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RESEARCH ARTICLE

Large increase in ASD prevalence in Israel between 2017 and 2021

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Abstract

Accurate estimation of annual changes in autism spectrum disorders (ASD) prevalence is critical for planning the expansion of diagnostic, education, and intervention services at an adequate rate. Previous studies from Israel have reported that ASD prevalence among 8-year-old children has increased from estimates of 0.3% in 2008 to 0.65% in 2015 and 1.3% in 2018. Here, we analyzed data acquired from the National Insurance Institute of Israeli (NII), a governmental organization that approves and monitors all ASD children who receive welfare services in Israel, and Clalit Health Services (CHS), the largest Health Maintenance Organization in Israel that provides health services to ~52% of the population. Data from both sources included annual data files from 2017 to 2021 containing the number of ASD cases per year of birth for 1–17-year-old children. This allowed us to estimate annual ASD prevalence among 3.5 million children born between 2000 and 2020 in Israel. Both data sources revealed a nearly two-fold increase in ASD prevalence among 1–17-year-old children from 2017 to 2021. Estimated prevalence rates differed across age groups with 2–3-year-old (day-care) children increasing from 0.27% to 1.19% (>4 fold change), 4–6-year-old (pre-school) children increasing from 0.8% to 1.83%, and 8-year-old children increasing from 0.82% to 1.56% in NII data. These results demonstrate that autism prevalence continues to increase in Israel with a shift towards diagnosis at earlier ages. These findings highlight the challenge facing health and education service providers in meeting the needs of a rapidly growing autism population.

Lay Summary

What is the prevalence of autism in children of specific ages and how has it changed from 2017 to 2021 in Israel? This national study of ~3.5 million children, 1–17-years-old, revealed that overall autism prevalence has doubled while prevalence in 2–3-year-old children has increased by a factor of 4.4. These results demonstrate that autism prevalence is increasing rapidly in Israel, particularly at young ages. These findings highlight the need for expanding the availability of services and interventions that will match prevalence changes with a specific focus on early development, where the intervention may have larger impact.

KEYWORDS
ASD, autism, diagnosis, epidemiology, incidence, Israel, prevalence, time trends

INTRODUCTION

The prevalence of individuals diagnosed with autism spectrum disorders (ASD) is continuously growing throughout the world (Zeidan et al., 2022). In the USA,

Ilan Dinstein and Shirley Solomon contributed equally to this work.

estimated ASD prevalence among 8-year-old children has grown from 1.47% in 2010 to 2.3% in 2018 and 2.7% in 2020 (Maenner et al., 2021, 2023). In Canada estimated prevalence among 5–17-year-old children has increased from 1.5% in 2015 to 2.2% in 2019 (Palmeter et al., 2019). Accurately estimating changes in ASD prevalence is vital for planning the expansion of services to meet growing demands. However, to properly plan services for specific age groups, it is important to quantify changes in prevalence per age group, something that is rarely reported in ASD prevalence studies (Shaw et al., 2023).

Estimates of ASD prevalence differ across studies for many reasons including the age of the examined sample, their geographic location, race, and sex (Chiarotti & Venerosi, 2020; Zeidan et al., 2022). For example, estimated ASD prevalence was higher in 8- versus 4-year-old children in the USA (Shaw et al., 2023) and higher in 15–19-year-old adolescents versus older adults in the UK (O'Nions et al., 2023). Geographic differences are apparent in reports from different countries with ASD prevalence estimated at 0.77%, 1.26%, and 3.1% in 7–9 -years-old children in Finland, Denmark, and Iceland, respectively (Delobel-Ayoub et al., 2020), 0.7% in 6–12-year-old children in China (Zhou et al., 2020) and 1.3% in 12-year-old children in New South Wales, Australia (Nielsen et al., 2023). Geographic differences are also apparent within the USA with ASD prevalence estimates of 4.5% and 2.3% in 8-year-old children in California and Maryland, respectively (Maenner et al., 2023). Differences are also apparent across race and sex with ASD prevalence estimated at 2.9% in Black children and 2.4% in White children, and 4.3% in boys and 1.1% in girls (Maenner et al., 2023).

