Introduction

There has been a progressive rise in the number of people seeking refuge due to human rights violations, persecutions and conflicts in several European countries. Such inflow of refugees has impacted the population demography all over Europe, especially in Sweden. Within the European union, the highest number of refugee status per capita was granted by Sweden in 2015. Only in 2015, 35,369 unaccompanied minors came to Sweden. Within the European union, the highest number of refugees is granted by Sweden in 2015. Within the European union, the highest number of refugees is granted by Sweden in 2015. Within the European union, the highest number of refugees is granted by Sweden in 2015. Within the European union, the highest number of refugees is granted by Sweden in 2015.

Many refugees have experienced traumatic events in their origin country and during flight. This might lead to the development of common mental disorders (CMDs) including depression, anxiety and post-traumatic stress disorder. A high prevalence of CMDs in refugees has been reported. Existing scientific knowledge also suggests that the risk for CMDs in subgroups of refugees, e.g., women, elderly and minors is higher than in economic migrants, particularly in unaccompanied refugee minors or separated refugee adolescents. Therefore, young refugees are of specific interest when it comes to CMDs.

Despite the higher risk of developing CMDs in refugees, the literature suggests that there are several obstacles for refugees with CMDs to access healthcare services and get proper treatment. These obstacles include restrictions regarding access to healthcare, language barriers, the stigma attached to mental disorders and the lack of skill in transcultural psychiatry of the treating physician. Research on treatment of CMDs in young refugees is therefore of eminent importance, but still sparse.

Refugees form a heterogeneous group and differ among other determinants regarding their country of birth. Treatment for CMDs may also vary according to the birth country of the refugee. Moreover, mental health problems and treatment-seeking behaviour among refugees are affected by the acculturation process in the host country, which may depend on the country of birth and the ethnicity of the refugees. Problems in acculturation and social integration, such as labour market marginalization, may in turn also result in the development of CMDs. Furthermore, pre-migration traumatic events in the country of birth, such as sudden and violent emergencies or war, separation from one or both parents and abrupt
financial deprivation affect the psychosocial well-being of refugee children, making them more vulnerable to subsequent CMDs.20 Finally, the lack of access to healthcare among refugees in their country of birth prior to migration to the host country also contributes to the risk for subsequent CMDs.21 For these reasons, analyzing any differences in the risk of treatment for CMDs in young refugees resettled in Sweden according to their country of birth is important.

Still, treatment for CMDs among young refugees may not only depend on pre-migration factors such as the country of birth, but on post-migration factors, such as the social insurance system, migration policies and the healthcare system in their destination country.22,23 These post-migration factors in the host country are subjected to temporal changes. Hence, entry and residence during different time periods in the host country may influence the risk for treated CMDs in the refugees. In Sweden, specialized healthcare consumption increased strongly in adolescents and young adults, particularly during the preceding 20 years.24 To date, it is not known, however, if this increase occurred only in the Swedish-born population or also in migrant populations, such as young refugees. For this reason, effects of the time period of resettlement in the association between refugee status and subsequent CMD treatment also needs to be enquired.

Aims

The study aimed to identify (i) if the risk of treatment for CMDs in young refugees varies by their country of birth, compared with the Swedish-born population and (ii) if time period of resettlement influences these possible associations.

Methods

Design and study population

Individuals aged 16–25 years who were either Swedish-born or were granted refugee status and thereby residence permit and residing in Sweden on 31 December 1999, 2004 and 2009 were identified from nationwide registers. Non-refugee immigrants were not included. These cohorts were followed for 4 years each for the outcome of treated CMDs in outpatient healthcare in order to study potential effects of the time period of resettlement. Here, the calendar years during different time periods (i.e. 2000–03, 2005–08 and 2010–13 for the respective cohort) of residence in Sweden were considered as the time period of resettlement. To assure measurement of incident treatment for CMDs in outpatient healthcare, individuals who had any hospitalization due to CMD in the previous 4 years (1996–99, 2001–04 and 2006–09, respectively) were excluded. This yielded a population of 948 904 (refugees 3.2%), 968 805 (refugees 4.3%) and 2 076 282 (refugees 4.1%) individuals for the 1999, 2004 and 2009 cohorts, respectively.

