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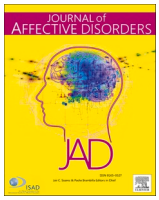

Research paper

Parental immigration status and offspring mental health service use for anxiety and depression: A Finnish nationwide register study

Prakash Khanal [a,b,*], Subina Upadhyaya [a,b], Tiia Ståhlberg [a,b,c], Emmi Heinonen [a,b], Terhi Luntamo [a,c], Andre Sourander [a,b,c]

[a] Research Center for Child Psychiatry, University of Turku, Turku, Finland
[b] INVEST Research Flagship Center, University of Turku, Turku, Finland
[c] Department of Child Psychiatry, Turku University Hospital, Turku, Finland

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ABSTRACT

Background: Despite the megatrend of immigration and subsequent studies on immigrant health outcomes, little is known about how parental immigration status specifically affects offspring mental health service utilization. This register study investigates how parental immigration status relates to offspring mental health service utilization for anxiety, depression, and comorbid anxiety and depression.

Methods: Using Finnish national registers (1992–2006 birth cohort), we analyzed parental immigration status and their association with mental health service use for 33,137 cases matched with 138,957 controls based on age and biological sex. We used multinomial logistic regression to calculate adjusted odds ratios (aORs), controlling for parental age, parity, parental psychopathology, socioeconomic status, and marital status.

Results: Children with two immigrant parents had reduced likelihood of service use for all outcomes: comorbid anxiety and depression (aOR 0.4, 95% CI 0.3–0.6, $p < 0.001$), depression only (aOR 0.5, 95% CI 0.4–0.6, $p < 0.001$), and anxiety only (aOR 0.8, 95% CI 0.7–0.9, $p = 0.001$). Those with immigrant fathers and Finnish mothers showed increased likelihood across all outcomes: comorbid anxiety and depression (aOR 1.6, 95% CI 1.4–1.8, $p < 0.001$), anxiety only (aOR 1.4, 95% CI 1.3–1.6, $p < 0.001$), and depression only (aOR 1.4, 95% CI 1.2–1.6, $p < 0.001$). Maternal immigration <1 year before childbirth lowered service use of comorbid conditions. Children with both parents from low HDI countries and with mothers from Sub-Saharan Africa exhibited significantly lower service utilization.

Conclusion: The significant differences in mental health service utilization among children of immigrant parents suggest that cultural factors, healthcare navigation skills, and migration-related stressors may influence service-seeking behaviors.

1. Introduction

Anxiety disorders and depression are among the leading causes of disability worldwide, with a global prevalence rate of 6.5% for anxiety disorders and 2.6% for depression among children and adolescents (WHO, 2022). Around 20% of young people experience either a depressive episode or an anxiety disorder by the age of 18 (Polanczyk et al., 2015). These two conditions often occur together with research indicating that between 16% and 62% of youth with one condition also experience the other (Queen and Ehrenreich-May, 2014) and are more notable among immigrant populations than among their native counterparts (Foo et al., 2018).

Immigration status is a critical social determinant of mental health outcomes and service utilization (Derr, 2016; Alegría et al., 2018). Despite availability of mental health services in high-income countries, immigrant children face persistent access disparities due to acculturative stress, socioeconomic disadvantage, stigma, and poor mental health literacy (Kirmayer et al., 2011; Alegría et al., 2015). This pattern has been documented across multiple Western contexts. In the United States, children of immigrants exhibit lower service utilization despite elevated psychopathology compared to native-born counterparts (Derr, 2016). Register-based studies from Sweden and Norway similarly reveal that children of immigrants, particularly those from non-Western backgrounds, were less likely to access specialized mental health services,

* Corresponding author at: Research Centre for Child Psychiatry, Lemminkäisenkatu 3 a / Teutori 3. krs, 20014, University of Turku, Turku, Finland.
E-mail address: prkhan@utu.fi (P. Khanal).

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with parental immigration status serving as a significant predictor of service access (Hollander et al., 2013; Abebe et al., 2017; Gubi et al., 2022).

In high-income countries such as Finland, despite theoretically equitable healthcare access, disparities in mental health service utilization persist among immigrant populations (Kieseppä et al., 2021), highlighting the influence of social, cultural, and systemic factors (Lehti et al., 2018; Ogbeiwi et al., 2025). Understanding these disparities in Finnish context is highly relevant, where individuals with an immigration background now comprise 11.1% of the population (Statistics Finland, 2024a, 2024b).

Within immigrant populations, second-generation immigrants represent a distinct group with unique mental health service needs. While first-generation immigrant children face direct migration-related challenges such as language barriers and recent displacement trauma, second-generation immigrants navigate different stressors including identity conflicts, intergenerational cultural tensions, and the dual challenge of integrating parental cultural values with those of their birth country (Lui, 2015; Choi et al., 2008; Berry and Hou, 2017). These experiences may differentially affect their help-seeking behaviors and service utilization patterns compared to both first-generation immigrants and native-born children. Despite significant research on the prevalence and risk factors of anxiety and depression among second-generation immigrants (Cantor-Graae and Pedersen, 2013; Salas-Wright et al., 2014), most studies on service utilization have focused on first-generation immigrants rather than those born in the host country to immigrant parents (Kieseppä et al., 2021; Kamali et al., 2023), or excluded children born to both immigrant parents (Gubi et al., 2022). Furthermore, many studies have been limited by inadequate adjustment for important confounders such as socioeconomic factors and parental psychiatric history (Bauldry and Szaflarski, 2017; Salas-Wright et al., 2014). Effectively examining service utilization in this population requires adjusting for key confounding variables such as parental psychiatric history, parity, and maternal socioeconomic status, which differ systematically between immigrant and non-immigrant families and independently influence both mental health outcomes and help-seeking behaviors (Fazel et al., 2012; Reiss, 2013; Hollander et al., 2020).

Understanding service utilization patterns among second-generation immigrants requires examining multiple dimensions of parental immigration. We distinguish between maternal, paternal and dual-parent immigration status because parents may differently seek healthcare through cultural norms, language proficiency, and familiarity with the healthcare system, with dual-parent immigration potentially amplifying these effects (Gubi et al., 2022; Alegría et al., 2023). Additionally, we examine parental country of origin using the Human Development Index (HDI) and geographical regions, as previous research suggests that mental health service utilization patterns vary according to the developmental and cultural context of immigrants' origin countries (Hollander et al., 2013; Delilovic et al., 2023). The timing of immigration relative to the child's birth is also considered, as it may affect acculturation and integration, potentially also affecting the parents' ability to navigate mental health services. Finally, we adjust for key confounding variables including parental age, parity, maternal socioeconomic status, marital status, and parental psychiatric history. These covariates were selected based on theoretical relevance linking them to both parental immigration and offspring mental health service utilization (Fazel et al., 2012; Reiss, 2013; Hollander et al., 2020; Gubi et al., 2022); demonstrated statistical associations with both the outcome and parental immigration status in the control group; and availability of information in the registers (Sund, 2012).

This case-control study was based on a large nationwide register data which includes information of second-generation immigrants, who were diagnosed with anxiety and/or depression by specialized healthcare services and were born in Finland, with one or both of their parents born abroad. The main aim of the study was to examine whether parental immigration status is associated with offspring utilization of mental health services for anxiety disorders, depression, and comorbid anxiety and depression. We also assessed whether the timing of parental immigration modifies these associations; and also examined if these association vary by parental country of origin, characterized by HDI level and geographical region.

2. Methods

2.1. Study design and participants

We employed a case-control design to efficiently examine the association between parental immigration status and offspring mental health service utilization in a large nationwide sample. This design allowed detailed assessment of several parental immigration categories and relevant confounding factors while retaining adequate statistical power. Cases and controls were matched based on age (±30 days), and biological sex to ensure comparability on key demographic factors.

This is a nationwide case-control study based on Finnish national registers. The source population comprises all live singletons born in Finland between January 1992 and December 2006 (n = 867,175). The cases were diagnosed and registered in the Finnish Care Register for Health Care (CRHC) as a depressive episode or recurrent depression, or anxiety disorders by 2012, and followed up until 2015. The controls were identified from the Finnish Population Information System (FPIS) as those without the diagnoses of a depressive episode or recurrent depression, or anxiety disorders.

