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REVIEW

The Face of Autism in Israel

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Abstract: This article seeks to offer a comprehensive perspective on autism in Israel, aligning with global reports. It aims to serve as a foundational resource for policymakers in developing relevant support and point to unmet needs. The data was drawn from publications by Israeli government authorities and academic publications. In 2022, the prevalence of child and adolescent autism in Israel was approximately 1.13%, with a male-to-female ratio of 4:1, and an annual increase of 23%, particularly among young children. In Israel, the diagnosis of autism follows the DSM-5 guidelines and is conducted by a physician and a psychologist specializing in autism. Typically, diagnosis is at age 2. The autism intervention approaches prevalent in Israel are consistent with those that are globally accepted. Children with autism are entitled to special education services adapted to their needs and developmental levels. The legally established package of services for children with autism includes sessions with occupational therapists, speech-language pathologists (SLPs), physical therapists, psychologists, and social workers. Children and adults with autism are eligible for disability allowance along with support regarding residence, educational programs, and employment opportunities. Nonetheless, underdiagnosis and low accessibility to services are common in minority populations and rural areas. Furthermore, in recent years, services for autistic individuals have declined. This decline, particularly considering the ongoing rise in the prevalence of autism, pose significant challenges for Israeli government authorities in ensuring that autistic persons receive appropriate support.

Keywords: autism, prevalence, education, services, sectoral disparities

Introduction

Disseminating information about the prevalence of autism, as well as on diagnostic and intervention services, education, financial support, housing, and employment for autistic persons could significantly influence governmental policy planning of the services offered for autistic children and adults. Only several studies have described the service needs and the existing services for autistic persons across the lifespan. Most reports focus on the services provided to the autistic population in Western developed countries, where resources are readily available.[1–5] However, there is limited published information regarding the availability of services and needs in developing countries, where the field of child psychiatry, including autism, is relatively new. Reports indicate that services for individuals with autism and their families are limited worldwide,[1–5] especially in developing countries.[6–8] Autism was not a subject of interest in the Arab countries until the late 1990s. A lack of awareness, cultural factors, and insufficient resources contribute to the unmet needs of autism patients in the Middle East.[6] For example, most children with ASD in Jordan have limited access to recommended autism services.[7] Even in Oman, an Arab country that has achieved economic prosperity and provides a national health system free of charge to all citizens from birth to death, people with ASD do not receive appropriate services due to severe shortage and maldistribution of facilities.[8] Tremendous effort is needed to raise policymakers' awareness of the necessity of implementation services and research plans to bridge the gap between needs and services worldwide. This effort should be informed by data from both developed and developing countries worldwide, encompassing diverse cultures.

This paper focuses on prevalence of autism and the state of services for children and adults with autism in Israel, a developed Western country neighboring developing countries in the Middle East. It aims to contribute toward filling the

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gap in available information about autism services in this region. This thematic review article uses the terms *autism* and *autistic* consistently, in line with the global trend.[9]

This article aims to delineate comprehensive data gathered from Israeli government authorities responsible for managing and allocating services for individuals with an autism diagnosis and their families. These authorities include the Ministry of Welfare and Social Affairs, the Ministry of Education, the Ministry of Health, the National Insurance Institute and the National Association for Children and Adults with Autism (ALUT). The information collected is supplemented with data extracted from articles published in reputable peer-reviewed journals focusing on various aspects of autism, including prevalence, diagnosis, treatment, and services in Israel, as well as corresponding data from around the world. The article offers insights into the increase in the prevalence of autism diagnoses, the associated needs, the diverse array of services available in Israel, along with an examination of relevant policies in Israel, including unmet needs in this context. By examining both past and future trends and presenting data alongside with identified unmet needs, the article provides recommendations for treatment programs. Treatment programs should aim to deliver high-quality, varied, and appropriate responses to the needs of individuals diagnosed with autism and their families.

Autism is often a lifelong neurodevelopmental disorder characterized by challenges in social communication and the display of restricted and/or repetitive interests and behaviors evident before the age of three years.[9–11] The capacities and needs of autistic individuals vary and may change over time. While some autistic individuals can lead independent lives, others face significant challenges and require lifelong care and assistance. Autism frequently impacts educational and employment prospects, while placing considerable demands on families. The quality of life for individuals with autism is substantially influenced by societal attitudes and the extent of support offered by both local and national authorities. Psychosocial evidence-based interventions have been shown to enhance communication and social skills, thereby positively influencing the well-being and quality of life for both individuals with autism and their caregivers.[10]

The Prevalence of Autism

In 2023, Israel's population reached almost 10 million, with Jews constituting 73%, Arabs (including Muslims, Christians, and Druze) 21%, and the remaining 5% representing other ethnicities. The population growth rate, currently at 2%, is the one of the highest among developed countries.[12]

Recent studies on global autism prevalence exhibit variability.[10–12] A recent systematic review included 71 studies spanning 34 countries from 2012 to 2021, revealing a median prevalence of 1% in children.[13] Salari et al[14] in a meta-analysis of 74 studies from 2008 to 2021, found a combined autism prevalence of 0.6%. Talantseva et al[15] covered 85 articles from 1994 to 2019 across 29 countries, showing variations, with the United States having the highest prevalence at 1.12%. Higher prevalence tends to correlate with a high socio-demographic index.[16] In Israel, the estimated prevalence of autism in children and teen-agers during 2021–2022 was approximately 1.13%,[17] aligned with the United States.[15] Reports on prevalence of ASD in Arab countries range from 0.2% to 1.49%. This wide range may have resulted from the varying methodologies and inclusion criteria used in these studies.[18] Data from 21 countries in North Africa and the Middle East showed age-standardized prevalence rate of 0.3% in 2019, with the highest in Iran (0.37%), and United Arab Emirates (0.33%), and the lowest in the Syrian Arab Republic (0.28%), Yemen (0.29%), and Libya (0.29%).[19] The prevalence of autism among children aged 0–14 was found to be 0.2% in Oman.[20] However, there are reports of higher prevalence of autism in the Middle East, similar to that of Israel, such as Kingdom of Saudi Arabia (0.59%),[18] Qatar 1.1%,[18] Egypt (1%),[21] Jordan (0.92%),[22] and Lebanon (1.49%).[23]