Additional differences in prevalence estimates are apparent across studies using different sampling and case ascertainment techniques (Zeidan et al., 2022). For example, a 2016 estimate based on the responses of 50,212 parents who completed the National Survey of Children's Health in the USA suggested an ASD prevalence rate of 2.5% in 3–17-year-old children (Karpur et al., 2019). In contrast, a 2016 estimate based on systematic record review by the Autism and Developmental Disabilities Monitoring (ADDM) network in 11 sites throughout the USA suggested an ASD prevalence rate of 1.85% in 8-year-old children (Maenner et al., 2020). Since different sampling and case ascertainment techniques have different biases (e.g., language barriers when using parent surveys), it is imperative to use identical prevalence estimation methods across years to assess change over time. For example, changes to questions on the National Health Interview Survey in the USA between 2013 and 2014 altered ASD prevalence estimates from 1.25% to 2.24% (Zablotsky et al., 2015).

Countries with centralized ASD registries that monitor the entire population can deduce the actual ASD prevalence of their population rather than estimating ASD prevalence from samples. Israel is fortunate to have such a registry that is managed by the National Insurance Institute (NII). Since 1981, the NII provides parents of Israeli children under the age of 18 who have a formal diagnosis of ASD with a monthly child disability allowance of 3000 NIS (US $965 in 2022). In addition, NII approval allows parents to apply for tax deductions and access to government funded special education services. To receive these benefits, parents need to demonstrate that their child was diagnosed according to Israeli health ministry regulations, by both a licensed psychologist and a physician (child psychiatrist or pediatric neurologist), according to diagnostic and statistical manual of mental disorders, 4th edition, text revision (DSM-IV-TR) (prior to 2013) or DSM-5 (after 2013) criteria. All diagnoses must include physical, neurological, and developmental assessments and are reviewed by a professional NII committee. Although parents of ASD children are not obligated to apply for NII benefits, there is clear motivation to do so.

Another important source of information about ASD prevalence in Israel is available through local Health Maintenance Organizations (HMOs). Israel has a universal, nationally funded healthcare system where approximately two thirds of all utilized healthcare services are paid for by the government. Each resident is required to register with one of four HMOs who supply these services. Clalit Health Services (CHS) is the largest, providing services to 52.8% of the population, with Maccabi, Meuhedet, and Leumit providing services to the remaining 27.4%, 12.4%, and 7.4% of the population in 2022, respectively. Children who receive a diagnosis of ASD at their HMO or a private clinic (shorter wait time), according to the health ministry regulations described above, are eligible for 3 weekly hours of speech, occupational, physical, and/or psychological therapy at their HMO. Although parents who complete the ASD diagnosis in a private clinic are not obligated to report it to their HMO, there is clear motivation to do so.

The Israeli NII and HMOs are, therefore, ideal centralized ASD registries for estimating national ASD prevalence rates. Excluding independent clerical and technical errors, the expectation is that the sum of ASD children listed in the four HMO will grossly correspond to that in NII data. Previous studies of NII data have reported relatively low ASD prevalence among 8-year-old children with values of 0.12% in 2005, 0.3% in 2008, and 0.65% in 2015 (Gal et al., 2012; Segev et al., 2019). ASD prevalence was higher in families with higher income, lower in Arab and Ultraorthodox minority families (Segev et al., 2019), and lower in families living in the geographic periphery of Israel (Magen-Molho et al., 2020). In contrast, studies of families insured by Maccabi Healthcare Services have reported higher ASD prevalence estimates of 0.65% in 2010 and 1.3% in 2018 among 8-year-old children (Davidovitch et al., 2013; Davidovitch et al., 2020). However, the ~25% of Israeli

residents who are members of Maccabi Healthcare tend to earn higher income and live in Central Israel. Hence, prevalence differences (Davidovitch et al., 2020) between NII and Maccabi data may be due to socioeconomic biases in the Maccabi sample that may be offset by opposite biases evident in data from other HMOs.