Refugees and the Swedish-born population

Individual granted refugee status, following an asylum-seeking period, by the Swedish Migration Agency with the following reason for residence were identified as refugees: ‘refugee’, ‘in need of protection’ and ‘humanitarian grounds’.20,21 A sensitivity analysis was carried out excluding the ‘in need of protection’ and ‘humanitarian grounds’ groups as refugees. This analysis showed similar results to our main analysis. Individuals born in Sweden were classified as ‘Swedish-born’.

Country of birth

Analyses were carried out for those countries of birth with the largest numbers of refugees to Sweden, i.e. Eritrea, Ethiopia, Somalia, Afghanistan, Iran, Iraq, Syria, Chile and countries of former Yugoslavia.

Outcome measures

In this study, the outcome measures, in determining the association between country of birth and treated CMD using the 2009 cohort, comprised the first treatment for CMDs in inpatient or specialized outpatient healthcare25 or the first prescription of antidepressants26 during the follow-up (2010–16). To ensure comparability among the cohorts, only treatment for CMDs in inpatient healthcare was regarded as the outcome when looking at the effects of time period of resettlement in such associations. This was due to the fact that information only on inpatient healthcare was available for all three cohorts. The follow-up in the latter analyses was from 1 January 2000, 2005 and 2010 to 31 December 2003, 2008 and 2013, respectively.
Covariates

Socio-demographic factors
Sex, age, educational level, family situation and type of residential area were measured at 31 December of the baseline year of each cohort (1999, 2004 and 2009), respectively.

Factors regarding labour market marginalization
Days with full-time unemployment, net days with sickness absence (e.g. 4 days on 25% sickness absence accumulate to one net day of sickness absence) and granted disability pension were considered as labour market marginalization factors. These factors were measured during the whole baseline year of each cohort (1999, 2004 and 2009, respectively).

Morbidity factors
History of inpatient and/or specialized outpatient healthcare due to any psychiatric diagnoses (other than CMDs) or somatic diagnoses during the 4 years before the start of follow-up (2006–9) was taken into account in the analyses using cohort 2009. The analyses for the effects of time period of resettlement were controlled for inpatient healthcare due to psychiatric or somatic diagnoses during the 4 years prior to follow-up (1996–99, 2001–04, 2006–09 for the respective cohort). Both main and secondary diagnoses were used. Missing values for a covariate were coded as a separate category. Categorization of the covariates can be seen in table 1.

Statistical analyses
Cox proportional hazard regression models were applied to compare refugees, in total and by their country of birth, with the Swedish-born population regarding subsequent treated CMDs. For the analyses on country of birth and subsequent CMD treatment, the models were adjusted in the following manner: Model 1, socio-demographic covariates measured at baseline; Model 2, labour market marginalization factors in 2009, and covariates in Model 1; Model 3, morbidity factor during for the respective cohorts and covariates in Model 2. Data were censored in the event of emigration, death and end of follow-up, whichever occurred first. The assumption of proportional hazard was confirmed by plotting log-minus-log Kaplan–Meier survival curves.

Ethics
Ethical approval was obtained from the Regional Ethical Review Board, Karolinska Institutet, Stockholm, Sweden.

Results
Table 1 shows the socio-demographic, labour market marginalization and morbidity characteristics, and cumulative incidence of treated CMDs in refugees and Swedish-born people in the three cohorts. The proportions of males were slightly higher in refugees compared with the Swedish-born in all cohorts. While the educational level was lower in refugees, the proportions of individuals who are cohabiting, living in big cities and with previous inpatient healthcare were higher in refugees compared with their Swedish-born peers. Unemployment was much more prevalent in refugees compared with the Swedish-born in all three cohorts, whereas sickness absence was more common in the Swedish-born in the 1999 cohort.