The male-to-female ratio in Israel is 4:1,[17] which is consistent with global ratios.[24] The prevalence rate in North Africa and Middle East was found to be 2.9 times greater in males compared to females in 2019. The suggested explanation for the relative scarcity of females is that they are more likely to be overlooked, misdiagnosed, or diagnosed later.[19]

International reports indicate a consistent rise in the prevalence of autism.[15,16,25,26] The Autism and Developmental Disabilities Monitoring (ADDM) Network noted a 243% increase in autism prevalence among 8-year-olds in the United States from 2000 to 2018.[15] In Sweden, there was an increase of nearly 3.5 times in autism prevalence among 2–17-year-olds from 2001 to 2011.[26] Solmi et al[16] reported a global increase of 39.3% in autism prevalence from 1990 to 2019, particularly in countries with high socio-demographic indexes. The number of prevalent cases of ASD in North Africa

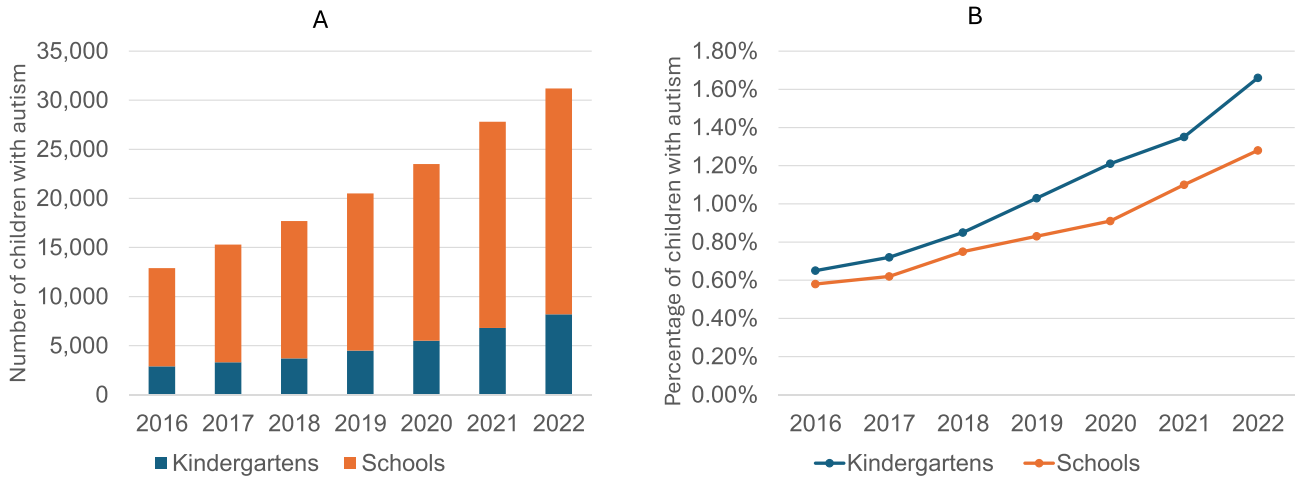

Figure 1 Change of students with autism in kindergartens (ages 3–6) and schools (ages 6–21) from 2016 to 2022. (**A**) The number of students with autism; (**B**) the percentage of students with autism out of all students (The figures were generated using data obtained from Ministry of Education's wide view system).

and Middle East increased by 70% between 1990 and 2019.[19] In Israel, autism prevalence mirrors global trends, with a notable increase in recent years.[27,28] (Figure 1). Davidovitch et al[28] analyzed data of 879,029 children born between 1999 and 2017, which revealed a significant rise in the incidence of autism by age 8. The prevalence has surged by 128%, averaging a 23% annual increase.[17] Projections suggest continued growth in the number of individuals on the autism spectrum. Surveys within the Israeli education system confirm a consistent uptrend in both the overall number of students diagnosed with autism and their proportion in the student body, especially in kindergarten and preschool age groups.[29]

Similar to the United States, the increased prevalence in Israel may not represent a true rise but rather changes in diagnostic criteria, methodologies, increased access to services, and heightened awareness of autism.[15] It has also been suggested that the increase in diagnosed autistic cases in Israel is not solely due to a shift towards younger ages at first diagnosis but rather the detection of previously undiagnosed cases.[28] In addition, advancing paternal age[30] and, to a lesser degree advancing maternal age[31] are also associated with increasing risks of autism. The increase in the prevalence of autistic individuals over time can also be attributed to greater awareness of autism within both professional and non-professional communities, along with the growing acceptance that autism can coexist with other developmental disorders.[29] To note that there is no available data on the co-occurrence of autism and intellectual disability in Israel.

By 2023, at least 46,000 individuals in Israel had been diagnosed with autism, each requiring diverse and adapted support and services throughout their life cycle.[17]

State Services for Autistic Persons in Israel

In Israel, numerous government offices and organizations play a role in decision-making, policy planning, education, and delivering services to individuals with autism. The Ministry of Health establishes policies for the diagnosis and treatment of autistic persons and oversees the implementation of these policies. Health Management Organizations (HMOs) and child development institutes within hospitals are accountable for conducting assessments and delivering various para-medical services to individuals with autism. The Ministry of Education is responsible for developing and implementing educational frameworks specifically tailored to address the needs of students with autism. The National Insurance Institute provides persons with autism a monthly disability allowance. The Ministry of Welfare and Social Affairs is responsible for the provision of welfare services for both children and adults with autism, including rehabilitation daycare for toddlers (0–3) and residential and employment support for adults.[17]

In addition to government authorities, various additional organizations provide support for individuals with autism and their families in Israel. The largest of these organizations is ALUT, the National Association for Children and Adults with Autism. ALUT plays a crucial role in disseminating comprehensive information about rights and therapeutic resources and provides a strong support network for both children and adults with autism and their families.[17]

Diagnosis

In Israel, a diagnosis of autism is considered "recognized" by authorities when it aligns with the guidelines established by the Ministry of Health. A *recognized autism diagnosis* serves as a prerequisite for accessing services related to education, health, welfare, and disability allowance. Children diagnosed with autism are entitled to diagnostic and treatment services in the field of child development from the time of diagnosis until they reach the age of 18. These services fall under the responsibility of the HMOs and are primarily offered through two types of institutions distributed across the country; diagnosis and treatment are primarily administered in child development institutes. If the HMOs cannot provide the necessary services within three months from the date of diagnosis, the insured individual is entitled to partial refunds to seek the service privately.[31]