To resolve previous differences and quantify recent ASD prevalence changes in Israel, we examined NII and CHS registry data from 2017 to 2021. We compared findings between NII and CHS data to assess the robustness of estimated prevalence changes. Moreover, we specifically assessed the magnitude of prevalence changes per age group to yield findings that are relevant for planning specific healthcare and education services. The Israeli healthcare and education systems offer comprehensive early intervention services to ASD children, who are placed in either special or mainstream education settings (Ilan et al., 2021). Accurately estimating ASD prevalence changes at specific ages is, therefore, critical for planning the expansion of early diagnostic and intervention services, given their importance for improving later outcomes (Gabbay-Dizdar et al., 2022; Zwaigenbaum et al., 2015).

METHODS

Study design and data sources

ASD prevalence was estimated using data acquired from the NII and CHS. The NII is the National Social Security Organization of Israel, which provides services to all Israeli residents (~9.36 million residents in 2021). CHS is the largest HMO in Israel, providing health services to over half (52.4%) of the population (~4.9 million residents in 2021). The data analyzed in the current study were requested from NII and CHS by the authors. Both sources generated annual data files from 2017 to 2021 containing the number of ASD cases per year of birth for 1–17-year-old children.

Ethics

This study was reviewed and approved by the Human Subjects Research Committee of Ben Gurion University of the Negev.

Case ascertainment by NII

To receive financial support and approval of benefits from the NII, parents of ASD children can submit a claim following their diagnosis. Israeli Health Ministry regulations require that the ASD diagnosis be verified by both a licensed psychologist and a physician (child psychiatrist or pediatric neurologist) according to DSM-IV-TR (prior to 2013) or DSM-5 (after 2013) criteria. All diagnoses must include physical, neurological, and developmental assessments and are reviewed by a professional NII committee. In January 2022, benefits included a monthly payment of NIS 3000 (US $965 in 2022) until the age of 18. In addition, NII approval allows parents to apply for tax deductions and early educational services (e.g., special education daycare). It is, therefore, assumed that the vast majority of ASD children are registered at the NII. Nevertheless, ASD-related healthcare services at HMOs may be accessed without registering at the NII. One previous study reported that of children registered with Maccabi Healthcare HMO, there was 97% overlap in ASD ascertainment across NII and Maccabi records (Raz et al., 2015).

Case ascertainment by CHS

To receive ASD-related health services from CHS, a child must receive a formal diagnosis of ASD as described above. Diagnosed children are eligible for 3 weekly hours of speech, occupational, physical, and psychological therapy. It is assumed that the vast majority of families with ASD children who are insured by CHS will report the ASD diagnosis to CHS in order to receive these services. However, ASD diagnoses can also be completed in private clinical settings without reporting the results to CHS. In such cases, the families may apply for and receive NII support without any record of the ASD diagnosis at their HMO.

Study population

The study population included all 1–17-year-old children who were residents of Israel in each of the study years (2017–2021). Total resident numbers for each year were obtained from the Israeli Central Bureau of Statistics (CBS) which calculates population estimates based on census surveys (https://www.cbs.gov.il/en/Pages/search/yearly.aspx). The data includes population estimates by age, thereby allowing us to compute ASD prevalence for children at different ages. The total number of 1–17-year-old children in Israel (in thousands) was 3014.5 in 2017, 3071.5 in 2018, 3125.7 in 2019, 3239.3 in 2020, and 3360.2 in 2021.