The study dataset was built from initial pools of anxiety (30,029 cases, 119,257 controls) and depression (17,555 cases, 69,588 controls), which included overlaps between anxiety and depression cases (8418), between anxiety and depression controls (16,549), between anxiety cases and depression controls (2389), and between depression cases and anxiety controls (2187). These datasets were merged using personal identity codes from Finnish Population Information System (FPIS), with cases defined as individuals who were cases in either or both datasets, while controls were individuals who weren't cases in either dataset, resulting in 39,166 cases and 167,720 controls.

2.2. Data sources

The Care Register for Health Care (CRHC), Finnish Medical Birth Register (FMBR), and Finnish Population Information System (FPIS) were used to obtain exposure and outcome data for this study. Data from these sources were linked via unique personal identification codes assigned to all Finnish citizens and residents. The CRHC routinely registers medical diagnoses in Finland, including all diagnoses from public inpatient care units and, since 1998, outpatient diagnoses from public specialized hospital units. For this study, the CRHC was used to identify cases of anxiety disorders, depression, and comorbid anxiety and depression conditions diagnosed according to International Classification of Diseases, Tenth Revision (ICD-10) diagnostics criteria. The data on parental history of psychopathology, a potential covariate, were also extracted from this register. In Finland, psychiatric diagnoses have transitioned from ICD-8 (1969–1986) to ICD-9 (1987–1995) and ICD-10 (since 1996), with validation studies demonstrating 75–99% positive predictive value for diagnoses including schizophrenia, bipolar disorder, autism, Tourette syndrome, ADHD, selective mutism, and depression (Sund, 2012). The FMBR, provided comprehensive perinatal data including sex, maternal age, date of birth, maternal marital status, socioeconomic status, and parity. The information on parents' date of birth, marital status, emigration, identification of controls, and country of birth for both cases and controls were obtained from FPIS.

The use and linkage of data for this study was approved by Data Protection Ombudsman, and the ethical approval was obtained from the Ethics Committee of the Hospital District of Southwest Finland. Register data were anonymized prior to analysis in compliance with Finnish data protection legislation. Finnish law exempts register-based research from

informed consent requirements when the study does not involve direct contact with registered individuals.

2.3. Procedures

The parental immigration status is the exposure for our study. Immigrants were defined as parents born abroad whose native language was not Finnish. Parents were classified as Finnish if they were born in Finland with Finnish, Swedish, or Sami as their native language, or if they were born abroad with Finnish as their native language. We used four different methods to classify parental status. First, parents were categorized based on their immigration status: both parents Finnish (reference group); mother Finnish and father immigrant; father Finnish and mother immigrant; and both parents immigrants. Second, parents were further categorized based on the Human Development Index (HDI) of their birth country. The HDI was classified into very high, high, medium, and low categories according to the Human Development Report 2021–22 (UNDP, 2022). HDI was chosen to reflect socioeconomic development of the origin country, a known correlate of health-seeking behavior (Lehti et al., 2013; Lehti et al., 2016). Third, parents were categorized based on their geographical region of origin as: Finland (reference group), Europe, North America and Australia, Former Soviet Union or Yugoslavia, Sub-Saharan Africa, North Africa and the Middle East, Asia, and Central and South America. Finally, parental timing of immigration was assessed in relation to the child's birth and categorized as: Finnish (reference group), immigrated ≥5 years before the child's birth, immigrated 1–4 years before the child's birth, and immigrated <1 year before the child's birth.

As the main outcome, we investigated mental health service use for anxiety disorders (ICD-10: F40, F41, F93 or F94.0, excluding F41.2), depression or recurrent depression (ICD-10: F32.0-F32.9 and F33.0-F33.9), or comorbid anxiety and depression. The ICD-10 codes for defining the outcomes are presented in the Supplementary Table S1.

The selection of covariates was based on previous evidence, and those demonstrated statistical association with both the outcome and parental immigration status in the control group, and availability of information in the registers (Sund, 2012). We chose parental age, parity, maternal socio-economic status (SES), marital status, number of previous births, and parental history of psychiatric disorders as potential covariates, as these factors have been associated with neurodevelopmental disorders in children and adolescents and are predictors of mental health service use (Hollander et al., 2020; de Laat et al., 2018; Khanal et al., 2024; Fazel et al., 2012; D'Onofrio et al., 2014; Reiss, 2013; Easey et al., 2019).

2.4. Statistical analysis

We used Chi-squared tests for categorical variables and *t*-tests for continuous parental age to analyze the association between potential covariates and immigration status among the controls. We examined the bivariable association between potential covariates and the primary outcome: anxiety disorder, depression and comorbid anxiety and depression. The association between covariates and each outcome was tested with multinomial logistic regression (adjusted by sex, and year and month of birth). By conducting these analyses, we aimed to select a set of covariates that were both theoretically relevant and statistically associated with both the exposure and the outcome. Covariates were included in the adjusted model if the association with parental immigration status and the outcome had a significance level of $p < 0.05$. The association between covariates and parental immigration status as well as the outcome is provided as supplementary Tables S2 and S3.

We used multinomial logistic regression analysis to examine the association between parental immigration status and service use for anxiety and/or depression in children. This approach was chosen to accommodate our three-category outcome while adjusting for the matched design by including sex, year of birth, and month of birth as covariates. The control group served as the reference category to which the three outcome groups were compared. All models included the selected covariates that showed association with both parents' immigration status and the outcome. The adjusted odds ratio (aOR) was calculated with a 95% confidence interval (CI). All statistical analysis was performed in SAS (version 9.4), and the figures were built in R (version 4.4.2).

3. Results

3.1. Descriptive data

As shown in Fig. 1, from the merged pool of cases (n = 39,1669), and controls (n = 167,7209), exclusions were applied: cases were removed if they had severe, or profound intellectual disability (ICD-10: F72, or F73) diagnoses (60), lacked depression or anxiety diagnoses at age 5 or later (5079), or had missing/unclear parental birth country or language information (889); controls were removed if they had a depression or anxiety diagnosis before the end of 2015 (5994), had ICD-10: F72, or F73 diagnoses (109), unclear parental information (1968), or no remaining matched cases (20,692). The final study population comprised 33,137 cases—divided into depression only (10,003), anxiety only (14,014), and comorbid anxiety and depression (9120)—and 138,957 controls.

3.2. Parental immigration status, and country of birth (HDI categorization)

Children with two immigrant parents showed significantly lower odds of mental health service use across all outcome categories: comorbid anxiety and depression (aOR 0.4, 95% CI 0.3–0.6, $p < 0.001$), depression only (aOR 0.5, 95% CI 0.4–0.6, $p < 0.001$), and anxiety only (aOR 0.8, 95% CI 0.7–0.9, $p = 0.001$). In contrast, children with immigrant fathers and Finnish mothers showed higher odds of receiving mental health services across all outcome categories: comorbid anxiety and depression (aOR 1.6, 95% CI 1.4–1.8, $p < 0.001$), anxiety only (aOR 1.4, 95% CI 1.3–1.6, $p < 0.001$), and depression only (aOR 1.4, 95% CI 1.2–1.6, $p < 0.001$). Fig. 2 illustrates the parental immigration status as predictor of service use across all outcome categories. Children whose immigrant parents were from low HDI countries showed lower odds of service use for depression only (aOR 0.08, 95% CI 0.02–0.3, $p < 0.001$), anxiety only (aOR 0.4, 95% CI 0.3–0.7, $p < 0.001$), and comorbid anxiety and depression (aOR 0.1, 95% CI 0.04–0.4, $p < 0.001$). Children with an immigrant father from a high HDI country and a Finnish mother had higher odds of service use for comorbid anxiety and depression (aOR 2.4, 95% CI 1.7–3.2, $p < 0.001$), depression only (aOR 2.0, 95% CI 1.5–2.8, $p < 0.001$), and anxiety only (aOR 1.9, 95% CI 1.4–2.5, $p < 0.001$). Additionally, children with a Finnish father and an immigrant mother from a very high HDI country showed higher likelihood of service use for anxiety only (aOR 1.2, 95% CI 1.1–1.4, $p = 0.005$). Table 1 shows parental immigration status, and country of birth based on HDI categorization, as predictor for service use.