Children undergo diagnosis at child development institutes by medical practitioners falling into one of the following categories: a child and adolescent psychiatrist specializing in neurology and child development, or a developmental pediatrician with a minimum of three years' experience in identifying developmental challenges. Additionally, a qualified clinical psychologist, developmental psychologist, rehabilitation psychologist, or an educational psychologist, should also be involved in the diagnostic process. In Israel, the diagnosis of autism follows the guidelines outlined in DSM-5 and requires agreement between the physician and the psychologist. At the end of the diagnostic process, two letters certifying the diagnosis must be obtained —one from the physician and one from the psychologist.[32] Other professionals may also be involved in determining in certain diagnoses. For example, speech-language pathologists (SLPs) may play a role in evaluating language and communication abilities,[33] while occupational therapists contribute to the assessment of sensory sensitivity. The diagnosis of autism in adults (over the age of 18) should be performed by both a psychiatrist and a psychologist who specialize in the diagnosis of autism. Diagnoses are performed in private diagnostic institutes that are recognized by the state.[32]

As mentioned above, the diagnosis of both children and adults follows the guidelines outlined in the DSM-5.[10] It involves assessment criteria and their respective severity levels in specific domains outlined in the DSM-5, including communication and social interaction (comprising three criteria) and repetitive behavior (comprising four criteria). Within the realm of *communication and social interaction*, the presence or history of all the following symptoms is necessary for diagnosis: impairments in social or emotional interactions, ranging from abnormal social attitudes and difficulties in maintaining conversations to limited sharing of interests and feelings. This extends to an inability to initiate and respond to social interactions. Deficiency in non-verbal communication for social interaction can manifest itself in various ways, such as abnormal eye contact and body language, difficulty interpreting gestures, or even the total absence of facial expressions and non-verbal communication. Challenges in developing, sustaining, and comprehending relationships can present in various forms, including struggles in adjusting behavior to diverse social situations, limited engagement in imaginative play, and a lack of interest in forming friendships. In the domain of repetitive behavior, a diagnosis necessitates the current or past occurrence of at least two of the following criteria: repetitive motor activities, repetitive use of objects, or repetitive language patterns.[2]

Persistence and rigidity in behavioral patterns, such as experiencing distress over minor changes, adhering to rigid thinking, following a fixed walking path, or displaying pickiness in food choices. Additionally, persons with autism may have limited or specific interests, exemplified by an excessive focus on unconventional objects, excessive or inadequate responses to sensory stimuli, or an atypical fascination with a particular sensory aspect of the environment (such as a lack of reaction to pain or temperature, an aberrant response to sound, or an overuse of smell or touch). The level of challenge in each section should be evaluated as either *mild, moderate*, or *severe*.[32]

To classify an individual as autistic, it is essential to confirm that the symptoms manifested early in development are causing substantial challenges in social or occupational functioning and are not attributed to a deficiency in intelligence. In the case of children with both autism and developmental intellectual disability, their social competence should be lower than expected based solely on the level of intellectual disability.[32]

The MULLEN tool may be employed to diagnose developmental/cognitive assessments of children up to the age of 3. If clinicians are unfamiliar with this tool, alternatives such as BAILEY-III or BAILEY-II can be utilized. Between the ages of three and seven, cognitive diagnosis involves using the WPPSI-III. If it is not feasible to administer the WPPSI,

alternative cognitive tests should be administered depending on the individual's age and capabilities. Beyond the age of 6, the WISC-IV should be used for cognitive assessment. For functional assessment, either VINELAND-II or ABAS-II should be employed.[32]

To evaluate symptoms of autism, it is essential to incorporate detection and assessment questionnaires, including surveys for parents (such as CARS-2, SCQ, SRS-2) and reports from educators (such as SRS-2). Additionally, diagnostic tools such as ADOS and ADI-R should be used, contingent on the need and the availability of appropriate training. Psychological diagnostic tools are exclusively administered by a psychologist. Since these tools are regularly updated, the most recent versions must be utilized.[33]

The typical age of diagnosis for children with autism reported by SLPs in Israel is 2 years of age. Some children are diagnosed by the age of 3, while others are diagnosed before the age of two.[34]

Intervention

Various autism intervention approaches are prevalent in Israel today, with endorsed approaches aligned with those that are accepted globally.[35,36] Within Israel's health and education frameworks, only behavioral/educational interventions are accepted, as no medication is currently prescribed as a solution for autism. However, sedatives and sleeping pills can be employed.[37] The intervention approaches prevalent in Israel include Applied Behavioral Analysis (ABA), Developmental, Individual, Differences, Relationship-based Approach (DIR), Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH), the Early Start Denver Model (ESDM), the Naturalistic Developmental Intervention (NDI), and the Social Thinking Methodology (STM).[37,38] The last two approaches (NDI and STM) are particularly common in Israel. It is essential to acknowledge however, that therapists often integrate principles from diverse treatment methodologies, thus rendering it challenging to categorically identify treatments based on distinct approaches. A diverse range of paramedical treatments is available in Israel including interventions led by speech-language pathologists (SLPs), occupational therapy, psychological treatment utilizing various methods, physical therapy, art therapy, music therapy, therapeutic horseback riding, and hydrotherapy. These interventions are provided within educational and healthcare settings, as well as through private practice. Some treatments may qualify for reimbursement by HMOs.[37]

Health Services

The legally defined package of services for children with autism includes three healthcare interventions per week, totaling 156 intervention sessions per year. These interventions comprise occupational therapy, physical therapy, psychology, and treatment by SLPs and social workers. The primary goal of these interventions is to enhance cognitive, language, emotional, and communication skills, aiming to optimize the child's development, emotional resilience, and social functioning, while reducing their future dependence on external assistance. In recent years, there has been a notable increase in the number of children with autism (ages 0–18) insured by the largest HMOs, rising from 18,500 in 2019 to 23,500 in 2020, and reaching 28,300 in 2021.[31]