Data analysis

We computed the prevalence of ASD according to NII by dividing the number of children with an ASD diagnosis by the number of children in Israel (per age group), separately in each calendar year. Prevalence estimates using CHS data were calculated by dividing the number of children with an ASD diagnosis by the number of

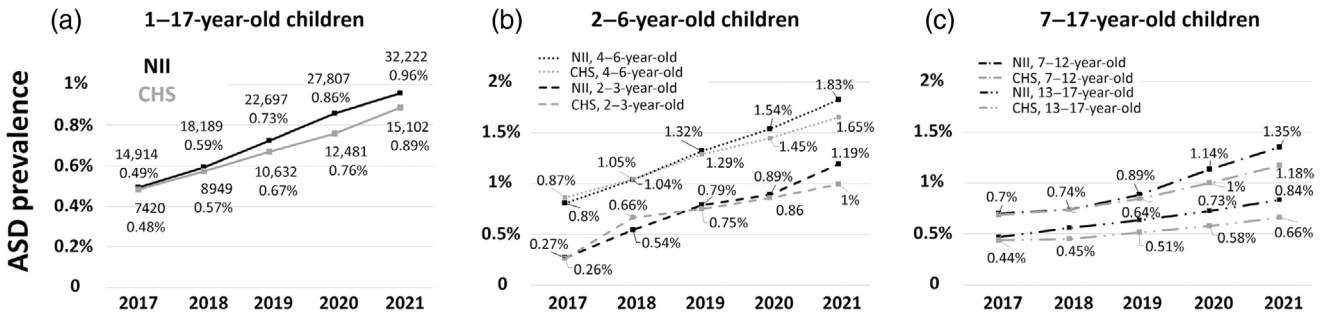

FIGURE 1 Autism spectrum disorders (ASD) prevalence rates according to National Insurance Institute (NII) (black) and Clalit Health Services (CHS) (gray) data between 2017 and 2021. (a). All children (1–17-year-old). (b). Separately for daycare (2–3 years old) and preschool (4–6 years old). (c). Separately for primary school (7–12 years old) and middle/high school (13–17 years old) children.

children who were insured by CHS, separately in each calendar year (per age group). The percentage of Israeli children ages 1–15-years-old insured by CHS was extracted from NII public data: (https://www.btl.gov.il/Mediniyut/Situation/haveruth1/Pages/default.aspx).

Equivalent analyses were performed for subgroups of children binned by age or age groups corresponding to day care (2–3 years), preschool (4–6 years), primary school (7–12 years), or middle/high school (13–17 years). When assessing changes over time (e.g., annual increase rates) we excluded 1-year-old children given the negligible number of ASD cases at this age.

Statistics

All statistical analyses were performed with the R statistical software (R Core Team, 2021). We performed a linear regression analysis with year and data source as predictors along with an additional interaction predictor for 'year × source' to assess whether the slope of prevalence changes differed across NII and CHS data. We performed a one-way analysis of variance (ANOVA) to test for differences in ASD prevalence across age groups with age, year of data, and source of data as main factors in the analysis. p-values <0.05 were considered significant. We also performed Z-tests of proportions to assess whether there were differences in the increase of ASD prevalence between NII and CHS from 2017 to 2021 for children of different ages. Results of these Z-tests were Bonferroni corrected for 16 comparisons such that only p-values <0.003 were considered statistically significant.

RESULTS

When considering the results presented below, please note that the CHS data represent a subgroup of the Israeli population (~52%) while the NII data represent the entire Israeli population. We compared the results across the two data sources to determine the robustness of estimated prevalence rates and their changes over time.

According to NII data, the number of individuals with a formal diagnosis of ASD, 1–17-years-old, increased from 14,914 in 2017 to 32,222 in 2021. This corresponds to nearly a two-fold increase in ASD prevalence from 0.49% to 0.96% (Figure 1a). Data from CHS suggested a slightly lower increase in prevalence from 0.48% to 0.89%. A linear regression analysis demonstrated a highly significant increase in prevalence across years ($\beta = 0.0012$; $p < 0.0001$), as well as a significant difference in prevalence between NII and CHS ($\beta = 0.3629$; $p = 0.0304$) and a significant interaction between data sources (NII and CHS) and time/years ($p = 0.0302$); suggesting a steeper increase of ASD prevalence rates in the NII data compared with CHS data.

