance of clear, explicit communication and personalised resources [59]. Innovative teaching strategies and programs such as PEERS for young adults [62] and the HEARTS online class [63] show promise in improving social and relationship skills among autistic individuals. These programs emphasise the importance of incorporating neurodiversity perspectives and supporting the real-world application of learned skills.

4.1. Limitations and Clinician Challenges

A major gap in the literature is the absence of research that directly assesses the long-term effects of the COVID-19 pandemic on the sexual and relational development of individuals with ASD. Future studies should aim to explore how the pandemic may have created new dynamics in intimacy, communication, and sexual health. Additionally, there is still insufficient understanding of the gender and sexual diversity within the autistic community, pointing to the need for research that addresses the intersectionality of autism, gender identity, and sexual orientation, particularly in post-pandemic contexts. The findings underscore the need for clinicians to focus on addressing the sexual health and relational challenges that autistic individuals face. Tailored interventions should be developed that account for sensory sensitivities, communication difficulties, and the heightened risks of victimisation. While the review does not provide specific data on how the pandemic may have altered these needs, it is reasonable to assume that disruptions in social and healthcare services

during COVID-19 heightened the vulnerability of this population. Clinicians must therefore prioritise interventions that not only address pre-existing challenges but also consider the compounded effects of prolonged social isolation.

5. Conclusions

Although there have been significant improvements and renewed knowledge about the living experience of autistic people, autistic individuals still face significant challenges in their sexual lives due to societal prejudices and a lack of appropriate education. Similar to other marginalised groups and/or because of their belonging to multiple marginalised communities, they are vulnerable to victimization [49]. Furthermore, from the studies analysed, there do not appear to be any elements or references to the COVID-19 pandemic and its influence on the psycho-sexual well-being of this segment of the population. Comprehensive education and support, as well as sexual education programs, are essential for addressing these barriers and improving overall wellbeing [59]. Further research on this topic needs to focus on investigating what would make sexual education for autistic individuals more effective since scientific literature on this topic is rare.

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Abbreviations

ASD Autism Spectrum Disorder

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