Table 2 presents the association between parental timing of immigration and mental health service utilization. Children whose mothers immigrated less than 1 year before birth had lower odds of service use for comorbid anxiety and depression (aOR 0.5, 95% CI 0.3–0.7, $p < 0.001$) and depression only (aOR 0.7, 95% CI 0.5–1.0, $p = 0.032$). Similarly, children whose mothers immigrated 5 or more years before their birth showed lower odds of service use for depression only (aOR 0.7, 95% CI 0.5–0.9, $p = 0.019$) and comorbid anxiety and depression (aOR 0.7, 95% CI 0.5–0.9, $p = 0.012$). In contrast, paternal timing of immigration showed minimal associations with service utilization, with one significant borderline finding: children whose fathers immigrated less than 1 year before their birth had higher odds of service use for anxiety only (aOR 1.4, 95% CI 1.0–1.8, $p < 0.022$). No significant associations were observed for depression only or comorbid anxiety and

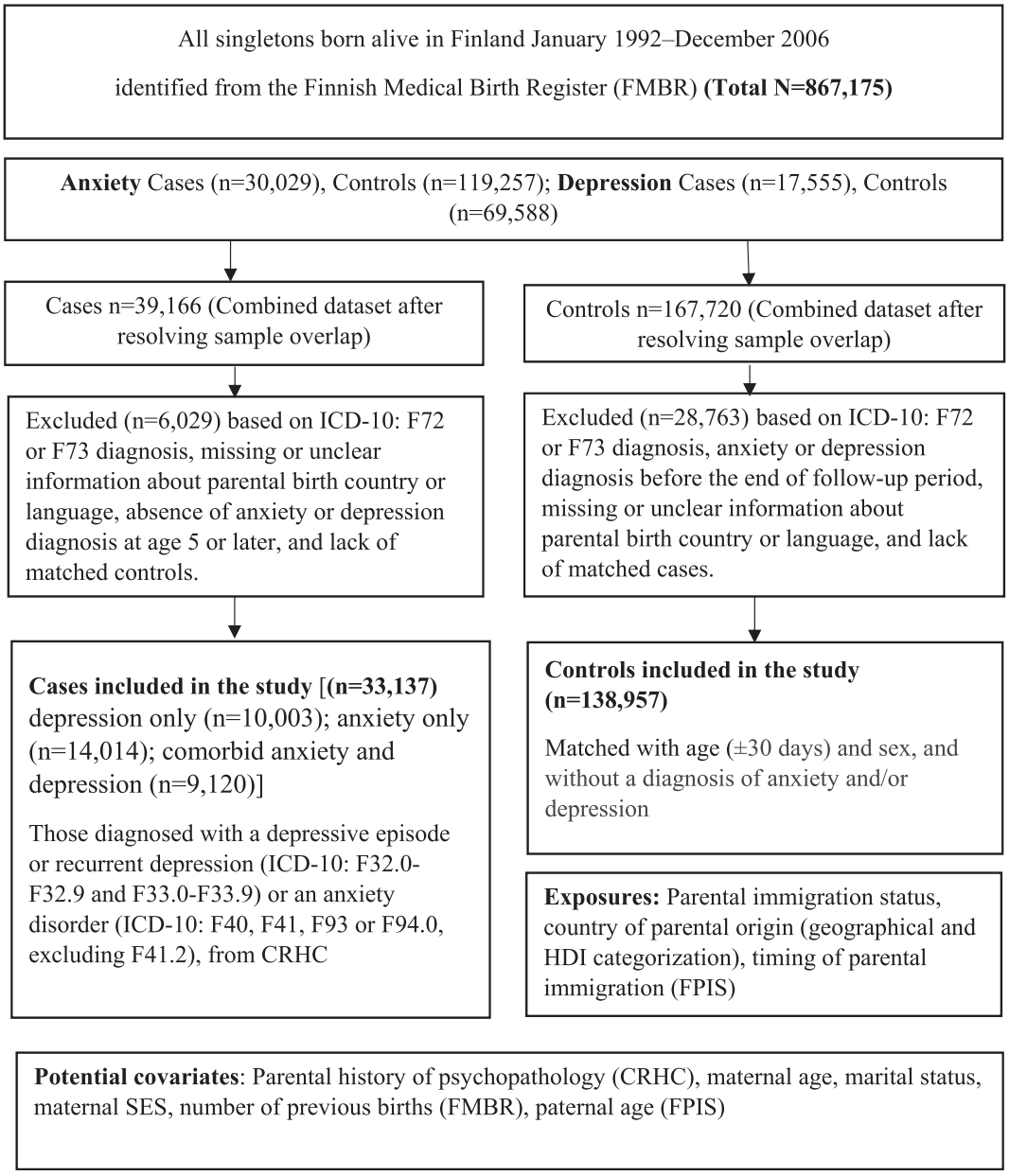


Fig. 1. Flow chart of building dataset, exclusion criteria, and study participants.

depression.

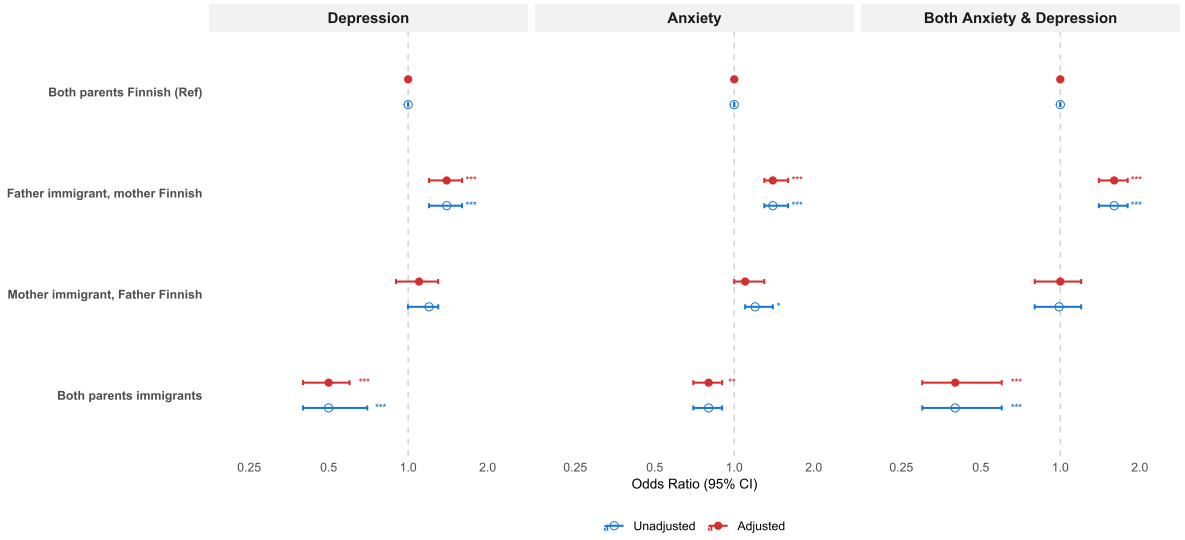
3.3. Geographical categorization of parental origin

Compared to children with Finnish mothers, children of mothers from Sub-Saharan Africa had lower odds of service use across all outcome categories: depression only (aOR 0.1, 95% CI 0.04–0.3, $p < 0.001$), comorbid anxiety and depression (aOR 0.2, 95% CI 0.1–0.5, $p < 0.001$), and anxiety only (aOR 0.6, 95% CI 0.4–0.8, $p = 0.002$). Similarly, children of mothers from North Africa and the Middle East showed lower odds of service use for depression only (aOR 0.4, 95% CI 0.2–0.8, $p = 0.006$) and comorbid anxiety and depression (aOR 0.5, 95% CI 0.2–0.9, $p < 0.023$). Maternal region of birth as predictor of service use across all outcome categories is illustrated in Fig. 3, and Table S4.