The data reveal that the distribution of paramedical treatments for children with autism varies with age. In the year 2021, young children primarily received interventions in the fields of social communication and occupational therapy, while more mature children received a higher rate of psychological treatments (Figure 2). This pattern is likely due to the fact that interventions by SLPs and occupational therapists focus on developing fundamental skills crucial in the early developmental stages, such as speech, language, social communication, independence, and learning skills. Conversely, older children with autism require a more comprehensive response to their emotional needs as they grow, including support for processing emotional processes related to self-identity and coping with social challenges.[17] Additionally, over time, a significant number of children with autism develop concurrent mental illnesses, such as anxiety disorders or attention deficit disorder.[39]

Education

Children diagnosed with autism are entitled to special education services that are tailored to their needs and adapted to their developmental levels. These services are crucial in providing appropriate support to help children with autism thrive academically, socially, and emotionally. Special education services for children with autism typically include

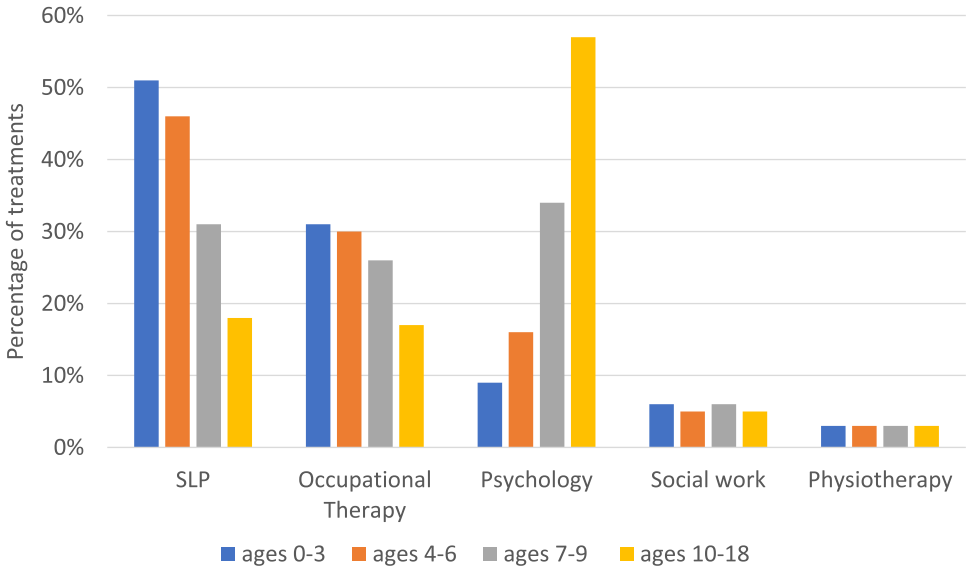

Figure 2 Types of treatments (SLP, Occupational Therapy, Psychology, Social work, and Psychotherapy) according to age group given to children with autism aged 0–18 years in the HMOs in Israel, 2021. The figures were generated using data obtained from health insurance re.

individualized education plans or similar personalized plans that outline goals, accommodations, and support strategies tailored to each child's unique strengths and challenges. These services may involve specialized teaching methods, interventions, therapies, and accommodations to facilitate learning and development. Additionally, educators and other professionals working with children with autism often collaborate closely with parents and caregivers to ensure continuity of support between home and school environments.[17]

Children aged 0–3 with autism fall under the responsibility of the Ministry of Welfare and Social Affairs, which is mandated to ensure their access to specialized rehabilitation daycare centers tailored to meet their distinct requirements. There are several alternatives available, including specialized rehabilitation centers for autism, which are staffed by professionals from the fields of education and health, offering comprehensive healthcare services for toddlers. Additionally, there are multi-handicapped rehabilitation daycare centers that, while not exclusively designated for autism, can also provide support. Another option involves individual integration into a standard daycare center, with the assistance of an integration aide.[40]

Students with autism aged 6–21 fall under the responsibility of the Ministry of Education. They can study in one of three education streams: (1) dedicated settings; (2) non-dedicated special education settings; (3) individual integration. In dedicated educational settings for students with autism aged 3–6, instruction takes place in communication kindergartens. A communication kindergarten is a specialized educational facility designed to meet the needs of young children diagnosed with autism. These kindergartens typically have five to eight children and are staffed by a special kindergarten teacher and an assistant. Meanwhile, students aged 6–21 receive education in schools dedicated to autism comprising a minimum of four classes, each of which consists of only five to eight students, along with increased staff support. Alternatively, students in this age group may opt for communication classes. A communication class is a special education class within a general or special education school, designed to meet the needs of students diagnosed with autism. These classes typically have five to eight students and are staffed by a special education teacher and an assistant. Non-dedicated special education settings are not dedicated for students with autism. Rather, they are designed for students who also have other special needs. Individual integration takes place in mainstream settings. For students with autism between the ages of 3 and 6, this entails joining regular preschool and kindergarten classes alongside typically developing peers. For students with autism aged 6–18, integration takes place in standard classrooms within mainstream educational institutions. Figure 3 presents the segmentation of students with autism according to educational frameworks in 2022, distinguishing between preschoolers and school-age children from age six to eighteen.[29]

