



Original article

Adolescent Health Inequality Across Immigrant Generations

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Article history: Received July 1, 2023; Accepted May 21, 2024

Keywords: Assimilation; Health inequality; Immigration; Immigrant generation

ABSTRACT

Purpose: Evidence on whether the immigrant health paradox (i.e., immigrants having better health than natives of nonmigrant background) extends to children and youth is mixed and often based on self-reported survey data. In this study, we use population-wide administrative micro-data from Norwegian demographic and health registries to investigate health inequalities between adolescents with foreign-born and native-born parents, paying specific attention to variation across immigrant generations, origin countries, and types of diagnoses.

Methods: In this registry-based study, we estimate differences in the likelihood of somatic and mental disorders using logistic regression and population-wide health records for adolescents aged 16–20 years ($N = 616,835$).

Results: Child immigrants and native-born children of immigrants have fewer consultations for somatic and psychiatric diagnoses in adolescence compared to natives, while native-born children with mixed parental background have health outcomes more similar to natives. The differences are most pronounced for mental disorders. Differences across immigrant generations persist when stratifying by country of origin and when looking at specific diagnoses.

Discussion: The findings support the existence of an immigrant health advantage, which we find across various psychiatric and somatic diagnoses and for most immigrant generations. A key task for future research is to explore specific mechanisms underlying these patterns and to address potential inequities in the quality of health care provided to immigrant-background youth.

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IMPLICATIONS AND CONTRIBUTION

This study explores the immigrant health paradox using population-wide registry data to investigate inequalities in physician-registered diagnoses among adolescents in Norway. Health advantages relative to natives diminish with duration of exposure to Norwegian society, measured as differences by immigrant generation.

Previous research has found that immigrants often have better health than natives in terms of somatic and psychiatric conditions and mortality [1–4]. This health advantage has been referred to as an *immigrant paradox*, as foreign nativity seems to protect against disorders even though many immigrants arrive from and settle into disadvantaged social circumstances [1,5,6]. Most studies of this immigrant health paradox have focused on first-generation adult immigrants [2,7,8]. Here, we examine

patterns of health inequality across immigrant generations using high-quality, population-wide registry data from the ethnically diverse Norwegian welfare-state context.

Broadly speaking there are two explanations of immigrants' health advantages, where one focuses on cultural differences between immigrants and natives and the other on selection processes influencing who migrates [6]. Cultural explanations suggest that healthier habits brought by immigrants from their origin country contribute to better health [5]. These cultural factors encompass various aspects such as dietary habits, religion, and social norms that promote well-being and healthier lifestyles [2,9]. Selection-based explanations suggest that

Conflicts of interest: The authors have no conflicts of interest to declare.

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immigrants, on average, are healthier than nonmigrants who remain in the home country [6]. Prior research indicates that positive immigrant selectivity on education tends to be stronger among immigrants from low-income and more geographically distant origin countries compared to those arriving from higher income countries [6]. Both culture-based and selectivity-based explanations suggest larger health advantages among immigrants from low-income and culturally more dissimilar countries [6]. However, in contrast, some argue that observed health advantages among immigrants stem from underuse of health services due to discrimination, inequality in access, lower trust in health authorities, and/or cultural stigma, rather than better underlying health [10,11]. Our first aim is to assess the hypothesis that children of immigrant background, especially child immigrants with shorter duration of stay in the host country, exhibit better health outcomes than children of nonmigrant natives (i.e., the “immigrant health advantage” hypothesis).

A recurrent finding in the literature is that the immigrant health advantage declines with time spent in the host country, resulting in health outcomes becoming more similar to those of natives or even so-called negative assimilation (i.e., worse health than natives) [5,12,13]. While some of these patterns have been linked to adaptation of unhealthy aspects of a Western lifestyle and diet, stressors related to the experience of migration and documentation status (e.g., trauma, fear, family separation) may also affect immigrants’ health [5,14,15]. Moreover, social, economic, and residential disadvantage—which is also common among immigrant minorities in Norway—are considered key factors linking immigrants’ living conditions to their health [16–18]. Further, these stressors may be compounded by experiences of racism and discrimination due to ethno-racial minority status [19]. Together, intersectional combinations of multiple stressors may influence not only the first generation of immigrants but also subsequent generations [14,18,20]. Our second aim is to assess the hypothesis that any health advantages relative to nonmigrant natives are smaller among immigrant-background adolescents with longer duration of exposure to the host country, as captured by child immigrants who arrived at young ages, native-born children of immigrants, and native-born children of mixed immigrant–native unions (i.e., the “generational health assimilation” hypothesis).

Adolescent health is increasingly called upon as a central area of public health [21]. Research on immigrant health patterns among adolescents is particularly relevant since many countries experience considerable growth in their populations of immigrant-background youth [22]. However, current evidence on whether the immigrant advantage extends to nonmigrant native-born children of immigrants is mixed [23–25]. For example, some studies find that children of foreign-born parents have fewer acute and chronic health disorders compared to children of native-born parents [23,26], while other studies find no differences or poorer outcomes [24,25,27]. Two comparative studies of England and the US found an advantage relative to children of nonmigrant natives among second-generation children (aged five years) in asthma for both countries [26] and a disadvantage for obesity [28]. A large comparative study from England, Germany, the Netherlands, and Sweden found better self-reported mental health for second-generation immigrant adolescents compared to nonmigrant natives [29], while other, smaller studies have found mixed or poorer mental health [30–32]. Current evidence is often based on survey data with few health outcomes and small, possibly skewed, samples [24,26].