Compared to children with Finnish fathers, children of fathers from Central and South America showed higher odds for service use across all outcomes: comorbid anxiety and depression (aOR 2.3, 95% CI 1.3–4.1, $p = 0.007$), anxiety only (aOR 2.0, 95% CI 1.3–3.1, $p = 0.003$), and depression only (aOR 1.9, 95% CI 1.1–3.5, $p = 0.03$). Similarly, children with fathers from North Africa and the Middle East showed increased odds of service use for anxiety only (aOR 1.3, 95% CI 1.1–1.6, $p = 0.002$) and comorbid anxiety and depression (aOR 1.4, 95% CI 1.1–1.7, $p = 0.011$), whereas children with fathers from Asia had lower likelihood of service use for anxiety only (aOR 0.6, 95% CI 0.4–0.9, $p = 0.006$). Paternal region of birth as predictor of service use across all outcome categories is illustrated in Fig. 4, and Table S4.

4. Discussion

This study reveals complex associations between parental immigration status and offspring mental health service use for anxiety disorders, depression, and comorbid anxiety and depression. The findings contribute significant insights as the first nationwide register-based study to examine these relationships. There are three key findings. First, children with two immigrant parents showed significantly reduced mental health service use across all outcomes. However, children with



Parental Immigration Status	Depression Cases	Anxiety Cases	Both Anxiety and Depression Cases	Controls
Both parents Finnish	9559	13187	8725	132703
Father immigrant, mother Finnish	232	390	237	2435
Mother immigrant, Father Finnish	149	254	112	1884
Both parents immigrants	63	183	46	1933

Fig. 2. Parental immigration status as predictor of service use for the outcome.

mixed parental backgrounds, specifically those with immigrant fathers and Finnish mothers, demonstrated an increased use of mental health services across all categories. Second, the timing of maternal immigration influenced service use patterns, with immigration less than one year before the child's birth associated with reduced odds of service use for comorbid anxiety and depression, and depression only. Third, children with two immigrant parents from low HDI countries, and those with mothers from Sub-Saharan Africa and North Africa/the Middle East had lesser likelihood of service utilization. However, children with immigrant fathers from Central/South America and high HDI countries demonstrated higher service use for all outcomes.

These patterns align with 'Andersen's Behavioral Model' of health services use, which suggests that service utilization is determined by predisposing factors (demographics, cultural beliefs), enabling factors (healthcare system knowledge, language proficiency), and need factors (Andersen, 1995). The differential patterns across parental immigration suggest that enabling factors, particularly the presence of a Finnish parent who can navigate the healthcare system, play a critical mediating role. Our findings also reflect the core principle of 'Inverse Care Law' where those with potentially greater healthcare needs due to migration-related stress experience the least access to services (Hart, 1971).

Children with two immigrant parents demonstrated lower engagement with mental health services across all outcome categories. This points to substantial barriers that immigrant families encounter when navigating healthcare systems. Given the high global burden of anxiety and depression in youth (Polanczyk et al., 2015), underutilization of mental health services among immigrant offspring is concerning. Previous evidence suggests that language difficulties, cultural stigma surrounding mental health, and limited familiarity with healthcare processes are persistent challenges for immigrant populations (Hollander et al., 2013). For families in which both parents are immigrants, these obstacles may be amplified due to the absence of a native-born parent, who might otherwise bridge cultural and systemic gaps (Derr, 2016). Cultural attitudes that view mental health issues as private matters or signs of weakness can deter families from seeking professional help, while practical challenges such as difficulties in understanding referral processes or accessing multilingual resources further compound the issue (Dalgard and Thapa, 2007). Moreover, pre-migration stressors like trauma or displacement (Fazel et al., 2012), combined with post-migration struggles such as discrimination or social isolation (Dalgard and Thapa, 2007; Abdulhamed et al., 2022), may heighten mental health needs while simultaneously reducing the likelihood of seeking care (Kirmayer et al., 2011). These barriers are particularly noticeable for families from collectivist cultural backgrounds where mental health problems are often seen through religious, spiritual, or somatic contexts rather than scientific models (Ventevogel et al., 2013; Abdullah and Brown, 2011). When both parents share these cultural bases and face language barriers, there is no alternative perspective within the household to bridge to Western mental health services. The particularly low service use among children whose parents are from low HDI countries suggests these barriers are most severe when combined with limited formal education and pre-migration experiences with under-resourced healthcare systems (Idemudia et al., 2013).

In contrast, children with immigrant fathers and Finnish mothers exhibited higher utilization of mental health services across all categories. This finding highlights the pivotal role a native-born parent can play in facilitating access to care. Previous studies indicate that children with mixed parenting, and those with a parent familiar with healthcare systems and cultural norms around mental health, often benefit from greater integration into the host society (Dalgard and Thapa, 2007; Kuo, 2014). In our study, Finnish mothers likely serve as a cultural bridge, utilizing their familiarity with the healthcare system to identify mental health issues and efficiently navigate service access. This potentially reduces obstacles such as institutional distrust and limited knowledge about available support services commonly faced by immigrant families. The increased likelihood of service use in this group could also reflect a higher willingness to seek help, influenced by the native parent's alignment with societal expectations that prioritize professional intervention for mental health issues. This pattern also reflects gender differences in healthcare decision-making, as mothers typically serve as primary healthcare navigators for children across cultures and are more likely to recognize mental health symptoms and initiate help-seeking

Table 1
Parental immigration status, and their country of birth (by HDI categorization) as predictors of service use for the outcome.

	Controls n (%)	Cases								
		Only depression N (%)	OR (95% CI)	aOR (95% CI)	Only anxiety N (%)	OR (95% CI)	aOR (95% CI)	Both depression & anxiety N (%)	OR (95% CI)	aOR (95% CI)
Parental immigration status (Overall)										
Both parents Finnish	132,703 (80.8)	9559 (5.8)	Ref	Ref	13,187 (8.0)	Ref	Ref	8725 (5.3)	Ref	Ref
Father immigrant, Mother Finnish	2435 (73.9)	232 (7.0)	**1.4 (1.2–1.6)** ***	**1.4 (1.2–1.6)** ***	390 (11.8)	**1.4 (1.3–1.6)** ***	**1.4 (1.3–1.6)** ***	237 (7.2)	**1.6 (1.4–1.8)** ***	**1.6 (1.4–1.8)** ***
Mother immigrant, Father Finnish	1884 (78.5)	149 (6.2)	1.2 (0.998–1.3)	1.1 (0.9–1.3)	254 (10.6)	**1.2 (1.1–1.4)** *	1.1 (1.0–1.3)	112 (4.7)	0.99 (0.8–1.2)	1.0 (0.8–1.2)
Both parents immigrants	1933 (87.0)	63 (2.8)	**0.5 (0.4–0.7)** ***	**0.5 (0.4–0.6)** ***	183 (8.2)	0.8 (0.7–0.9)	**0.8 (0.7–0.9)** **	46 (2.1)	**0.4 (0.3–0.6)** ***	**0.4 (0.3–0.6)** ***
Parental immigration status by HDI										
Father Immigrant										
Very High	1624	132	**1.2 (1.01–1.5)** *	**1.2 (1.01–1.5)** *	248	**1.4 (1.2–1.6)** ***	**1.4 (1.2–1.6)** ***	150	**1.5 (1.3–1.8)** ***	**1.5 (1.3–1.8)** ***
High	306	43	**2.0 (1.5–2.8)** ***	**2.0 (1.5–2.8)** ***	60	**1.9 (1.4–2.5)** ***	**1.9 (1.4–2.5)** ***	45	**2.4 (1.7–3.2)** ***	**2.4 (1.7–3.2)** ***
Medium	316	28	1.3 (0.9–1.9)	1.3 (0.9–1.9)	46	1.3 (0.97–1.8)	1.3 (0.97–1.8)	26	1.4 (0.9–2.0)	1.4 (0.9–2.0)
Low	191	29	**2.2 (1.5–3.3)** ***	**2.2 (1.5–3.3)** ***	36	**1.8 (1.3–2.6)** **	**1.8 (1.3–2.6)** **	16	1.4 (0.8–2.3)	1.4 (0.8–2.3)
Mother Immigrant										
Very high	1615	126	1.2 (0.96–1.4)	1.2 (0.96–1.4)	216	**1.2 (1.1–1.4)** **	**1.2 (1.1–1.4)** **	98	0.997 (0.8–1.2)	0.997 (0.8–1.2)
High	199	20	**1.6 (1.001–2.5)** *	**1.6 (1.001–2.5)** *	27	1.1 (0.8–1.7)	1.1 (0.8–1.7)	11	0.97 (0.5–1.8)	0.97 (0.5–1.8)
Medium	49	3	0.96 (0.3–3.1)	0.96 (0.3–3.1)	8	1.3 (0.6–2.9)	1.3 (0.6–2.9)	1	0.4 (0.05–2.6)	0.4 (0.05–2.6)
Low	21	0	n/a	n/a	3	1.3 (0.4–4.3)	1.3 (0.4–4.3)	2	1.6 (0.4–6.7)	1.6 (0.4–6.7)
Both parents immigrants										
Very high	943	41	**0.7 (0.5–0.97)** *	**0.7 (0.5–0.97)** *	107	0.9 (0.8–1.1)	0.9 (0.8–1.1)	28	**0.5 (0.4–0.8)** ***	**0.5 (0.4–0.8)** ***
High	335	16	0.7 (0.4–1.2)	0.7 (0.4–1.2)	30	0.7 (0.5–1.1)	0.7 (0.5–1.1)	12	0.6 (0.3–1.1)	0.6 (0.3–1.1)
Medium	217	4	**0.3 (0.1–0.9)** *	**0.3 (0.1–0.9)** *	23	0.8 (0.5–1.2)	0.8 (0.5–1.2)	3	**0.3 (0.09–0.9)** *	**0.3 (0.09–0.9)** *
Low	438	2	**0.08 (0.02–0.3)** ***	**0.08 (0.02–0.3)** ***	23	**0.4 (0.3–0.7)** ***	**0.4 (0.3–0.7)** ***	3	**0.1 (0.04–0.4)** ***	**0.1 (0.04–0.4)** ***