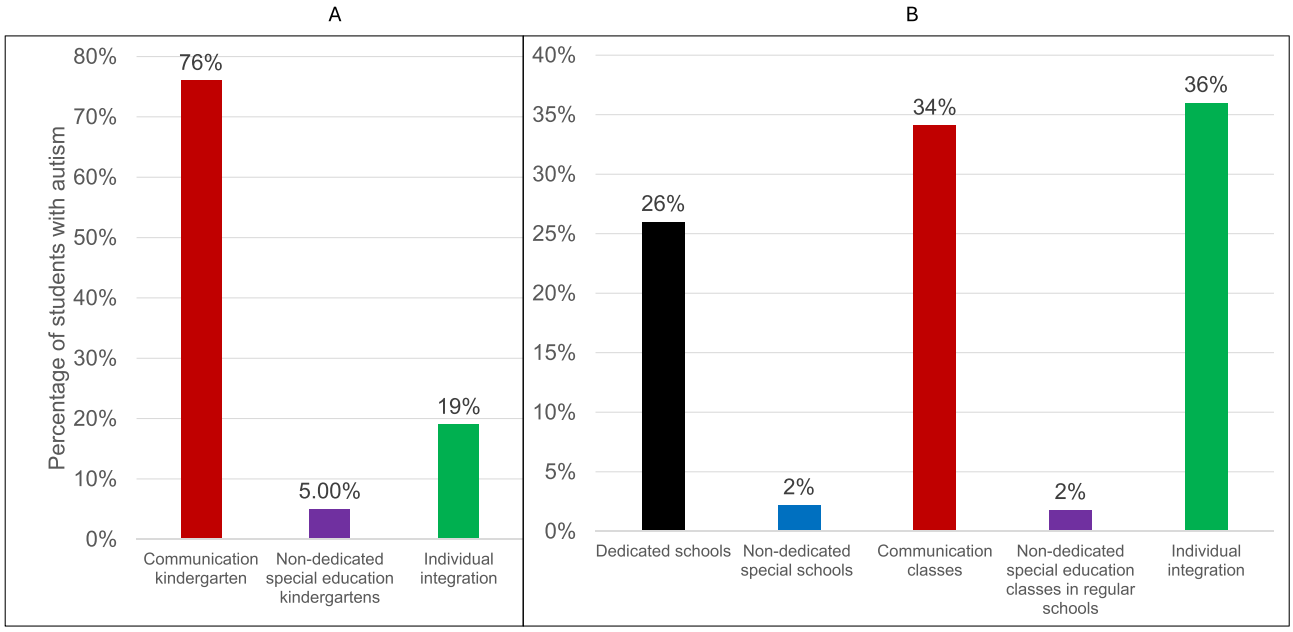

Figure 3 Students with autism – segmentation according to educational frameworks in 2022: (**A**) preschoolers; (**B**) school-age children (6–18 years of age). The figures were generated using data obtained from Ministry of Education's wide view system.

Across all settings, an individualized educational-therapeutic program is tailored to each student, encompassing weekly hours dedicated to teaching, treatment, and support. The support network consists of education and teaching professionals, including teachers, kindergarten staff, and assistants, along with caregivers from the health professions. In recent years, alongside the rise in the number of students with autism, there has been a corresponding increase in the availability of dedicated frameworks catering to these students.[29]

In 2019, Israel implemented a special education reform. Under this reform, the process of placing students in special education services is carried out through *Eligibility and Characterization Committees*. Parents have the right to choose the type of educational setting for their child, and a personal budget is allocated based on the child's needs, according to the budget follows the child approach.[41] One of the key principles of this reform was to promote the individual integration of students with special needs, including those with autism, into mainstream educational settings. This approach is grounded in the consensus among researchers and educators regarding its positive impact on both the personal development of many children and society as a whole.[42] It is worth noting that despite the intentions underlying this reform, there has not been a significant increase in the proportion of students with autism integrated into mainstream educational settings, particularly among preschool children.[43]

In 2022, the majority of preschoolers diagnosed with autism (76%) attended communication kindergartens, with 19% integrated into mainstream settings, and 5% enrolled in non-dedicated special-education kindergartens. Among school-age children with autism in the same year, 36% underwent individual integration, 34% participated in communication classes, and 26% attended specialized schools.[29]

Disability Allowance

In Israel, both children and adults are eligible for disability allowances provided by the National Insurance Institute. To qualify for these allowances, it is important to note that the average monthly salary in Israel for the year 2024 is $3,500. As of 1.1.2024, children up to the age of 18 are eligible for a disabled child allowance, with amounts ranging from $915 to $2,127 per month. The specific amount depends on the child's degree of dependency in areas such as eating, personal hygiene, and mobility.[44] According to National Insurance Institute data, the percentage of children aged 0–18 with autism receiving an allowance has increased from 0.43% in 2017 to 1.05% in 2021. It's noteworthy that the majority (93%) of these children receive the lower allowance.[14] Individuals aged 18 and above with autism may qualify for a general

disability allowance, which is distinct from the allowance applicable to children with autism. As of 2024, this general disability allowance amounts to $1,100 per month.[45]

Residence

While the majority of neurotypical young individuals leave their parents' homes and move into housing for independent living during early adulthood, the types of living arrangements become a crucial concern for those with autism and their families. Choosing the type of housing is especially important in families of individuals with autism because those parents, far more than parents of children with typical development, play a more substantial role in their children's lives, supporting them, continually providing support, and ensuring they receive services tailored to their needs.[42,43] In some countries, various housing options are available for individuals with autism, including family-based living and out-of-family living. The latter includes independent living, supervised community living, or other residential arrangements.[46] Research indicates both advantages as well as disadvantages associated with each housing option concerning the quality of life and well-being of adults with autism and their families.[46,47] Intriguingly, data from Seltzer et al[48] (2000) reveals that only one quarter to one third of adults with autism in their 30s still reside with their parents, in contrast to approximately 60% of individuals with other intellectual disabilities who continue living with their parents into adulthood.[49] It is important to note that this information is based on older data, and no updated data was found.

In Israel, in addition to family housing, the Ministry of Welfare and Social Affairs oversees the residential arrangements for teenagers aged 12 and above and adults with autism. The primary options include: (1) residential frameworks offering continuous support and care in a 24/7 format for tenants requiring ongoing assistance; (2) community-supported housing tailored for tenants capable of leading an independent life in the community but still requiring some level of guidance and support; and (3) intensive supported housing, resembling the supported housing program but specifically designed for persons in need of intensive support. We found no data on the utilization rate of the various types of housing in Israel.[40]

Educational Programs

As outlined in the Individuals with Disabilities Education Act, the primary aim of public education is to prepare individuals for employment [Individuals with Disabilities Education Act Amendments]. Therefore, appropriate educational programs for autistic persons may play a crucial role in preparing them for occupational integration.[50]

In Israel, various educational programs are available for young autistic persons. Each program features a distinct study model tailored to furnish students with the necessary tools and support, aiming to enhance their education, skills, realize their potential, and acquire a profession. For example, the "Diamond Program" at Tel-Aviv University aims to establish an academic and social infrastructure to support the integration of high-functioning students with autism.[51] This includes creating personalized plans to cater to each student's unique needs. The main focus of the project is on helping these students adapt to and become part of both the academic and social aspects of university life. This support includes evaluating the potential for educational adjustments and offering personal guidance by fellow students on campus. The emphasis is on equipping these autistic students with the skills and tools they need to cope independently and pursue their education. This tailored support is expected to significantly enhance the students' independence and self-confidence and, in the long term, increase their prospects of entering the job market.[51] Similar programs exist at Ariel University and the Hebrew University in Israel. Ono Academic College also offers two specialized initiatives for young autistic persons. One of these is a Bachelor of Arts degree program in business administration, which combines academic learning with a support system. This program covers various specializations, including information systems, finance, and accounting. The support system includes gradual deployment of the curriculum, small practice groups, personal and group support of the program coordinators, academic mentoring and more.[52] The second initiative is a "music enrichment program" designed for autistic persons who have a passion for music. Participants in this program learn essential musical theory, engage in collaborative music-making, and explore various musical styles.