Moreover, many prior studies use broad immigrant status categories, which may hide important variation in health status within these categories, especially pertaining to marginalized groups [33]. We examine the physical and mental health of children of immigrant background relative to nonmigrant natives using high-quality population data that allow us to measure a broad set of disorders across detailed generational categories and countries of origin.

A few recent studies have used registry data with more detailed information across immigrant generations [34,35]. A study of Finnish hospital records found that first-generation immigrants who arrived as children had better health than nonmigrant natives but did not find differences for second-generation immigrants [34]. In contrast, a Danish study found better health among all immigrant generations relative to nonmigrant natives, but only considered somatic and psychiatric hospitalization [36]. A study from Norway found lower rates for selected psychiatric disorders in specialist health care among second-generation children (ages 0–12) of immigrants [37]. These studies, however, focus mostly on hospitalizations and provide limited knowledge about a broad set of specific disorders, especially those that are not treated in specialist care. Moreover, few studies have been able to assess variation by generational status (i.e., child immigrants arriving at different developmental stages), even though arrival at different sensitive age periods might be important for later health [38]. Finally, immigrant populations within host countries are heterogeneous and often arrive from different countries and regions in distinct temporal waves and at different ages, leading to variation in the national-origin composition of different immigrant generations. Because prior studies do not address heterogeneity in generational composition across countries of origin [34,36], it is important to assess whether we also observe generational health gradients among immigrant-background children from the same origin country. Finally, in order to examine whether health differences are specific to certain conditions or apply to many different types of conditions, it is also important to study the generational health gradients using a broad set of disorders.

In this study, we address (1) whether adolescents of immigrant background exhibit a health advantage relative to children of nonmigrant natives and (2) whether this health advantage is smaller in immigrant generations with longer duration of exposure to the host country. Using population-wide Norwegian administrative microdata, we study immigrant–native differences in somatic and psychiatric diagnoses from primary and specialist health care in late adolescence (16–20 years) across immigrant generations. Specifically, we examine whether child immigrants who arrived in early childhood (ages 0–5), middle childhood (ages 6–10) or adolescence (ages 11–15), as well as native-born children of two immigrant parents and native-born children with one immigrant parent, have better health outcomes relative to native-born children of native-born parents. Importantly, we investigate how the generational gradient in the immigrant–native health gap varies across specific diagnoses and origin countries. Our data allow us to study both overall differences in health care use and specific diagnoses in primary and specialist health services.

The Norwegian context combines expansive, universalistic welfare-state institutions and a comparatively large and diverse immigrant population. Health care is free for all children under 18 years and heavily subsidized in adulthood, which makes formal access to health care less dependent on parental resources

compared to countries where access is more income-dependent [39]. Today, immigrants and their native-born children constitute about one in five of the Norwegian population [40]. Large-scale immigration to Norway started with labor migrants arriving from Pakistan, Turkey, and Morocco in the 1970s, followed by refugees arriving from Vietnam, Chile, Sri Lanka, and Iran in the 1980s, from the Balkans in the early 1990s, and from Iraq, Somalia, Afghanistan, and Syria in the late 1990s through the 2010s. More recent labor immigration from Poland and other new Eastern European EU member states increased sharply after the EU enlargements in 2004 and 2007. For several decades, child poverty has been high within Norway's immigrant population, which reflects the weak labor market attachment among immigrant parents from many non-European origin countries [41]. Despite childhood disadvantages, native-born children of immigrants often experience considerable upward mobility in education and the labor market [42].

Methods

Data and sample

We use data on the entire birth cohorts 1990–1999, who were either born in Norway or arrived as immigrants no later than at age 15 ($N = 616,835$) and measure their health outcomes at ages 16–20. We do not include immigrants who arrived during ages 16–20 in our analytic sample, since these individuals will not be observed for all the years when we measure the health outcomes. A small number of observations were excluded due to lack of information on parental income (0.4%, see supplemental information for details). Unique personal identifiers used across administrative registries, allow us to link information on immigrant background and parental characteristics to health care data from two sources. First, the Norwegian Control and Reimbursement Database contains data from all primary care consultations during 2006–2019, coded according to the second edition of the International Classification of Primary Care (ICPC-2) [43]. All consultations are recorded with either a symptom or a diagnosis code. Second, the Norwegian Patient Registry captures data from all specialist care consultations (somatic and psychiatric) during 2008–2019, coded according to the International Classification of Diseases 10th Revision. Descriptive statistics are presented in Table A1. The study is approved by the Norwegian Regional Committees for Medical and Health Research Ethics (2018/434).