Similar findings were apparent when separating the children into four age groups corresponding to educational settings in Israel (Figure 1b,c). All groups exhibited a significant increase in ASD prevalence across years ($\beta \geq 0.0009$; $p \leq 0.0002$). Only children in preschool and middle/high school settings exhibited significant differences in prevalence between NII and CHS ($\beta \geq 0.6505$; $p \leq 0.0052$) and a significant interaction between data sources (NII and CHS data) and time/years ($p \leq 0.005$).

ASD prevalence rates differed by the age of the children (Figure 2) with preschool children (4–6-years-old) consistently demonstrating the highest prevalence from 2017 to 2021. A one-way ANOVA revealed statistically significant differences in ASD prevalence across the four age groups (Figure 2b $F[3,4] = 65.4$; $p = 0.0007$). Tukey's test for multiple comparisons demonstrated that ASD prevalence was significantly higher in the preschool group relative to the daycare ($p = 0.0101$, 95% C.I. = 0.0021, 0.0048), primary school ($p = 0.0009$, 95% C.I. = 0.0013, 0.0057), and middle/high school ($p = 0.0477$, 95% C.I. = 0.0032, 0.0044) groups. ASD prevalence was also significantly higher in the primary school group relative to day care ($p = 0.0007$, 95% C.I. = 0.0048, 0.0091) and middle/high school ($p = 0.0015$, 95% C.I. = 0.0035, 0.0079) groups. NII data yielded significantly higher

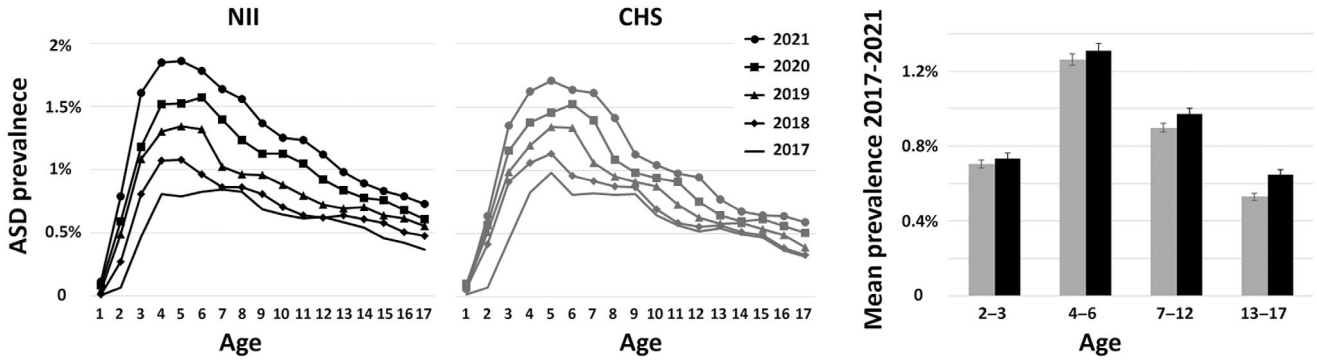

FIGURE 2 Prevalence of autism spectrum disorders (ASD) by age as computed from National Insurance Institute (NII) (black) and Clalit Health Services (CHS) (gray). Left: Data per age of child for 2017 (solid line), 2018 (diamonds), 2019 (triangles), 2020 (squares), and 2021 (circles). Right: Mean ASD prevalence, during the period of 2017–2021, in daycare (2–3-year-old), preschool (4–6-year-old), primary school (7–12-year-old), and middle/high school (13–17) children. Error bars: standard error of the mean.