*P < 0.05, **p < 0.01, ***p < 0.001, Ref: Reference category. aOR: adjusted odds ratio, adjusted by: sex, year of birth, month of birth, previous births, maternal SES, marital status, parental history of psychopathology, and parental age; HDI: Human development index. Bold values indicate odds ratios that are statistically significant.

(Cabassa et al., 2006; Thurston et al., 2014). When mothers are immigrants and fathers are Finnish, the reduced direct involvement of Finnish fathers in day-to-day healthcare decisions may limit their enabling influence. The particularly low service utilization among children with two immigrant parents reflects compounding barriers when neither parent possesses native-born enabling factors such as language fluency and healthcare system familiarity (Hollander et al., 2013).

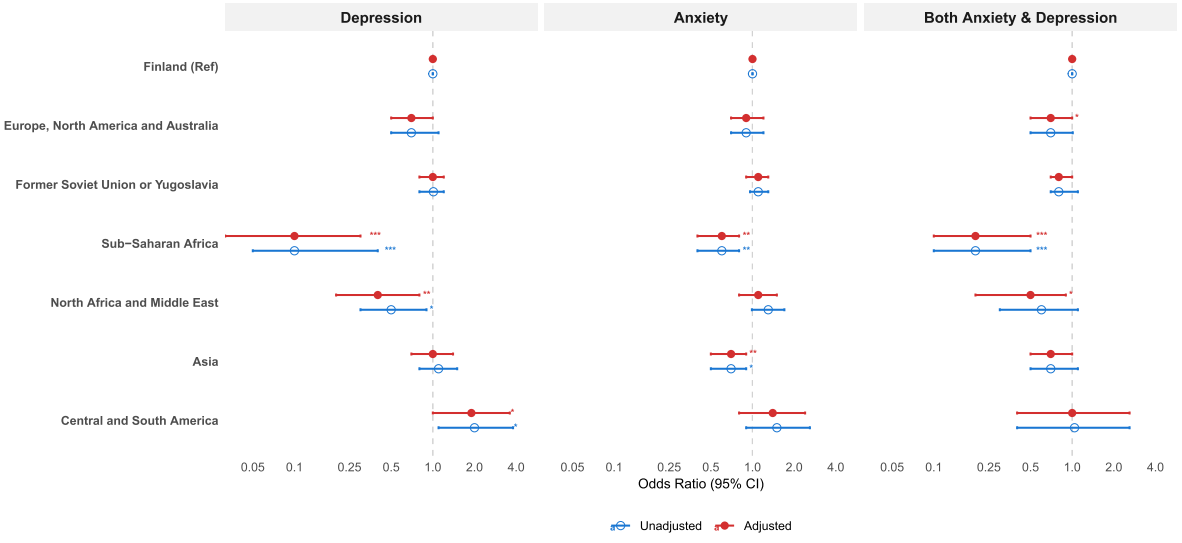
The distinct differences for comorbid anxiety-depression likely reflect that comorbidity indicates greater symptom severity and complexity, requiring more intensive services that are particularly difficult for immigrant families to navigate (Cummings et al., 2014). Comorbidity may also be more difficult for parents to recognize as a treatable condition due to overlapping symptoms and greater clinical complexity (Melton et al., 2016), particularly when cultural frameworks emphasize somatic complaints or attribute distress to life circumstances rather than psychiatric disorders (Kirmayer, 2001).

The timing of maternal immigration emerged as a significant factor influencing children's mental health service use, particularly for specific conditions like comorbid disorders and depression. Recent immigrants often struggle with acculturation and a lack of system knowledge during the early integration phase (Kirmayer et al., 2011). Moreover, mothers who immigrate shortly before childbirth may face critical challenges, including adaptation stress, limited social networks, and unfamiliarity with healthcare options, all of which can hinder their ability to seek care for their children (Abebe et al., 2017; Lehti et al., 2018), and as suggested by Potochnick and Perreira (2010), intergenerational trauma

Table 2
Parental timing of immigration as predictor of service use for the outcome.

	Controls n (%)	Cases								
		Only Depression n (%)	OR (95% CI)	aOR (95% CI)	Only Anxiety n (%)	OR (95% CI)	aOR (95% CI)	Both Anxiety & depression n (%)	OR (95% CI)	aOR (95% CI)
Mother's timing of immigration										
Non immigrant	135,140 (80.7)	9791 (5.8)	Ref	Ref	13,577 (8.1)	Ref	Ref	8962 (5.4)	Ref	Ref
≥5 years before child's birth	1143 (83.0)	48 (3.5)	**0.7 (0.5–0.98)** *	**0.7 (0.5–0.9)** *	148 (10.7)	0.96 (0.8–1.1)	0.9 (0.8–1.1)	40 (3.0)	**0.7 (0.5–0.95)** *	**0.7 (0.5–0.9)** *
1–4 years before child's birth	1720 (81.7)	112 (5.3)	0.98 (0.8–1.2)	0.9 (0.8–1.1)	187 (9.0)	0.97 (0.8–1.1)	1.0 (0.8–1.1)	85 (4.0)	0.8 (0.7–1.02)	0.8 (0.6–1.0)
<1 year before child's birth	802 (84.0)	45 (4.7)	0.8 (0.6–1.1)	**0.7 (0.5–1.0)** *	82 (8.6)	0.97 (0.8–1.2)	0.9 (0.7–1.1)	26 (2.7)	**0.5 (0.3–0.7)** ***	**0.5 (0.3–0.7)** ***
Father's timing of immigration										
Non immigrant	134,587 (80.8)	9708 (5.8)	Ref	Ref	13,441 (8.1)	Ref	Ref	8837 (5.3)	Ref	Ref
≥5 years before child's birth	1755 (80.0)	98 (4.5)	0.97 (0.8–1.2)	1.0 (0.8–1.2)	241 (11.0)	1.05 (0.9–1.2)	1.0 (0.9–1.2)	102 (4.6)	1.1 (0.9–1.4)	1.1 (0.9–1.4)
1–4 years before child's birth	1732 (79.5)	132 (6.1)	1.1 (0.9–1.3)	1.1 (0.9–1.3)	197 (9.1)	1.1 (0.96–1.3)	1.1 (1.0–1.3)	117 (5.4)	1.1 (0.9–1.3)	1.1 (0.9–1.3)
<1 year before child's birth	458 (78.0)	33 (5.6)	0.99 (0.7–1.4)	0.9 (0.6–1.3)	68 (11.5)	**1.5 (1.1–1.9)** **	**1.4 (1.0–1.8)** *	30 (5.1)	0.99 (0.7–1.4)	1.0 (0.7–1.4)

*p < 0.05, **p < 0.01, ***p < 0.001, Ref: Reference category. aOR: adjusted odds ratio, adjusted by: sex, year of birth, month of birth, previous births, maternal SES, marital status, parental history of psychopathology, and parental age. Bold value indicate odds ratios that are statistically significant.