The cumulative incidence rate of treated CMDs was lower in young refugees compared with their Swedish-born peers and increased from 1999 to 2009 in both the Swedish-born and refugees (table 1). Incidence of CMD treatment was higher in young refugees in the 1999 cohort, though, but considerably lower in the cohort 2009. In all three cohorts, the incidence of depressive disorders and anxiety disorders was higher in persons born in Sweden, whereas incidence rates of post-traumatic stress disorder and other stress-related disorders were higher in refugees (table 1).

Table 2 shows the hazard ratios (HRs) for the treatment of CMDs in refugees in the 2009 cohort, during a 7-year follow-up period, in comparison with the Swedish-born population. The estimates for the risk for treated CMDs among refugees, following adjustment of potential socio-demographic, labour market marginalization and morbidity factors, were 25% lower compared with the Swedish-born. This lower risk was observed in refugees from almost all countries of birth, with the exception of Iran (HR 1.15, CI: 1.05–1.26), which showed a higher risk for treated CMDs compared with the Swedish-born. The lower risk for treated CMDs compared with the Swedish-born was especially pronounced in refugees from Somalia, Eritrea, Syria and Ethiopia (range of HRs 0.43–0.54).

In table 3, the risk estimates for treated CMDs within 4 years in all three cohorts are shown. In the crude models, there was a 19% lower risk for refugees, observed only in the 2009 cohort, compared with the Swedish-born. In the model adjusted for socio-demographic variables, refugees from all three cohorts showed a significant lower risk for treated CMDs, compared with the Swedish-born. The change from non-significant estimates in the crude models to significantly lower risk was mostly due to adjustment for educational level in the 1999 cohort, and for age in the 2004 cohort (data not shown). In the models adjusted additionally for labour market marginalization factors (Model 2) and morbidity factor (Model 3), there was a significant lower risk for treated CMDs in refugees in all three cohorts, compared with the Swedish-born (table 3). In a sensitivity analysis including only individuals between 21 and 25 years of age in 1999, 2004 and 2009 who were not overlapping among these cohorts, similar patterns as in the main results were seen (Supplementary table S1).

Discussion

Main findings
In this study, we found that refugees, aged 16–25 years, living in Sweden in 2009 had a 25% lower risk for treated CMD within 7 years, when compared with the Swedish-born. There were considerable differences according to the country of birth of the refugees. While refugees from Iran had a higher risk for treated CMDs than the Swedish-born, this risk was substantially lower in refugees from Somalia, Eritrea, Syria and Ethiopia. No effect of time period of resettlement was observed in the association of refugee status with subsequent treatment for CMDs.

Comparison with previous studies
In general, the prevalence of CMDs has been reported to be considerably higher in refugees compared with the host population. Due to several reasons, healthcare due to CMDs, however, has been found to be lower in refugees. Our findings are therefore in line with the current literature. Reasons for lower healthcare consumption in refugees include restricted access to healthcare, limited knowledge of the structure and functioning of the healthcare system, high levels of stigma attached to mental disorders and frequent lack of knowledge in transcultural psychiatry of the treating physician. Our findings have to be interpreted in the context of the universal nature of the healthcare system in Sweden, which implies that the access for refugees with residence permit is the same as for the Swedish-born majority. This applies for both somatic and mental healthcare. Still, other reports specializing on a particular patient group, i.e. patients with suicide attempt, showed lower rates of psychiatric healthcare use in refugees, compared with the Swedish-born. This lower psychiatric healthcare utilization raises concerns regarding prevailing gaps between mental healthcare needs and psychiatric healthcare utilization in refugees. For this reason, education
and training for healthcare staff in transcultural medicine and implementation of health literacy programmes for refugees are crucial to decrease these gaps in healthcare utilization of young refugees.

We found clear differences in the risk for treated CMDs in refugees according to the respective countries of birth, particularly showing that refugees from both large cities and medium-sized cities had higher risk than Swedish-born. In Norway, young immigrants from Iran were found to use specialized mental healthcare more than ethnic Norwegians. On the contrary, young immigrants from other refugee generating countries like Iraq or Somalia had a much lower use of specialized mental healthcare. Refugees from Iran were also found to be more educated than their origin population. Therefore, they may have more knowledge of mental health problems and are more inclined to seek healthcare than other refugee groups.