Health measures

For primary care, our main variable is a binary measure indicating at least one consultation resulting in a subset of diagnoses of interest. We also use a binary measure indicating at least one consultation in primary care and a set of binary measures for specific diagnoses, in addition to a numeric measure for the total number of consultations resulting in a diagnosis. For specialist care consultations, the main variables are two separate binary indicators for any somatic consultation and any psychiatric consultation. We also use a binary measure indicating at least one consultation in specialist care and a set of binary measures for specific diagnoses, in addition to numeric measures for the total number of consultations in either somatic or psychiatric specialist care. Since information from Norwegian Patient Registry is available from 2008 onwards, specialist care

consultations and diagnoses are measured between ages 17(18)–20 for those born in 1991(1990).

Immigrant status and country of origin

From the Central Population Registry, we use information on each child's own and parental country of birth, date of birth, and, if born abroad, date of the first stay in Norway. We differentiate between five groups of adolescents: (1) *natives* refer to children born in Norway with two Norwegian-born parents; (2) *native-born children with mixed parental background* refer to children born in Norway with one Norwegian-born and one foreign-born parent; (3) *native-born children of immigrants* are born in Norway with two foreign-born parents; (4) *child immigrants*, born abroad with two foreign-born parents, who arrived in Norway *in early childhood* (at 0–5 y); (5) *child immigrants*, born abroad with two foreign-born parents, who arrived in Norway *during middle childhood* (6–10 y); (6) *child immigrants*, born abroad with two foreign-born parents, who arrived in Norway *during early adolescence* (11–15 y). *Country of origin* refers to mother's country of birth for children with two immigrant parents, and the migrant parent's country of birth for children with mixed parental background.

Control variables

Parental income comes from the Norwegian Registry for Personal Taxpayers on annually reported pensionable labor market income. We average the sum of mother's and father's income when the child is 16–20 years old, but we do not equalize for household size due to data limitations on the accuracy of household members. For each birth cohort, children are ranked by parental income decile. Sociodemographic factors include birth year (dummies), mother's age at birth (continuous), number of siblings (zero; one; two or more), birth order (continuous), sex, birth year, and residence municipality (municipality dummies) and mothers' marital status at child age 16 (five statuses: unmarried; married; widowed; divorced; separated).

Analysis strategy

As a first description of the two key hypotheses of (1) an immigrant-native health gap that (2) decreases with exposure to the host country, in Figure 1 we report unadjusted differences (population shares and mean) for consultations in primary and specialist health care between children of natives and children in the different immigrant generations.

Figures 2 and 3 probe deeper into these hypotheses by examining the relative size of the immigrant-native differences for selected disorders in primary and specialist health care after adjusting for sociodemographic background characteristics. In these analyses we use the binary outcome variables for selected disorders and the five immigrant generation groups as main explanatory variables. We control for parental income, parental union status, birth order, and number of siblings, all of which have been linked to health differences in previous research [44–46]. In order to take cohort, gender, and regional health differences into account, we also adjust for birth year, sex, and municipality of residence.

In Figure 4, we address the concern that the generational gradients reflect compositional effects due to variation in generational profiles across different origin countries (immigration to Norway from different origin countries has varied