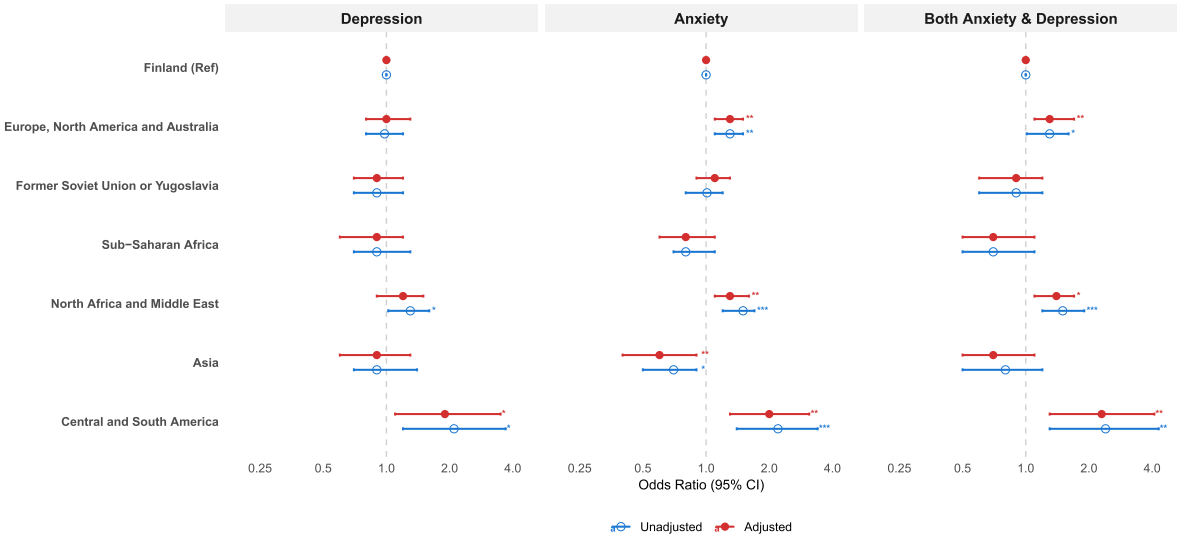


*p<0.05, **p<0.01, ***p<0.001
aOR: adjusted odds ratio, adjusted for: sex, year of birth, month of birth, previous births, maternal SES, marital status, parental psychopathology, and parental age
Ref: Reference category

Mother's Region of Birth	Depression Cases	Anxiety Cases	Both Anxiety and Depression Cases	Controls
Finland	9791	13577	8962	135140
Europe, North America and Australia	33	64	28	640
Former Soviet Union or Yugoslavia	109	212	82	1655
Sub−Saharan Africa	4	30	6	463
North Africa and Middle East	9	61	9	328
Asia	46	54	28	646
Central and South America	11	16	5	85

Fig. 3. Maternal region of birth as predictor of service use for the outcome.

may compound barriers for children of recent immigrants. Interestingly, our study also shows that even mothers who have resided in the country



*p<0.05, **p<0.01, ***p<0.001
aOR: adjusted odds ratio, adjusted for: sex, year of birth, month of birth, previous births, maternal SES, marital status, parental psychopathology, and parental age
Ref: Reference category

Father's Region of Birth	Depression Cases	Anxiety Cases	Both Anxiety and Depression Cases	Controls
Finland	9708	13441	8837	134587
Europe, North America and Australia	81	166	93	1218
Former Soviet Union or Yugoslavia	51	112	44	928
Sub−Saharan Africa	39	65	27	671
North Africa and Middle East	80	167	83	962
Asia	31	37	23	490
Central and South America	13	26	13	100

Fig. 4. Paternal region of birth as predictor of service use for the outcome.

for several years before the child's birth show less likelihood of service use. This indicates that the barriers may not fully disperse with time, possibly due to continuing cultural dissonance, where attitudes toward mental health care do not align with host country norms, or because of the difficulty in accessing specialized services (Lehti et al., 2018). Extended periods of residence may encourage dependence on informal coping strategies, such as support from family or community networks, or deeper integration into the immigrant's own ethnic society, which may favor traditional care over professional services (Arat et al., 2018). Similar findings have been reported by a Norwegian study in which immigrants with over 10 years of residence were less likely to use specialist mental healthcare, indicating a potential shift away from formal systems with longer stays (Abebe et al., 2017). Notably, paternal immigration timing showed limited associations with mental health service utilization. This differential pattern with maternal immigration timing aligns with research showing that mothers typically serve as primary healthcare decision-makers and navigators (Thurston et al., 2014), suggesting mother's immigration experiences and acculturation may have a more direct influence on children's healthcare-seeking patterns.

Another important finding was that the parental region of birth or country of origin further influenced the service use patterns. Children of parents from low HDI countries, as well as those with mothers from Sub-Saharan Africa and North Africa/Middle East showed lower service utilization. Previous studies have shown that children with parents from low-income countries often underutilize the psychiatric care services compared to their native peers (Naslund and Deng, 2021). It is also evident that many in low HDI countries often emphasize handling mental health problems within the family, which potentially reduces formal service utilization (Kuo, 2014). The regional variations we observed reflect interactions between economic development and cultural health beliefs. In many Sub-Saharan African and Middle Eastern societies, mental health problems are frequently understood through religious or spiritual contexts, leading families to seek traditional healers or religious leaders rather than psychiatric services (Ventevogel et al., 2013; Shefer et al., 2013). Stigma surrounding mental illness is especially evident in many cultures in low HDI regions, where mental health problems may be considered to cause shame to the entire family (Abdullah and Brown, 2011). For instance, parents may attribute symptoms of depression to laziness or lack of discipline rather than recognizing them as treatable mental health conditions. Contrasting this, higher service utilization among children with fathers from Central/South America and high HDI countries likely reflects greater socioeconomic resources, higher educational attainment, better language proficiency, and more favorable attitudes toward mental health care shaped by mental health system reforms in several Latin American countries (Mascayano et al., 2015).

This study has some limitations that need consideration. Despite utilizing nationally representative data, our findings may not be generalizable to countries with different healthcare systems or immigration patterns. Additionally, our reliance on specialized healthcare register data likely underestimates the true prevalence of anxiety and depression, as individuals with milder symptoms may not seek specialized care or may use informal care. The analysis is limited to small sample sizes in certain subgroups, particularly with specific regions of origin, which limits the precision of our estimates for these populations. Furthermore, while register-based studies offer comprehensive coverage and minimize selection bias, they lack critical information on important social determinants such as discrimination experiences, acculturation processes, stigma perceptions, language proficiency, and pre-migration trauma, limiting the ability to fully explain disparities in service utilization. Finally, although our adjusted analyses controlled for several known confounders, the minimal differences between unadjusted and adjusted odds ratios suggest that the included variables may not fully capture the underlying mechanism for service use disparities such as cultural perceptions of mental health, language barriers, and healthcare access. To better explain these patterns, future research should explore additional mediators, including acculturation levels, discrimination

experiences, and stigma.

These findings have important implications for improving mental health service access for children of immigrant parents. Universal screening in schools and primary care settings could overcome recognition barriers, particularly for families where both parents are immigrants (Alegría et al., 2015). Culturally responsive outreach using community health workers from immigrant communities could bridge cultural and linguistic gaps (Cabassa et al., 2006). Given mothers' crucial role in healthcare decision-making, targeted education and support for immigrant mothers is essential. Moreover, system level adaptations such as simplified referral pathways, flexible scheduling, and integrated mental health services in general pediatric care could lower practical barriers and reduce stigma (Asarnow et al., 2015). Interventions should be adapted to specific immigrant communities, recognizing that families from low HDI countries and certain regions face particularly noticeable barriers requiring intensive and culturally adapted mental health services.