Differences between the Swedish-born and refugees regarding all socio-demographic, labour market marginalization and morbidity factors were statistically significant based on $\chi^2$ tests ($P < 0.0001$ except for sickness absence and disability pension which showed non-significant differences in the 2004 and 2009 cohort ($P > 0.05$). Mean age differences between the Swedish-born and refugees were statistically significant according to $t$ tests ($P < 0.05$) for all three cohorts.

Individuals who resettled in Sweden as ‘refugee’ or ‘in need of protection’ or ‘humanitarian grounds’.

| Characteristics                                         | 1999 cohort, n (%) | 2004 cohort, n (%) | 2009 cohort, n (%) |
|----------------------------------------------------------|--------------------|--------------------|--------------------|
| All (row percentage)                                     |                   |                    |                    |
| Socio-demographic factors (1999, 2004, 2009)              |                    |                    |                    |
| Age in years, mean (SD)                                  |                    |                    |                    |
| Women                                                    | 20.6 (2.9)         | 20.1 (2.9)         | 20.3 (2.9)         |
| Men                                                      | 244 836 (48.4)     | 14 042 (45.8)      | 448 744 (48.4)     |
| Educational level (years)                                | 473 418 (51.6)     | 16 608 (54.2)      | 478 467 (51.6)     |
| Compulsory school (0–9)                                  | 358 088 (39.0)     | 16 010 (52.2)      | 372 073 (40.1)     |
| High school (10–12)                                      | 410 418 (44.7)     | 9765 (31.9)        | 381 868 (41.2)     |
| College or university (>12)                              | 133 617 (14.6)     | 164 (54.5)         | 154 783 (16.7)     |
| Missing                                                  | 16 131 (1.8)       | 3230 (10.5)        | 18 487 (2.0)       |
| Family situation                                         |                    |                    |                    |
| Married/cohabiting without children at home              | 7166 (0.8)         | 1016 (3.3)         | 6307 (0.7)         |
| Married/cohabiting with children at home                 | 33 137 (3.6)       | 2193 (7.0)         | 28 416 (3.1)       |
| Single without children at home                          | 474 896 (51.7)     | 11 878 (38.8)      | 450 980 (48.6)     |
| Single with children at home                             | 9958 (1.1)         | 602 (2.0)          | 8219 (0.9)         |
| Children (<20 years old) living at home                  | 393 097 (42.8)     | 15 066 (49.0)      | 433 289 (46.7)     |
| Type of residential area                                 |                    |                    |                    |
| Big cities                                               | 310 666 (33.8)     | 25 446 (8.5)       | 312 207 (33.7)     |
| Medium-sized cities                                      | 345 096 (37.6)     | 11 533 (37.6)      | 353 599 (38.1)     |
| Small cities/villages                                    | 262 492 (28.6)     | 4863 (15.9)        | 261 405 (15.9)     |
| Labour market marginalization at baseline (1999, 2004, 2009) |                   |                    |                    |
| Unemployed, 1–180 days                                   | 203 753 (22.2)     | 8355 (27.3)        | 206 610 (21.7)     |
| Unemployed, >180 days                                    | 11 295 (1.2)       | 810 (2.6)          | 13 367 (2.8)       |
| Sickness absence, 1–90 net days                         | 29 280 (3.2)       | 488 (1.6)          | 24 192 (2.8)       |
| Sickness absence, >90 net days                           | 5383 (0.6)         | 90 (0.3)           | 8221 (0.9)         |
| Disability pension                                       | 9306 (1.0)         | 241 (0.8)          | 12 027 (1.3)       |
| Mobility (1996–99, 2001–04, 2006–09)                     | 118 355 (12.9)     | 4581 (14.9)        | 141 408 (15.3)     |
| History of inpatient healthcare                          |                    |                    |                    |
| Outcome (2000-03, 2005-08, 2010-13)                      |                    |                    |                    |
| CMDs (rate per 100 000 per year) of which                |                    |                    |                    |
| Depressive disorders                                    | 2460 (67.0)        | 56 (45.7)          | 3504 (89.1)        |
| Anxiety disorders                                       | 11 371 (31.0)      | 3702 (30.2)        | 2100 (56.6)        |
| Post-traumatic stress disorder                           | 49 (1.3)           | $<10^{g}$         | 82 (2.2)           |
| Other stress-related disorders                           | 1411 (38.4)        | 78 (63.6)          | 1750 (45.6)        |
### Table 2: Crude and multivariate HRs with 95% CIs for treated CMDs in refugees, aged 16–25 years, compared with the Swedish-born population of same age and resident in Sweden in 2009