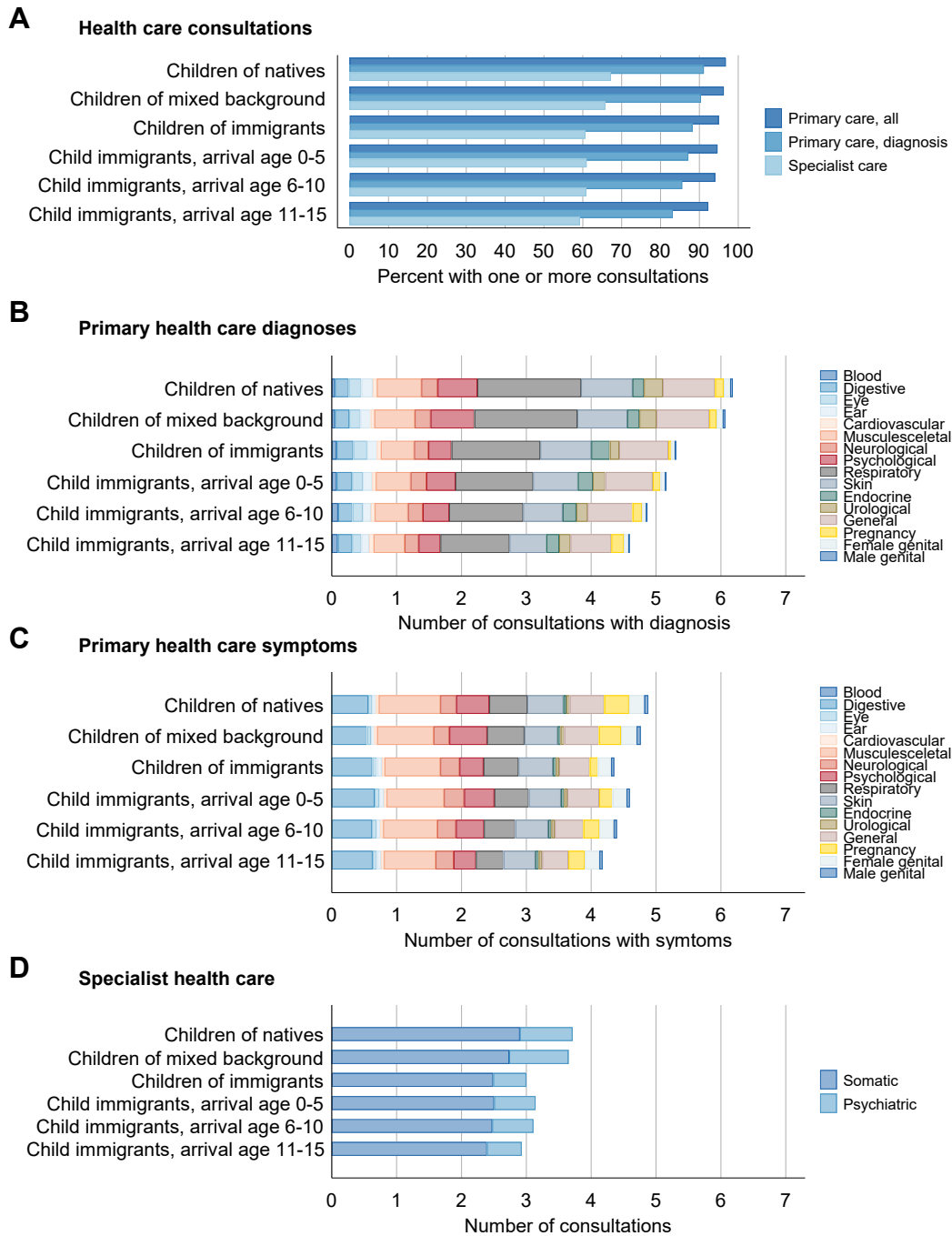


Figure 1. Distribution of health care consultations and resulting diagnoses in adolescence (age 16–20) for natives and children of immigrant background, 2006–2019. The figure presents (A) the percent of adolescents with at least one consultation in i) primary care, ii) primary care with a registered diagnosis code, iii) specialist care, (B) the average number of diagnosis codes (by ICD-2 chapters) from primary care consultations, (C) the average number of symptom codes (by ICD-2 chapters) from primary care consultations, (D) the average number of somatic and psychiatric diagnoses from specialist care consultations. N = 616, 835 in total, see Table A1 for subgroup sizes. Data source: the Norwegian Control and Reimbursement Database and the National Patient Registry.

over time, see Table A3), by estimating the immigrant–native differences for receiving a disorder (i.e., somatic and psychiatric disorders combined), separately by immigrant status, within the 25 largest countries of origin while adjusting for socio-demographic factors.

Figures 2–4 are estimated by logistic regression and display the estimates as odds ratios using native-born children of native-born parents as reference category [47]. Full set of regression estimates are reported in Online Appendix Tables A4–7. All analyses were performed using Stata, version 17.