5. Conclusion

Parental immigration status significantly associates with children's mental health service utilization. Children with two immigrant parents had less likelihood of services access, while those with Finnish mothers and immigrant fathers showed higher utilization rates. Maternal immigration less than one year before childbirth reduced likelihood of service access. Moreover, children whose parents originated from low HDI countries, particularly those with mothers from Sub-Saharan Africa, utilized services less frequently. These patterns suggest that cultural and social factors affect Finland's universal healthcare access within this demographic. These findings highlight the need to address mental health literacy, stigma, and language barriers among immigrant populations.

CRediT authorship contribution statement

Prakash Khanal: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Conceptualization. **Subina Upadhyaya:** Writing – review & editing, Validation, Conceptualization. **Tiia Ståhlberg:** Writing – review & editing, Validation, Methodology. **Emmi Heinonen:** Validation, Software, Methodology, Formal analysis, Data curation. **Terhi Luntamo:** Writing – review & editing, Validation. **Andre Sourander:** Writing – review & editing, Validation, Supervision, Resources, Methodology, Funding acquisition, Conceptualization.

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Declaration of competing interest

The authors declare no competing interests.

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Data availability

The data that support the findings of this study are available from Findata (https://findata.fi). Restrictions apply to the availability of these data, which were used under license for this study.

References

Abdulhamed, R., Lonka, K., Hietajärvi, L., Ikonen, R., Klemetti, R., 2022. Anxiety and depression symptoms and their association with discrimination and a lack of social support among first- and second-generation immigrant adolescents. Int. J. Intercult. Relat. 87, 193–205. https://doi.org/10.1016/j.ijintrel.2022.03.001.

Abdullah, T., Brown, T.L., 2011. Mental illness stigma and ethnocultural beliefs, values, and norms: an integrative review. Clin. Psychol. Rev. 31 (6), 934–948. https://doi.org/10.1016/j.cpr.2011.05.003.

Abebe, D.S., Lien, L., Elstad, J.I., 2017. Immigrants' utilization of specialist mental healthcare according to age, country of origin, and migration history: a nation-wide register study in Norway. Soc. Psychiatry Psychiatr. Epidemiol. 52, 679–687. https://doi.org/10.1007/s00127-017-1381-1.

Alegría, M., Álvarez, K., DiMarzio, K., 2015. Immigration and mental health. Curr. Epidemiol. Rep. 2, 145–155. https://doi.org/10.1007/s40471-015-0045-x.

Alegría, M., NeMoyer, A., Falgàs Bagué, I., Wang, Y., Alvarez, K., 2018. Social determinants of mental health: where we are and where we need to go. Curr. Psychiatry Rep. 20, 95. https://doi.org/10.1007/s11920-018-0969-9.

Alegría, M., O'Malley, I.S., Smith, R., Useche Rosania, A., Boyd, A., Cuervo-Torello, F., Williams, D.R., Acevedo-Garcia, D., 2023. Addressing health inequities for children in immigrant families: psychologists as leaders and links across systems. Am. Psychol. 78 (2), 173–185. https://doi.org/10.1037/amp0001016.

Andersen, R.M., 1995. Revisiting the behavioral model and access to medical care: does it matter? J. Health Soc. Behav. 36 (1), 1–10. https://doi.org/10.2307/2137284.

Arat, A., Östberg, V., Burström, B., Hjern, A., 2018. ADHD medication in offspring of immigrants - does the income level of the country of parental origin matter? BMC Psychiatry 18, 3. https://doi.org/10.1186/s12888-017-1572-z.

Asarnow, J.R., Rozenman, M., Wiblin, J., Zeltzer, L., 2015. Integrated medical-behavioral care compared with usual primary care for child and adolescent behavioral health: a meta-analysis. JAMA Pediatr. 169 (10), 929–937. https://doi.org/10.1001/jamapediatrics.2015.1141.

Bauldry, S., Szaflarski, M., 2017. Immigrant-based disparities in mental health care utilization. Socius Sociol. Res. Dyn. World 3, 1–16. https://doi.org/10.1177/2378023116685718.

Berry, J.W., Hou, F., 2017. Acculturation, discrimination and wellbeing among second generation of immigrants in Canada. Int. J. Intercult. Relat. 61, 29–39. https://doi.org/10.1016/j.ijintrel.2017.08.003.

Cabassa, L.J., Zayas, L.H., Hansen, M.C., 2006. Latino adults' access to mental health care: a review of epidemiological studies. Adm. Policy Ment. Health Ment. Health Serv. Res. 33 (3), 316–330. https://doi.org/10.1007/s10488-006-0040-8.

Cantor-Graae, E., Pedersen, C.B., 2013. Full spectrum of psychiatric disorders related to foreign migration: a Danish population-based study. JAMA Psychiatry 70, 427–435. https://doi.org/10.1001/jamapsychiatry.2013.441.

Choi, Y., He, M., Harachi, T.W., 2008. Intergenerational cultural dissonance, parent-child conflict and bonding, and youth problem behaviors among Vietnamese and Cambodian immigrant families. J. Youth Adolesc. 37 (1), 85–96. https://doi.org/10.1007/s10964-007-9217-z.

Cummings, C.M., Caporino, N.E., Kendall, P.C., 2014. Comorbidity of anxiety and depression in children and adolescents: 20 years after. Psychol. Bull. 140 (3), 816–845. https://doi.org/10.1037/a0034733.

Dalgard, O.S., Thapa, S.B., 2007. Immigration, social integration and mental health in Norway, with focus on gender differences. Clin. Pract. Epidemiol. Ment. Health 3, 24. https://doi.org/10.1186/1745-0179-3-24.

de Laat, S.A.A., Huizink, A.C., Hof, M.H., Vrijkotte, T.G.M., 2018. Socioeconomic inequalities in psychosocial problems of children: mediating role of maternal depressive symptoms. Eur. J. Pub. Health 28, 1062–1068. https://doi.org/10.1093/eurpub/cky125.

Delilovic, S., Hagström, A., Shedrawy, J., Hollander, A.C., Lönnroth, K., Hasson, H., 2023. Is legal status associated with mental illness among newly arrived refugees in Sweden: an epidemiological study. BMC Psychiatry 23 (1), 197. https://doi.org/10.1186/s12888-023-04679-y.

Derr, A.S., 2016. Mental health service use among immigrants in the United States: a systematic review. Psychiatr. Serv. 67, 265–274. https://doi.org/10.1176/appi.ps.201500004.

D'Onofrio, B.M., Rickert, M.E., Frans, E., Kuja-Halkola, R., Almqvist, C., Sjölander, A., Lichtenstein, P., Larsson, H., 2014. Paternal age at childbearing and offspring psychiatric and academic morbidity. JAMA Psychiatry 71 (4), 432–438. https://doi.org/10.1001/jamapsychiatry.2013.4525.

Easey, K.E., Mars, B., Pearson, R., Heron, J., Gunnell, D., 2019. Association of birth order with adolescent mental health and suicide attempts: a population-based longitudinal study. Eur. Child Adolesc. Psychiatry 28 (8), 1079–1086. https://doi.org/10.1007/s00787-018-1266-1.

Fazel, M., Reed, R.V., Panter-Brick, C., Stein, A., 2012. Mental health of displaced and refugee children resettled in high-income countries: risk and protective factors. Lancet 379, 266–282. https://doi.org/10.1016/S0140-6736(11)60051-2.

Foo, S.Q., Tam, W.W., Ho, C.S., Tran, B.X., Nguyen, L.H., McIntyre, R.S., Ho, R.C., 2018. Prevalence of depression among migrants: a systematic review and meta-analysis.