| Population | CMDs, n (rate per 100 000 person-years) | Crude HR (CI) | Model 1HR (CI) | Model 2HR (CI) | Model 3HR (CI) |
|------------|----------------------------------------|----------------|----------------|----------------|----------------|
| Swedish-born Refugees | 110,696 (95.9) | 15,576 (2500.8) | 0.85 (0.83–0.87) | 0.77 (0.75–0.79) | 0.75 (0.73–0.77) |
| Non-western countries | 91,084 (4.1) | 5701 (2123.7) | 1 | 1 | 1 |
| Africa (region) |  |  |  |  |  |
| Eritrea | 316 (0.0) | 30 (1489.3) | 0.60 (0.42–0.86) | 0.52 (0.37–0.75) | 0.52 (0.36–0.75) | 0.53 (0.37–0.75) |
| Ethiopia | 317 (0.0) | 35 (1697.8) | 0.68 (0.49–0.95) | 0.61 (0.44–0.85) | 0.59 (0.42–0.82) | 0.60 (0.43–0.84) |
| Somalia | 1685 (0.2) | 178 (1648.7) | 0.66 (0.57–0.77) | 0.46 (0.39–0.53) | 0.44 (0.38–0.51) | 0.43 (0.37–0.50) |
| Asia (region) |  |  |  |  |  |
| Afghanistan | 1191 (0.1) | 200 (2712.7) | 1.09 (0.95–1.25) | 0.92 (0.80–1.06) | 0.94 (0.81–1.07) |
| Iran | 2627 (0.3) | 491 (3028.3) | 1.21 (1.11–1.33) | 1.16 (1.06–1.27) | 1.15 (1.05–1.26) |
| Iraq | 6559 (0.6) | 924 (2219.8) | 0.89 (0.83–0.95) | 0.79 (0.74–0.84) | 0.75 (0.71–0.81) | 0.76 (0.71–0.81) |
| Syria | 988 (0.1) | 101 (1560.7) | 0.63 (0.52–0.76) | 0.56 (0.46–0.69) | 0.55 (0.45–0.66) | 0.54 (0.44–0.65) |
| South America (region) |  |  |  |  |  |
| Chile | 634 (0.1) | 113 (2877.6) | 1.15 (0.96–1.39) | 0.94 (0.78–1.13) | 0.92 (0.77–1.11) | 0.93 (0.77–1.12) |
| Western country | 18,906 (1.8) | 2457 (1303.3) | 0.80 (0.77–0.84) | 0.77 (0.74–0.80) | 0.74 (0.71–0.77) | 0.74 (0.71–0.77) |

HRs with 95% CIs in bold indicates statistically significant associations (P < 0.05).

First incident inpatient or specialized outpatient healthcare due to depressive disorders [International Classification of Diseases version 10 code (ICD-10) F32–F33], anxiety disorders (ICD-10 F40–F42), post-traumatic stress disorder (ICD-10 F43.1) and other stress-related disorders (ICD-10 F43 except F43.1) as main diagnosis or first prescription of antidepressant medication (Anatomical Therapeutic Chemical Classification System code N06A) during the follow-up period (2010–2016).

a: First incident inpatient or specialized outpatient healthcare due to depressive disorders [International Classification of Diseases version 10 code (ICD-10) F32–F33], anxiety disorders (ICD-10 F40–F42), post-traumatic stress disorder (ICD-10 F43.1) and other stress-related disorders (ICD-10 F43 except F43.1) as main diagnosis or first prescription of antidepressant medication (Anatomical Therapeutic Chemical Classification System code N06A) during the follow-up period (2010–2016).

b: Model 1: adjusted for age, sex, educational level, family situation, type of residential area measured at baseline (2009).