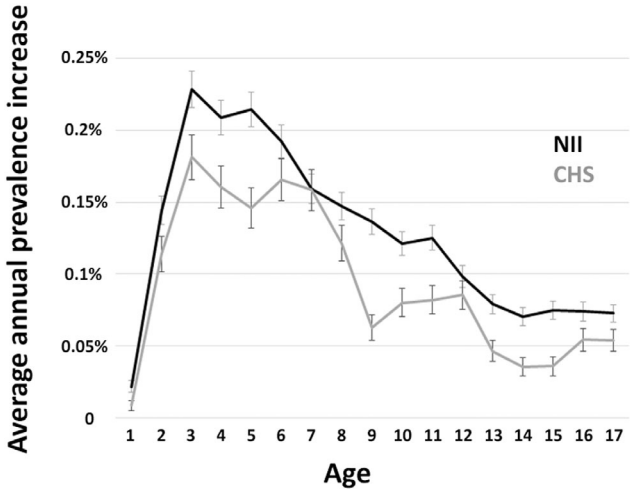

FIGURE 3 Mean annual increase in autism spectrum disorders (ASD) prevalence per age from 2017 to 2021 as deduced from National Insurance Institute (NII) (black) and Clalit Health Services (CHS) (gray) data. Error bars: standard error of the mean.

estimates of ASD prevalence than CHS data ($F[1,4] = 12.22$; $p = 0.0396$).

ASD prevalence increased annually in all age groups from 2017 to 2021, but not at the same rate (Figure 3). The largest increases were apparent in children 3–7 years old, with mean annual increases of 0.16%–0.23% and 0.15%–0.18% reported in NII and CHS data, respectively. In contrast, 10-year-old children exhibited annual increases that were approximately half as large and annual increases were even smaller for older children. Note that these annual increases represent additive changes to the population prevalence rate (e.g., an increase of 0.2% to an existing prevalence rate of 1% would yield a new rate of 1.2%). Although annual increases in prevalence were overall larger in NII data (M[SD] = 0.13%[0.0009]) versus CHS data (0.09% [0.0103]), there were no significant differences across data sources by age after Bonferroni correction for multiple comparisons ($p > 0.003$), suggesting similar annual increases across data sources.

We also calculated the total fold increase in ASD prevalence from 2017 to 2021 per age (Figure 4). The greatest fold increase was found in 2-year-old children with a 12- and 9.4-fold increase in NII and CHS data, respectively. This was followed by 3-year-old children who exhibited a 3.5- and 3-fold increase in NII and CHS data, respectively. In contrast, older children ages 4–17 exhibited, on average, a 1.96 (Inter quartile range, IQR = 0.04) fold increase according to NII data and 1.70 (IQR = 0.06) according to CHS data. This demonstrates the shift in ASD diagnosis to earlier ages (i.e., 2–3-year-olds).

DISCUSSION

Our results demonstrate that ASD prevalence has continued to grow steadily in Israel between 2017 and 2021, despite the COVID-19 epidemic, which limited access to

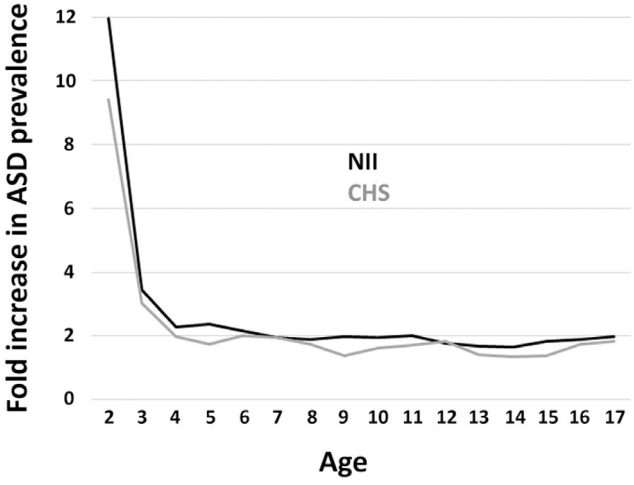

FIGURE 4 Total fold increase in autism spectrum disorders (ASD) prevalence from 2017 to 2021 per age in National Insurance Institute (NII) (black) and Clalit Health Services (CHS) (gray) data.

health services in 2020 and 2021. Although overall ASD prevalence in children 1–17-years-old has almost doubled (Figure 1), ASD prevalence in children 2–3-years-old has increased by a factor of 4.4. This demonstrates a shift towards early ASD diagnosis such that in 2021, the ASD prevalence was 1% among 2–3-year-old children and almost 2% among 4–5-year-old children (Figure 1b). The high percentage of diagnosed children at such young ages creates an opportunity for early intervention that is important for improving outcomes (Gabbay-Dizdar et al., 2022; Zwaigenbaum et al., 2015). However, capitalizing on this opportunity requires a corresponding rapid increase in the availability of early intervention services that are managed by the Israeli healthcare and education systems.