Int. J. Environ. Res. Public Health 15, 1986. https://doi.org/10.3390/ijerph15091986.
Gubi, E., Sjöqvist, H., Viksten-Assel, K., Bäärnhielm, S., Dalman, C., Hollander, A.C., 2022. Mental health service use among migrant and Swedish-born children and youth: a register-based cohort study of 472,129 individuals in Stockholm. Soc. Psychiatry Psychiatr. Epidemiol. 57, 161–171. https://doi.org/10.1007/s00127-021-02145-2.
Hart, J.T., 1971. The inverse care law. Lancet 297 (7696), 405–412. https://doi.org/10.1016/S0140-6736(71)92410-X.
Hollander, A.C., Bruce, D., Burström, B., Ekblad, S., 2013. The association between immigrant subgroup and poor mental health: a population-based register study. J. Nerv. Ment. Dis. 201, 645–652. https://doi.org/10.1097/NMD.0b013e31829dbd64.
Hollander, A.C., Pitman, A., Sjöqvist, H., Lewis, G., Magnusson, C., Kirkbride, J.B., Dalman, C., 2020. Suicide risk among refugees compared with non-refugee migrants and the Swedish-born majority population. Br. J. Psychiatry 217, 686–692. https://doi.org/10.1192/bjp.2019.220.
Idemudia, E.S., Williams, J.K., Wyatt, G.E., 2013. Migration challenges among Zimbabwean refugees before, during and post arrival in South Africa. J. Inj. Violence Res. 5 (1), 17–27. https://doi.org/10.5249/jivr.v5i1.185.
Kamali, M., Edwards, J., Anderson, L.N., Duku, E., Georgiades, K., 2023. Social disparities in mental health service use among children and youth in Ontario: evidence from a general, population-based survey. Can. J. Psychiatr. 68, 596–604. https://doi.org/10.1177/07067437221144630.
Khanal, P., Ståhlberg, T., Upadhyaya, S., Heinonen, E., Ortin-Peralta, A., Sourander, A., 2024. Parental psychopathology and offspring anxiety disorders in childhood and adolescence: a Finnish nationwide register study. J. Affect. Disord. 368, 374–382. https://doi.org/10.1016/j.jad.2024.09.046.
Kieseppä, V., Holm, M., Jokela, M., Suvisaari, J., Gissler, M., Lehti, V., 2021. Depression and anxiety disorders among immigrants living in Finland: comorbidity and mental health service use. J. Affect. Disord. 287, 334–340. https://doi.org/10.1016/j.jad.2021.03.049.
Kirmayer, L.J., 2001. Cultural variations in the clinical presentation of depression and anxiety: implications for diagnosis and treatment. J. Clin. Psychiatry 62 (Suppl. 13), 22–30.
Kirmayer, L.J., Narasiah, L., Munoz, M., Rashid, M., Ryder, A.G., Guzder, J., Hassan, G., Rousseau, C., Pottie, K., 2011. Common mental health problems in immigrants and refugees: general approach in primary care. Can. Med. Assoc. J. 183, E959–E967. https://doi.org/10.1503/cmaj.090292.
Kuo, B.C., 2014. Coping, acculturation, and psychological adaptation among migrants: a theoretical and empirical review and synthesis of the literature. Health Psychol. Behav. Med. 2, 16–33. https://doi.org/10.1080/21642850.2013.843459.
Lehti, V., Hinkka-Yli-Salomäki, S., Cheslack-Postava, K., Gissler, M., Brown, A.S., Sourander, A., 2013. The risk of childhood autism among second-generation migrants in Finland: a case-control study. BMC Pediatr. 13, 171. https://doi.org/10.1186/1471-2431-13-171.
Lehti, V., Chudal, R., Suominen, A., Gissler, M., Sourander, A., 2016. Association between immigrant background and ADHD: a nationwide population-based case-control study. J. Child Psychol. Psychiatry 57, 967–975. https://doi.org/10.1111/jcpp.12570.
Lehti, V., Gissler, M., Markkula, N., Suvisaari, J., 2018. Mental health service use among immigrants in Finland—a register-based study. Eur. J. Pub. Health 28, 712–717. https://doi.org/10.1093/eurpub/cky044.
Lui, P.P., 2015. Intergenerational cultural conflict, mental health, and educational outcomes among Asian and Latino/a Americans: qualitative and meta-analytic review. Psychol. Bull. 141 (2), 404–446. https://doi.org/10.1037/a0038449.
Mascayano, F., Armijo, J.E., Yang, L.H., 2015. Addressing stigma relating to mental illness in low- and middle-income countries. Front. Psychiatry 6, 38. https://doi.org/10.3389/fpsyt.2015.00038.
Melton, T.H., Croarkin, P.E., Strawn, J.R., McClintock, S.M., 2016. Comorbid anxiety and depressive symptoms in children and adolescents: a systematic review and analysis. J. Psychiatr. Pract. 22 (2), 84–98. https://doi.org/10.1097/PRA.0000000000000132.
Naslund, J.A., Deng, D., 2021. Addressing mental health stigma in low-income and middle-income countries: a new frontier for digital mental health. Ethics Med. Publ. Health 19, 100719. https://doi.org/10.1016/j.jemep.2021.100719.
Ogbeiwi, O., Ilyas, A., Harper, M., et al., 2025. Ethnic disparities in access to mental health services for Black and Asian migrants in major resettlement countries. J. Racial Ethn. Health Disparities 12, 3676–3688. https://doi.org/10.1007/s40615-024-02168-w.
Polanczyk, G.V., Salum, G.A., Sugaya, L.S., Caye, A., Rohde, L.A., 2015. Annual research review: a meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. J. Child Psychol. Psychiatry 56, 345–365. https://doi.org/10.1111/jcpp.12381.
Potochnick, S.R., Perreira, K.M., 2010. Depression and anxiety among first-generation immigrant Latino youth: key correlates and implications for future research. J. Nerv. Ment. Dis. 198, 470–477. https://doi.org/10.1097/NMD.0b013e3181e4ce24.
Queen, A.H., Ehrenreich-May, J., 2014. Anxiety-disordered adolescents with and without a comorbid depressive disorder: variations in clinical presentation and emotion regulation. J. Emot. Behav. Disord. 22, 160–170. https://doi.org/10.1177/1063426613478175.
Reiss, F., 2013. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. Soc. Sci. Med. 90, 24–31. https://doi.org/10.1016/j.socscimed.2013.04.026.
Salas-Wright, C.P., Kagotho, N., Vaughn, M.G., 2014. Mood, anxiety, and personality disorders among first and second-generation immigrants to the United States. Psychiatry Res. 220, 1028–1036. https://doi.org/10.1016/j.psychres.2014.08.045.
Shefer, G., Rose, D., Nellums, L., Thornicroft, G., Henderson, C., Evans-Lacko, S., 2013. 'Our community is the worst': the influence of cultural beliefs on stigma, relationship with family and help-seeking in three ethnic communities in London. Int. J. Soc. Psychiatry 59 (6), 535–544. https://doi.org/10.1177/0020764012443759.
Statistics Finland, 2024a. Population Structure 2024. Official Statistics of Finland. https://stat.fi/en/statistics/vaerak.
Statistics Finland, 2024b. Migration 2024. Official Statistics of Finland. https://stat.fi/en/statistics/muutl.
Sund, R., 2012. Quality of the Finnish Hospital Discharge Register: a systematic review. Scand. J. Public Health 40, 505–515. https://doi.org/10.1177/1403494812456637.
Thurston, W.E., Roy, A., Clow, B., Este, D., Gordey, T., Haworth-Brockman, M., McCoy, L., Rasouli, J., Saulnier, C., Carruthers, L., 2014. Pathways into and out of homelessness: domestic violence and housing security for immigrant women. J. Immigr. Refug. Stud. 12 (4), 418–436. https://doi.org/10.1080/15562948.2013.801734.
United Nations Development Programme, 2022. Human Development Report 2021-22: Uncertain Times, Unsettled Lives: Shaping Our Future in a Transforming World. UNDP. https://hdr.undp.org/content/human-development-report-2021-22.
Ventevogel, P., Jordans, M., Reis, R., de Jong, J., 2013. Madness or sadness? Local concepts of mental illness in four conflict-affected African communities. Confl. Heal. 7 (1), 3. https://doi.org/10.1186/1752-1505-7-3.
World Health Organization, 2022. World Mental Health Report: Transforming Mental Health for All. World Health Organization. http://apps.who.int/iris.