c: Model 2: adjusted for Model 1 covariates, and labour market marginalization factors [unemployment in 2009 (0, 1–180, >180 days), sickness absence in 2009 (0, 1–90, >90 net days) and disability pension in 2009 (No, Yes)].

d: Model 3: adjusted for Model 2 covariates, morbidity factors [main or side diagnosis from inpatient and specialized outpatient healthcare during 2006–2009 for any psychiatric diagnosis (measured as any ICD-10 code except those for CMDs) or somatic diagnosis (measures as all other ICD-10 codes except F codes)].

e: Individuals who settled in Sweden as ‘refugee’ or ‘in need of protection’ or ‘humanitarian grounds’.

f: Countries which generated the largest number of refugees to Sweden. Estimates for other African countries, other Asian countries, other South American countries and rest of the world are not presented.

### Table 3: Crude and multivariate HRs with 95% CIs for treated CMDs in refugees, aged 16–25 years, compared with the Swedish-born population of same age, in three time period cohorts i.e. 1999, 2004 and 2009 cohort, each with 4 years of follow-up

| Cohort | Refugee status | Person-years | CMDs, n (rate per 100 000 person-years) | Crude HR (CI) | Model 1HR (CI) | Model 2HR (CI) | Model 3HR (CI) |
|--------|----------------|-------------|----------------------------------------|----------------|----------------|----------------|----------------|
| 1999   | Swedish-born Refugees | 3642 117 | 5057 (138.8) | 1 | 1 | 1 | 1 |
| 2004   | Swedish-born Refugees | 6722 707 | 735 (197.0) | 1.05 (0.90–1.22) | 0.79 (0.68–0.92) | 0.80 (0.69–0.93) | 0.80 (0.69–0.94) |
| 2009   | Swedish-born Refugees | 164 187 | 324 (197.3) | 1.00 (0.89–1.12) | 0.86 (0.77–0.97) | 0.85 (0.76–0.96) | 0.86 (0.77–0.96) |
|        | Swedish-born Refugees | 4083 276 | 10 206 (249.9) | 1 | 1 | 1 | 1 |
|        | Swedish-born Refugees | 173 025 | 349 (207.1) | 0.81 (0.73–0.90) | 0.71 (0.64–0.79) | 0.69 (0.62–0.77) | 0.70 (0.63–0.78) |

First incident inpatient healthcare due to depressive disorders [International Classification of Diseases version 10 code (ICD-10) F32–F33], anxiety disorders (ICD-10 F40–F42), post-traumatic stress disorder (ICD-10 F43.1) and other stress-related disorders (ICD-10 F43 except F43.1) as main diagnosis during the follow-up period. HRs with 95% CIs in bold indicate statistically significant associations (P values < 0.05).

a: First incident inpatient healthcare due to depressive disorders (International Classification of Diseases version 10 code (ICD-10) F32–F33), anxiety disorders (ICD-10 F40–F42), post-traumatic stress disorder (ICD-10 F43.1) and other stress-related disorders (ICD-10 F43 except F43.1) as main diagnosis during the follow-up period.

b: Model 1: adjusted for age, sex, educational level, family situation, type of residential area.

c: Model 2: adjusted for Model 1 covariates and labour market marginalization factors [unemployment in 1999, 2004, 2009 (0, 1–180, >180 days), sickness absence in 1999, 2004, 2009 (0, 1–90, >90 net days) and disability pension in 1999, 2004, 2009 (No, Yes) for respective cohorts].

d: Model 3: adjusted for Model 2 covariates, morbidity factors [main or side diagnosis from inpatient healthcare for specific somatic or psychiatric disorders during 1996–1999, 2001–2004, 2006–2009 for respective cohort].

e: Individuals who settled in Sweden as ‘refugee’ or ‘in need of protection’ or ‘humanitarian grounds’.