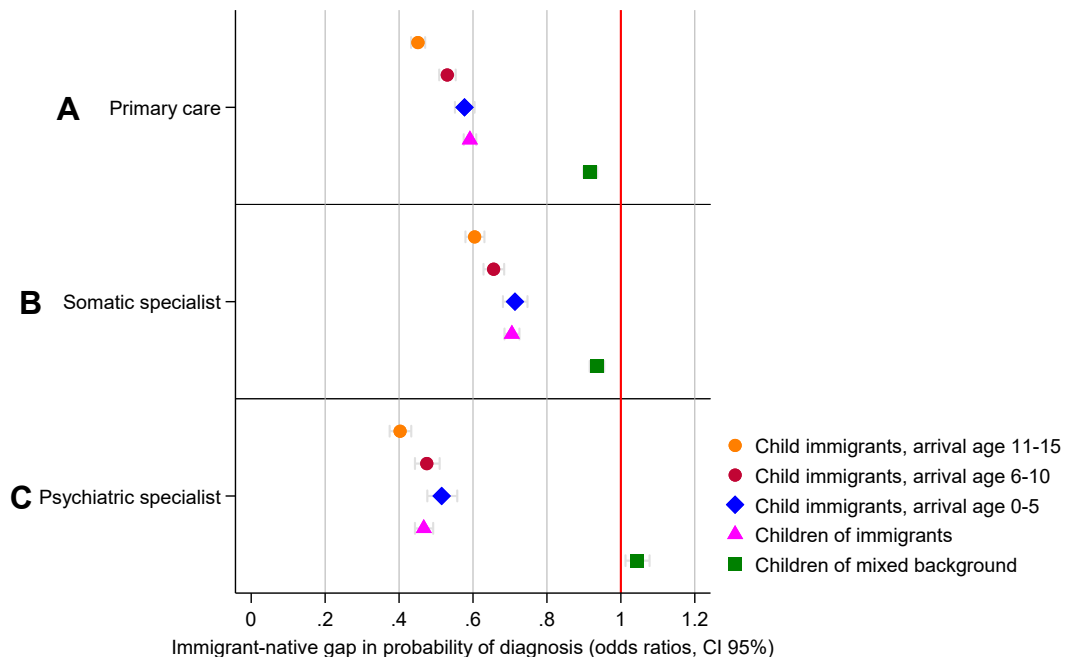


Figure 2. Immigrant–native gaps for diagnoses in primary care and somatic and psychiatric specialist care, estimated with logistic regression (odds ratios, 95% confidence intervals), for adolescents (aged 16–20), 2006–2019. Odds ratios are relative to reference category of native-born children of native-born parents (the red vertical line). Regression estimates are adjusted for parental income, parental union status, birth year, number of siblings, birth order, child sex, and municipality of residence. The measure in (A) is a summary measure for having any of the specific diagnoses (shown in Table A1) from a primary care consultation. The measure in (B) is having at least one diagnosis from a somatic specialist care consultation. The measure in (C) is having at least one diagnosis from a psychiatric specialist care consultation. $N = 616, 835$ in total, see Table A1 for subgroup sizes. Data source: the Norwegian Control and Reimbursement Database and the National Patient Registry.

Results

Immigrant–native health gaps in primary and specialist care

Figure 1 reports, by immigrant generation, (A) the percent of adolescents with one or more consultations in primary or specialist care, (B) the average number of diagnoses (by ICPC-2 chapters) from primary care consultations, (C) the average number of symptom codes (by ICPC-2 chapters) from primary care consultations, (D) the average number of somatic and psychiatric diagnoses from specialist care consultations. Panel A reveals that more than nine out of 10 adolescents of all backgrounds have had at least one primary care consultation, and at least six out of 10 have had a specialist care consultation. On average, children of immigrants and child immigrants have fewer diagnoses from primary care (panel B) and specialist care (panel D) compared to natives, but more similar for number of symptoms (panel C)

Figure 2 presents odds ratio estimates for the immigrant–native gap in the likelihood of receiving at least one diagnosis in primary care (A), somatic specialist care (B) and psychiatric specialist care (C), adjusted for parental income and sociodemographic factors. All immigrant generations have reduced risk of being diagnosed with a disorder compared to natives (reference group), except for native-born children with mixed parental background, whose risk is similar to that of natives. We also see a gradient by age at arrival, where child immigrants arriving in adolescence have the lowest likelihood of diagnoses relative to natives, followed by child immigrants arriving at ages 6–10 and, finally, child immigrants arriving at ages 0–5. Native-

born children of immigrants have diagnosis likelihoods that are similar to child immigrants who arrived in early childhood (ages 0–5). Native-born children with mixed parental background have diagnosis likelihoods that are similar to natives. Overall, Figure 2 shows a consistent pattern of lower diagnosis likelihood relative to natives among child immigrants and native-born children of immigrants. There is also a similar generational gradient of immigrant–native gaps in diagnosis likelihoods relative to natives when not adjusting for sociodemographic background factors (see Figure A2).

Immigrant–native health gaps for specific diagnoses

Figure 3 reports the estimated immigrant–native gaps for specific somatic and psychiatric diagnoses, adjusted for parental income and sociodemographic factors. Compared to natives, immigrant youth in all generations have lower rates of most somatic or psychiatric diagnoses, and again, we find clear generational gradients. The immigrant–native gaps are typically larger for psychological and psychiatric diagnoses than for somatic diagnoses. The largest gaps are for attention deficit hyperactivity disorder (primary and specialist care) and anxiety (specialist care), with odds ratios of around 0.2–0.3 for child immigrants and native-born children of immigrants (i.e., 70–80 percent lower odds of diagnosis compared to natives). There are smaller, albeit considerable gaps for injuries, with odds ratios of around 0.6–0.8 for child immigrants and native-born children of immigrants (i.e., 20–40 percent lower odds of diagnosis compared to nonmigrant natives). Immigrant-background adolescents also have lower risk of chronic disorders with severe