In addition, several Israeli colleges offer the program *Being a Student*, designed for persons with disabilities who may not meet the criteria for full-time student status. This initiative provides them with opportunities for academic studies within institutions of higher education. The curriculum is tailored to each participant's specific needs and requirements.

Employment

Engaging in employment allows both persons with and without disabilities to earn wages, support themselves, and pursue their interests.[50] Employment serves as a platform that fosters personal dignity and has been shown to enhance the quality of life for autistic persons,[53] along with improving cognitive performance.[54] Obtaining and maintaining employment can be difficult for any person but is particularly complicated for an adolescent or adult with autism due to unique communication and social impairments.[55] Various employment options are available for autistic persons that include segregated workshops, supported employment, and competitive employment.[56] The outcomes of supported and competitive employment are far superior to sheltered workshop or other day service options in terms of financial gains, wider social integration, and worker satisfaction.[57] There is evidence that supported and competitive employment exhibit advantages over sheltered workshops or other day service alternatives in terms of financial gains, social integration, and worker satisfaction.[57]

According to Israeli law, an employer with over 100 employees is obliged to provide appropriate employment, which would mean that 3% of the company's employees would be employees with disabilities, including persons with autism. Unfortunately, most employers still do not meet this requirement.

The Israeli Ministry of Welfare and Social Affairs is responsible for adapted employment frameworks for autistic persons. Graduates with autism from the ages of 18 or 21 until retirement age are eligible for employment services suitable to their skills. The main options are: (1) therapeutic-rehabilitative day centers, where persons who cannot integrate into the labor market acquire work skills, social skills, and life skills through a variety of occupations (such as in factory jobs and creative workshops); (2) protected factories, the purpose of which is to bring about the development of occupational skills and integration into the labor market; and (3) group or individual integration into workplaces in the community accompanied by rehabilitation support ("supported employment"). There are various employment opportunities that allow persons with disabilities, and specifically, those on the autistic spectrum, to integrate into the labor market, and engage in a field suited to their ability, for example, integration into the world of high-tech and software testing as offered by the *It Works* program.[58]

Military Service

Young persons in Israel are typically required to serve in the military when they reach age 18 years. Although young persons with autism are exempt from compulsory military service, some autistic persons voluntarily choose to serve in the military, considering it a right and an opportunity to contribute to their country and better integrate into Israeli society. These volunteers serve in various roles, such as software testers, network administrators, intelligence researchers, photographers, and video editors, showcasing their dedication to service and integrating into their nation's defense and society.

Additional Support Options

Children and adults diagnosed with autism who reside in their parents' homes are eligible for additional support services from the Ministry of Welfare and Social Affairs. These services comprise a range of options, including a personal aide in the family's home, as well as participation in various types of clubs aimed at enhancing their skills and well-being. There are several types of clubs, including rehabilitation clubs designed for individuals aged 5 and above, social clubs tailored for those requiring lower levels of support, and employment clubs that offer supplementary programs for autistic persons residing in the community. Additionally, children and adolescents with autism between the ages of 5 and 21 can take part in day camps during summer vacations and holidays, which operate on a daily basis without overnight accommodation. Furthermore, autistic persons of all ages, including both children and adults, have the right to partake in year-round vacations that include leisure activities, accommodation, and full board.[58]

ALUT, the Israeli National Association for Children and Adults with Autism, plays a crucial role in advocating for the well-being and advancement of autistic persons. ALUT's mission extends from early diagnosis through adulthood, including old age. The association is dedicated to championing the rights of over 20,000 autistic persons and offers steadfast support to their family members. ALUT's efforts are in three key areas. Firstly, they advocate for the rights of both children and adults with autism, as well as their families. Secondly, they are actively involved in establishing,

operating, and expanding services that are tailored to the needs of children and adults with autism and their families. Lastly, ALUT is committed to advancing knowledge and fostering research in the realm of autism. Through these initiatives, ALUT makes a significant contribution to the well-being and development of autistic persons and their families in Israel.[17]

Current Gaps in the Care of Autistic Persons in Israel

The prospects for policy planning, education, and service delivery for autistic persons in Israel appear promising. However, the state's commitments to these services are often not fully met. Children with special needs, including autistic children, currently wait many months for diagnostic and treatment services,[59] and this is despite the considerable contribution of early intervention to the development of autistic children.[54] Furthermore, in the year 2021, only 12% of the allied health services that autistic children and teenagers (ages 0–18) were entitled to as part of the child development package were actually received by them from the HMOs. Among those insured in the 7–18 age range, 63% did not benefit from any treatment facilitated by the HMOs. Instead, many parents had to pay for private treatments out of their own pocket.[60] A key factor in this situation is the shortage of healthcare therapists within the public health system, including SLPs, occupational therapists, physiotherapists, and psychologists. This shortage can be attributed to relatively low salaries and inadequate personnel standards in public service as noted in a report by the Prime Minister's Office. Furthermore, this shortage is expected to increase in the coming years and will have implications for both healthcare and educational settings.[61]

Within the education system, there are also significant gaps, such as a lack of dedicated educational frameworks for autistic students. As a result, many students in these settings experience overcrowded conditions, impeding the fulfillment of their educational and therapeutic needs.[29] Reports by local authorities underscore a significant number of violations within the education system, particularly with regard to non-compliance with standards, especially concerning student quotas (eight students per kindergarten or school class).[17] Within the education system, there is also a shortage of personnel including educators,[42,61] and healthcare therapists.[62] Subsequently, in 2021, many communication kindergartens and communication classes were not provided with the required package of health care services. It thus appears that while adequate health services are essential for the development and the advancement of a child on the autism spectrum, children and youth receive limited publicly funded healthcare services.[17]

Sectoral Disparities

Reports by the Ministry of Education,[29] the Ministry of Welfare,[58] the Ministry of Health,[32] and the National Insurance Institute,[17] indicate that there is a lower prevalence of autism and fewer requests for services in the peripheral regions of Israel and among minority groups, including religious sectors. This may indicate underdiagnosis and less use of services, including appropriate educational and paramedical interventions in low socioeconomic sectors. This observation in Israel aligns with reports from numerous Western countries indicating that the prevalence of autism,[2,63,64] and service use among autistic children and their families,[65,66] are linked to sociodemographic disparities.