Overall, the prevalence of CMDs in young refugees is influenced by a variety of factors including the country of origin, time period of resettlement, and potential discrimination. It is essential to ensure that refugees receive the appropriate mental healthcare services, and efforts to address cultural and linguistic barriers are crucial. The findings highlight the importance of understanding the unique challenges faced by young refugees and the need for tailored interventions to support their mental health. Compliance with medical treatment is also emphasized, as it plays a vital role in the management of mental health conditions.
Regarding country of birth shown in this study were also found in a recently published study on refugees and their risk of suicidal behaviour.39

Our analysis indicated little to no effects of time period of resettlement in the association between refugee status and subsequent treatment for CMDs. Levels of treated CMDs were lower in refugees in all three cohorts in the main and sensitivity analyses. These results show that temporal increases of treated CMDs occurred in both young refugees and Swedish-born. The strong increase in utilization of psychiatric healthcare—particularly due to CMDs, in young adults in Sweden, is a topic of considerable concern and frequent discussion.39 Reasons for this are plentiful, including improved help-seeking behaviour, changes in diagnostic criteria as well as structural changes including alterations in family structures, the school system and higher demands at the labour market.40 Our findings suggest that both Swedish-born and refugees are equally influenced by these temporal changes. Further studies are warranted to investigate which factors have influenced mental healthcare utilization in refugees over time, in order to design culturally sensitive intervention strategies.

**Strengths and limitations**

Strengths of the study include the high quality of the Swedish register data with national coverage,27–29 the prospective cohort design and the long follow-up period, which allowed us to stratify by refugees’ countries of birth. Another strength is the possibility to adjust for a wide range of covariates like socio-demographic, labour market marginalization and morbidity factors. Moreover, available data allowed time period analyses, which is a unique contribution to the current scientific knowledge base.

There are also limitations which need to be mentioned. In the analyses for a potential effect of time period of resettlement, we could obtain information on treated CMDs only from inpatient healthcare. This means that only most severe cases could be observed, whereas the majority of CMDs are usually treated in primary healthcare. Still, estimates in the period analyses and the analyses with a longer follow-up and including specialized outpatient healthcare and antidepressant prescription were similar. This suggests that the association between refugee status and subsequent treated CMDs does not differ if only inpatient healthcare is concerned. There is a possibility that educational level and labour market conditions changed over time, especially in a population that was 16–25 years old at baseline and particularly, in refugees. Still, due to the marginal effect of adjustment for these factors in the main analyses, adding them as time-dependent variables in the fully-adjusted model might hardly have had a strong influence on the findings. Information on sickness absence (a measure of labour market marginalization) did not include data on the first 14 days of a sick-leave spell for employees. Still, as both short- and long-term sickness absence were considered in the analyses, the lack of information on the first 2 weeks has likely not made a considerable impact on the estimates. Moreover, familiarity with accessing psychiatric healthcare services in the new country is expected to increase with a longer duration of residence and evidently so, the risk of treated CMDs was reported to increase with longer duration of residence in young refugees.38 In light of the fact that our refugee cohorts were quite homogenous regarding this covariate, i.e. 70%, 90% and 84% of refugees (data not shown) in the 1999, 2004 and 2009 cohort, respectively, had a duration of residence longer than 5 years, we do not believe that our results are significantly affected by differences in duration of residence.

**Conclusions**

Healthcare utilization due to CMDs is lower in young refugees compared with their Swedish-born peers, and varies according to their country of birth. This association is constant over time. Wide implementation of health literacy programmes and continuous education in transcultural psychiatry of healthcare staff are crucial components in the attempt to lower the treatment gap in refugees. These programmes should focus particularly on the healthcare needs of young refugees from the Horn of Africa and Syria.

**Supplementary data**

Supplementary data are available at EURPUB online.

**Key points**

- Young refugees had a lower risk for treated CMDs, compared with the Swedish-born population of the same age.
- The risk for treated CMDs in young refugees varied according to their country of birth and refugees from Iran had a higher risk for CMDs, compared with the Swedish-born.
- No effect of time period of resettlement was observed in the association between refugee status and subsequently treated CMDs in inpatient healthcare.
- Implementation of health literacy programmes and continuous education in transcultural psychiatry of healthcare personnel are essential to address the underutilization of mental healthcare in young refugees.

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**Conflicts of interest:** None declared.

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