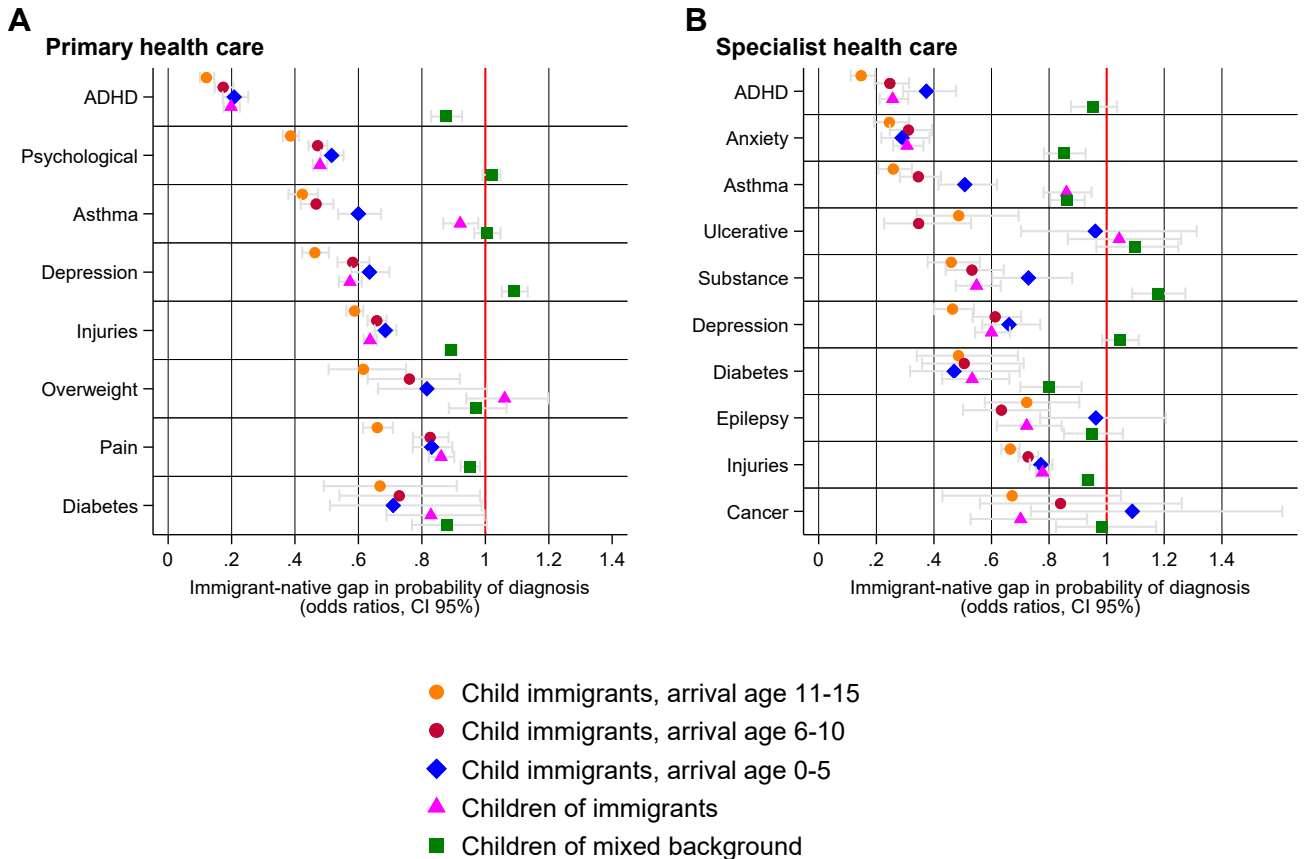


Figure 3. Immigrant–native gaps for selected diagnoses in primary (A) and somatic and psychiatric specialist care (B), estimated with logistic regression (odds ratios, 95% confidence intervals), for adolescents (aged 16–20), 2006–2019. Odds ratios are relative to reference category of native-born children of native-born parents (the red vertical line). Regression estimates are adjusted for parental income, parental union status, birth year, number of siblings, birth order, child sex, and municipality of residence. $N = 616, 835$ in total, see Table A1 for subgroup sizes. Data source: the Norwegian Control and Reimbursement Database and the National Patient Registry.

symptoms, such as diabetes-1, asthma, and epilepsy, but precision is low due to low prevalence.

Country-specific immigrant–native health gaps by generational status

Figure 4 presents adjusted immigrant–native gaps by immigrant generation, separately for each of the 30 largest national-origin groups and other remaining origin regions. The largest gaps are found among children with background from Thailand, Somalia, Vietnam, and Pakistan, while the smallest gaps are primarily found among children with background from the Nordic region and Western high-income countries, such as France, Germany, Great Britain, Canada, and the United States. Importantly, we find generational differences within most origin countries, where child immigrants, both early, mid and late arrivers, have lower odds compared to natives. Estimates for native-born children of immigrants are often similar child immigrants arriving at ages 0–5, while native-born children of mixed parental background have the smallest gap relative to natives.

Discussion

In this study, we examine patterns of health inequality among immigrant-background adolescents using comprehensive and

detailed diagnostic health measures from population-wide primary and specialist health-care registries in Norway. Our findings reveal that, first, immigrant-background adolescents have a health advantage across a wide range of psychiatric and somatic diagnoses. We found the largest differences in consultations and diagnoses for mental disorders and more moderate difference for most physical disorders. Second, we also observed a clear generational gradient, where child immigrants had the largest health advantages relative to natives. The health advantage remains, albeit reduced, among native-born children of immigrants, and is largely absent among native-born children with mixed parental background. Our analyses demonstrate a pattern of where immigrant-background adolescents' health outcomes is more similar to those of nonmigrant natives in generational groups with longer host-country exposure, which generally holds also within single origin countries. Our findings align with and expand upon prior research, by examining a broader range of diagnoses reported by physicians, rather than self-reported health, and by examining generational gradients. Overall, our findings support the hypothesis that adolescents of immigrant background have better health than their peers with native-born parents (*“immigrant health advantage”*), as well as the hypothesis that the health advantage relative to natives declines across immigrant generations (*“generational health assimilation”*).