Within the Israeli education system in 2021, students with typical developments were classified according to the six recognized sectors within Israeli society: state education (secular, Jewish), Arab (including Bedouin), Druze and Circassians, religious state education, and ultra-Orthodox education (Figure 4A). Students with autism were then classified according to the same six education sectors within Israeli society (Figure 4B). The comparison between these two classifications revealed several noteworthy patterns. In 2021, the percentage of students with autism in Jewish state education, out of the total of students with autism (Figure 4B), exceeded the percentage of typical students in Jewish state education, out of all students in the education system (Figure 4A). Conversely, all other demographic groups are shown to be underrepresented in the overall population of students with autism (Figure 4B). For instance, in ultra-Orthodox education, there was a representation gap of 10% for autistic students, despite the fact that this education sector comprises 20% of the general student population. In total, the representation disparities amounted to 16% when considering ultra-Orthodox and state religious education together, and 14% in the Arab, Bedouin, Druze, and Circassian sectors combined. Thus, it appears students with autism are underrepresented among religious populations and minority groups.[29]

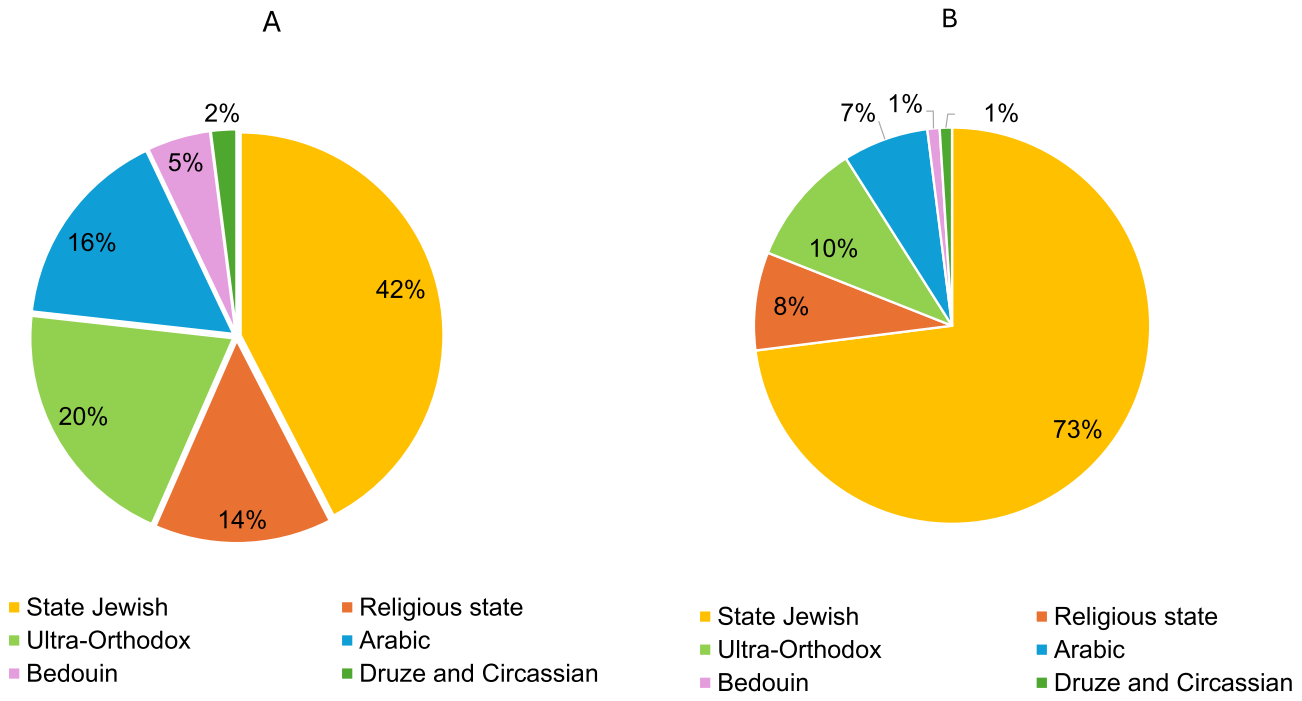

Figure 4 Segmentation by sector within the education system (2021). (**A**) The proportion of students from each sector: (State-education (Secular Jewish), Arab (including Bedouin), Druze and Circassians, Religious state education, and ultra-Orthodox education) out of all students within the education system. (**B**) The proportion of students with autism from each sector out of all students with autism within the education system. (The figures were generated using data obtained from Ministry of Education's wide view system.

Moreover, a higher severity of morbidity was observed in the Arab population.[56] A greater proportion of children with severe autism and mental retardation was noted among Arab children, while Jewish children exhibited a higher prevalence of mild autism. Additionally, Arab families tend to experience a higher occurrence of multiple children with autism within the same family compared to Jewish families. Researchers attribute these disparities primarily to the higher prevalence of consanguineous marriages in the Arab sector, leading to an increased prevalence of hereditary disorders within this population.[60] Furthermore, it was observed that in the Jewish sector, kindergarten teachers and caregivers demonstrate greater awareness in identifying signs of autism, often raising suspicions even before pediatricians. In contrast, in the Arab sector, it is more common for medical doctors to be the first to suspect autism.[67]

Underdiagnosis in minority groups can be accounted for by low awareness of autism, limited accessibility to services, physical, linguistic, cultural, social barriers related to community norms, and the meaning of diagnosing autism and associated stigmas.[28,68,69]

These disparities extend beyond the mere prevalence of autistic persons; they also manifest themselves in the percentage of those with autism who receive disability allowances from the National Insurance Institute and services from the Ministry of Welfare and Social Affairs. Data from the National Insurance Institute for the year 2021 reveals that the rates of those receiving a disability allowance for autism were considerably lower in peripheral areas with high concentrations of children from minority groups, such as Arabs, Bedouin, Druze, and others. Additionally, there were notably low rates of utilization of services provided by the Ministry of Welfare and Social Affairs in localities predominantly inhabited by minority groups.[40]