Since children rarely loose an ASD diagnosis (Wiggins et al., 2012), these findings suggest that ASD prevalence in older children and adolescents in the Israeli population will reach at least 2% within a decade as the ASD children described in the current study grow older and are joined by those diagnosed at older ages. These results, therefore, highlight the need to expand the healthcare, educational, and social services necessary to support this population as it ages.

ASD prevalence in Israel relative to other countries

Previous estimates of ASD prevalence using NII data in Israel have been considerably lower than those reported in most comparable high-income countries around the world. Although ASD prevalence among 8-year-old children in the USA was already 1.47% in 2010 (Maenner et al., 2021), ASD prevalence for this age group in Israel was only 0.65% in 2015 (Segev et al., 2019). Our results are consistent with previous NII data and demonstrate a continuous increase in the ASD prevalence of this age group from 0.82% in 2017 to 1.56% in 2021 (Figure 2). This suggests that ASD had been previously underdiagnosed in Israel and that the Israeli healthcare system is closing the gap towards ASD prevalence rates described in other countries including the USA (Maenner et al., 2023), Canada (Palmeter et al., 2019), the UK (O'Nions et al., 2023), Australia (Nielsen et al., 2023), and Western Europe (Delobel-Ayoub et al., 2020). Alternatively, continuously rising prevalence estimates throughout the world may indicate that ASD is being overdiagnosed (Fombonne, 2023), perhaps in part because of difficulties in separating intellectual disability from ASD (Thurm et al., 2019).

Since ASD prevalence is affected by a complex combination of social, political, ethnic, financial, genetic, and environmental factors (Leonard et al., 2010), it is difficult to predict whether ASD prevalence in Israel will continue to increase at a similar rapid rate over the next 4–5 years or start to stabilize. Note that in some countries such as Iceland (Delobel-Ayoub et al., 2020) and U.S. states such as California and New Jersey, ASD prevalence among 8-year-old children has already exceeded 3% (Maenner et al., 2021, 2023). Hence, ASD prevalence is likely to continue and grow in Israel if one assumes that there is a similar percentage of ASD children across different populations and geographic locations, and assuming that relatively lower prevalence rates in minority groups and marginalized geographic locations will equate to those of the main population (Maenner et al., 2023; Magen-Molho et al., 2020; Raz et al., 2015).

Comparison of ASD prevalence estimates across data sources

Previous studies have demonstrated large differences in ASD prevalence estimates when using different sampling and case ascertainment techniques (Zeidan et al., 2022). There are two main advantages to the data presented in the current study. First, NII and CHS are national registries used to manage social and health services, respectively, with NII providing services to the entire population and CHS providing health services to ~52% of the population. Families with children who received a formal ASD diagnosis have clear motivation to report their diagnosis to both organizations to receive services. Second, both organizations utilize identical ASD case ascertainment based on ministry of health regulations that have not changed since the introduction of DSM-5 criteria in 2013. Although the transition from DSM-IV-TR to DSM-5 may have an impact on prevalence estimates in the older children born before 2011 (who may have been diagnosed before 2013), this change is not relevant to the large increase in ASD prevalence among 2–6-year-old children, apparent in both data sources (Figure 1), who were all diagnosed with DSM-5 criteria.