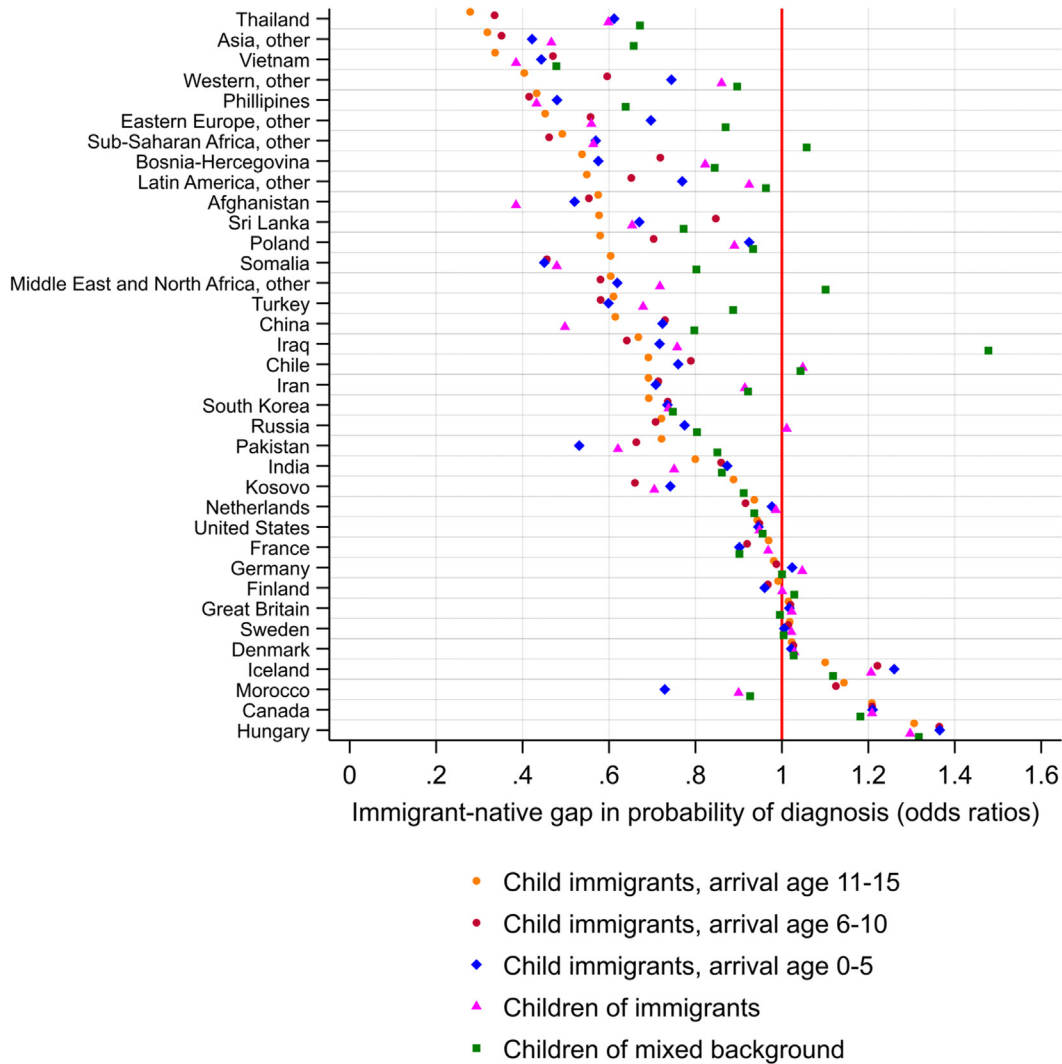


Figure 4. Origin country-specific immigrant–native gaps for having one or more selected diagnoses in primary care or any diagnosis in somatic and psychiatric specialist care, estimated with logistic regression (odds ratios), for adolescents (aged 16–20), 2006–2019. Odds ratios are relative to reference category of native-born children of native-born parents (the red vertical line). Regression estimates are adjusted for parental income, parental union status, birth year, number of siblings, birth order, child sex, and municipality of residence. The figure only shows estimates for origin countries with at least 20 observations in each immigrant generation. $N = 616, 835$, see [Tables A1](#) and [A3](#) for subgroup sizes. Data source: the Norwegian Control and Reimbursement Database and the National Patient Registry.

Prior research has associated demographic characteristics such as being a first-born child, having more siblings, and parental union stability, with better health [44–46,48]. Given adjustment for these factors, our analysis shows that differences in these characteristics does not explain why immigrant-background adolescents exhibit better health outcomes than nonmigrant natives. The country-specific analyses showed that the health advantage was most prominent among immigrants with non-Western origin, while immigrants with Western origin had health outcomes more similar to natives. A source of heterogeneity, often overlooked in existing literature, is the generational differences within national ancestry groups. We find that the generational gradients persist among immigrants from the same origin country, suggesting that compositional effects alone cannot explain the overall health advantage.

Our findings align with many previous studies that have found migrants and their children to have better health than

nonmigrants [6,7]. Whether this advantage can be linked to unobserved resources in the parent generation (e.g., aspirations, resilience, and selection on better health), or other cultural aspects related to immigrant background, remains an unsolved question in the literature.