Moreover, the proportion of autistic persons accessing social services is less than their percentage in the population. In 2021, only 41% of children and youth with autism aged 0–18 were identified and registered with the Ministry of Welfare and Social Affairs. Among those recognized by the ministry, 62% did not take advantage of their entitlement to welfare services, which include rehabilitative daycare centers for toddlers, leisure facilities, community services, housing, and employment support. This low rate of accessing welfare services among children and adults with autism in Israel represents a significant obstacle to their integration and advancement within society. Several factors contribute to

this pattern, such as limited-service availability, services not fully meeting their needs, and concerns about being stigmatized as welfare recipients.[58]

These data findings for Israel are consistent with findings for different areas all over the world, highlighting the fact that notable unmet needs are most prevalent among minority populations and in rural settings.[2] Various factors could contribute to the disparities observed in access to support and services for autistic persons across different sectors. This might involve limited accessibility to welfare services in peripheral settlements, low awareness of available services within these minority communities, and a potential mismatch between the services offered and the unique cultural characteristics of these communities.[58]

Conclusions and Recommendations

The findings regarding the prevalence, achievements, and challenges presented in this report are similar to those faced by other Western countries. In Israel, in the year 2022, the estimated prevalence of autism among the population of children and teenagers was approximately 1.13%. This prevalence is comparable to that observed in the United States. In recent years, the number of children with autism has increased by about 128%, with an average annual increase of 23% in the number of children diagnosed with autism. It is anticipated that the prevalence will continue to increase in the years ahead. Israel's policies concerning the diagnosis, education, and rehabilitation of autistic persons are generally positive. State laws comprise support obligations in various areas, including diagnosis, intervention, education, financial assistance, residence, employment, personal tutoring, skill-enhancing clubs, day camps, and full-board vacations for autistic persons. However, due to budget limitations and a shortage of professional personnel, not all state commitments are fully realized. A report detailing a discussion within a committee of the Israeli Knesset (Parliament) has just been released. The discussion revolved around new data revealing a sevenfold increase in the number of children with autism within the education system over the past decade. Conversely, the deficit of educational staff and healthcare professionals equipped to handle this increase in prevalence has escalated.[70] This shortage of professional personnel is also a concern in other developed[1–5] and developing[6–8] countries experiencing an increasing demand for healthcare professionals while not expanding budgets for public service employment.[1–8]

Moreover, noticeable discrepancies in diagnosis and suitable support are apparent within minority populations and rural regions. This suggests that in these regions, diagnosis may be delayed, and essential rehabilitation services, including employment and housing, are limited.

This data poses substantial challenges for Israeli government authorities in ensuring autistic persons receive adequate support. Specifically, within the education system, addressing these challenges involves establishing additional dedicated educational frameworks and devising customized models within existing structures to address the growing number of students with autism and their diverse needs. Considering alternatives like group treatments is one example. Furthermore, it is suggested that individual integration in mainstream educational frameworks be encouraged by providing these frameworks with appropriate incentives, training educational teams, and adapting the frameworks to meet the needs of students with autism.[17]

To address the long queues for diagnosis and intervention, it is recommended that the child development services, and the dedicated allocation of budgets and diagnostic and treatment services be expanded.

To tackle the shortage of educational staff and healthcare professionals, it is worth exploring the potential of expanding programs in academic institutions dedicated to autism, within departments of education and healthcare professions. Additionally, it is advisable to introduce incentives for persons entering healthcare professions in public service, such as perseverance grants and scholarships, especially in the geographic and social periphery.[17]

To address the disparities in diagnosis, treatment, and support across sectors, it is advisable to allocate resources differentially based on district-specific requirements. This approach aims to enhance the range of services, education, health, and welfare provided in peripheral areas, ensuring their adaptation and accessibility to diverse populations. Moreover, in addition to efforts to raise awareness among these populations an in-depth examination should be conducted of the diagnostic and treatment systems in minority sectors. To achieve this, educational teams and healthcare professionals should be trained to act effectively within multicultural communities. Moreover, it may be crucial to recruit influential individuals in each community to support the processes of changing social attitudes towards autism.[17]

Tele-services utilizing telecommunication equipment present a potential solution to reach individuals with autism and their families who would otherwise be unable to access necessary services due to distance or a lack of available resources. Structured tele-practice modules have been found to be effective, low-cost, and promising method for conducting and completing online assessments, diagnoses, and intervention sessions. This approach allows parents, caregivers, and educators to act as facilitators in supporting treatment delivery.[71] To implement this solution, the state needs to provide efficient infrastructure and remote communication equipment to the families of persons with autism, particularly those from low socioeconomic status (SES) backgrounds living in peripheral areas.

It appears that in the near future, a promising solution to address long queues for diagnosis and intervention, as well as the limited accessibility of services for families in remote areas, is the use of in-home diagnosis and intervention powered by Artificial Intelligence (AI) and/or Extended Reality technology. These services would be guided by professional therapists, either in person or remotely. AI has been increasingly applied in the assessment[72] and treatment[73] of people with autism. AI technologies can enhance early diagnosis,[72] personalize treatment plans,[73] and improve the quality of life for individuals with ASD and their families.[74] Virtual Reality technology offers a virtual environment to enhance children's social, communication, and self-regulation skills.[75] In the future, both paramedical teams as well as educators are anticipated to incorporate AI and virtual reality for the benefit of people with ASD. The implementation of these technologies can simplify and accelerate assessments, enable self-practice, and consequently can decrease the number of face-to-face interventions required, thus alleviating the strain on systems that support individuals with autism.

Addressing the challenges in delivering services to individuals with autism by adopting the suggested solutions, along with other future innovations, is essential for enhancing the support and opportunities available to autistic persons in Israel.

Ethics Approval and Informed Consent

This thematic review manuscript delineate data gathered from Israeli government authorities responsible for managing and allocating services for autistic persons and their families and data extracted from articles published in reputable peer-reviewed journals focusing on various aspects of autism. Therefore, ethics approval for this thematic survey manuscript is not required.

Disclosure

The authors report no conflicts of interest in this work.

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