Although gross changes in estimated ASD prevalence were similar across NII and CHS data, CHS prevalence estimates and their increase over time were significantly lower than NII estimates. There may be multiple explanations for these differences, which are not mutually exclusive. First, it may be the case that more families with newly diagnosed children were registering with NII than with CHS, perhaps due to a larger urgency of receiving benefits and access to early education services (NII jurisdiction) rather than ASD-related healthcare services (CHS jurisdiction). Second, NII and CHS databases are managed independently and are likely prone to different clerical, organizational, and data management errors that may create differences across sources. Third, the socioeconomic and geographic composition of CHS members may be associated with lower ASD prevalence rates as CHS tends to insure more of the poorer, marginalized populations living in the geographic periphery of Israel. This corresponds to a recent study analyzing Maccabi Healthcare data that reported an

ASD prevalence rate of 1.3% among 8-year-old children already in 2018 (Davidovitch et al., 2020). This ASD prevalence was ~0.5% higher than that found in the current CHS data for the equivalent year.

Taken together, these findings suggest that NII data is likely to offer the most representative data for the entire Israeli population while individual HMO data may include different biases associated with the socioeconomic, ethnic, race, and geographic composition of the members in their respective samples. Ultimately, assessing ASD prevalence with both NII data and that of all HMOs in Israel would yield a more accurate estimate of national ASD prevalence.

Growth of health, education, and social services in corresponding years

There is limited publicly available data about the corresponding growth of ASD-related services in Israel. Nevertheless, according to NII data, the number of families receiving supplemental income due to ASD diagnoses in Israel has doubled between 2017 and 2021 (Figure 1). Moreover, according to Israeli law, ASD children (unlike children with other developmental disorders) are eligible for intensive early intervention programs at the ages of 1–7-years-old. According to health ministry data (personal communication, unpublished), the utilized budget of these programs has doubled from 255 million NIS in 2017 to 510 million NIS in 2021 (287 in 2018, 400 in 2019, and 447 in 2020; in millions NIS). Although ASD prevalence at these ages has more than doubled during this period (Figure 4), it is remarkable that the availability of early intervention programs is growing at such a rapid pace in Israel. This is because of the intervention programs that are funded by the Ministry of Health and managed by nongovernment organizations such as ALUT (national ASD parent organization) and the association for children at risk. According to data from the ministry of education (personal communication, unpublished), the number of special education kindergartens for ASD children 3–6-years-old has grown from 625 in 2020 to 723 in 2021, indicating an annual increase of ~15.6%; which is also remarkable, but still lower than the annual prevalence increase (~21%, Figure 3) for this age group.

Limitations

The current study had several limitations. First, we did not have information regarding the sex or geographic composition of ASD cases, which limited our ability to identify prevalence differences across males and females or distinct geographic areas of Israel. Second, we did not have retrospective data from before 2017, which limited our ability to calculate cumulative incidence rates by birth cohort as reported by previous studies in Israel (Raz et al., 2015; Segev et al., 2019). However, given that ASD diagnoses are rarely lost (Wiggins et al., 2012), ASD prevalence rates are likely to be equivalent to cumulative incidence rates such that; for example, ASD prevalence of 4-year-olds in 2017 will be equivalent to the ASD cumulative incidence rate of those born in 2013. Third, we did not have equivalent data from Maccabi, Meuhedet, and Leumit HMOs that service ~50% of Israeli residents. This limited our ability to assess how ASD prevalence increases differ across HMOs. Finally, we used the reported number of children in Israel as estimated by census surveys from the CBS rather than NII, because NII do not publish these numbers publicly. If census surveys and NII data do not match, this may impact the accuracy of our prevalence estimates.

CONCLUSIONS

Both NII and CHS data consistently demonstrate that ASD prevalence in 1–17-year-old children have almost doubled in Israel within 4 years. Prevalence increase is particularly high (>4 fold) in 2–3-year-old children who are eligible for early intervention programs. These findings highlight the necessity of a coordinated effort to further expand support services for the ASD population at a more rapid pace. Improving transparency of NII, HMO, Health Ministry, and Education Ministry data will greatly facilitate the assessment of ASD prevalence and availability of services in Israel. Similar studies in other countries are highly warranted for determining changes in global prevalence rates and comparison across countries.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The study was approved by the Human Subjects Research Committee of Ben Gurion University of the Negev.

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