We document the largest health advantage in mental disorders, which may contradict expectations, since many immigrants, especially refugees, have experienced trauma before migration. It also contradicts a consistent finding in epidemiological studies, of a strong relationship between socioeconomic disadvantage and mental disorders [49]. This raises some concern as to whether the observed mental health advantage among immigrants reflects variation in health-seeking behavior (i.e., the propensity to seek medical care for a given symptom) rather than underlying health conditions.

If the underlying prevalence of disorders among immigrants is the same as or higher than among natives, our findings may

conceal problems of unequal access to health care due to discrimination or stigma. Cultural differences, language difficulties, physical barriers (e.g., lack of access to transportation), and lower trust in health authorities (e.g., due to fear of deportation and/or family separation), may all influence immigrants' health service use relative to that of natives. Especially mental disorders may carry more stigma and greater risk of involvement from authorities (such as child protective services), which could explain why we observe the largest gaps for these problems. It could also be that immigrants lack a framework or awareness to recognize and report mental health problems due to stigma and, perhaps, lack of access to treatment in their home countries [17,50]. Research has also suggested that there might be cultural differences in the expression of mental health disorders [51]. For example, some may communicate mental distress through somatization, and whether symptoms are recognized may depend on the physician.

Health care in Norway is, however, heavily subsidized and free for all children under the age of 18, which reduces economic barriers to seeking health care. As shown in Figure 1 (see also Table A1 and Figure A1), more than 90% of the immigrant-background adolescents in our sample had at least one consultation in primary care, suggesting that health-care services are widely used among immigrant youth. Without direct evidence, we believe that the observed differences cannot solely be attributed to lower help-seeking behavior. We also observed that immigrant-background youth had fewer diagnoses regarding somatic disorders that carry less stigma and have clear symptoms, such as diabetes-1, epilepsy, and asthma.

Aspects of immigrant cultures, such as higher share of religiosity, strong family ties, and lower share of risky health behavior (e.g., less alcohol consumption and smoking), may confer protective effects related to mental disorders [9,52]. Prior research from Norway has found lower alcohol and substance use among immigrant youth compared to natives [53]. Furthermore, survey studies conducted in Europe reveal that immigrant youth report better self-rated mental health [48]. Finally, improved levels of living standards among immigrants and their children compared to their origin country, often substantial for those arriving from low-income regions, may protect them from developing mental health problems after migration.

Strengths and limitations

The key strengths of our study are that the analysis is based on high-quality population data, covering several generational categories of children with immigrant background, and that it, unlike most prior studies, includes both primary and specialist health care registered diagnoses. Our study also has several limitations. Our results are limited to health measures resulting from contact with health-care services. Moreover, we cannot examine the quality of health care provided to children of immigrant background. Prior research has found that physicians' assessment of health problems may vary across race, ethnicity and socioeconomic background [54]. If physicians systematically fail to appropriately diagnose children with immigrant background, this would bias our results in the direction of an observed immigrant health advantage. Our examination of many different diagnoses, and our consistent finding of such health gaps also for diagnoses with clear symptoms and etiology, could help mitigate such a bias. Future research could pursue these

questions using field experiments where cues for language skills, ethnocultural traits, and race are used to assess differences in access to high-quality treatment from doctors and health services more broadly.

Further, we were not able to examine the health of unaccompanied minor immigrants because we condition on parental characteristics, although this group may be especially vulnerable, nor do we address the health of immigrants arriving in late adolescence (i.e., during the period when health outcomes are measured) or those with missing parental income information, thus our results are not generalizable to these groups. Moreover, our administrative data lack information on phenotypic characteristics (e.g., skin color), which prevents us from addressing health disparities more directly related to ethnoracial minority status [55]. Another limitation is related to the age period of observation in our sample, since we are not able to examine disorders with later onsets due to our focus on health outcomes at relatively young ages (16–20 years). For example, immigrant-background youth may experience cumulative disadvantages and stressors as they grow up and reach adulthood (e.g., due to ethnic discrimination in the labor market and other domains of daily life) [17], and the accumulated load of such stressful experiences may increase their risk of disorders with increasing age. Finally, our study relies on a cross-sectional observational design, which makes causal inference hard, and, even with population data, the sample size is small in some groups, especially when examining generational gradients within single countries.

Conclusion

This study is one of the first to examine patterns of health inequality among adolescents using administrative data that allow for detailed analysis of a broad set of diagnoses across fine-grained immigrant generations and national origins. The findings are consistent with a pattern of immigrant health advantage, which we find across various psychiatric and somatic diagnoses and for all immigrant generations with the exception of those with mixed parental background. Since immigrants typically are under-represented in survey data, this population-wide study provides important knowledge to inform public health policies aimed at mitigating health inequalities between youth of immigrant and nonimmigrant native background. Future research is needed to explore the specific mechanisms underlying these patterns and to address potential challenges related to unequal access to health care, quality of care, and cultural differences in seeking health-care services.

Funding Sources

The work has received funding from the Research Council of Norway through project grant 315357, NordForsk (grant 95263), and the Centres of Excellence funding scheme (project number 262700).

Supplementary Data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jadohealth.2024.05.017>.

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