

Antipsychotic medication use among working age first-generation migrants resident in Finland: An administrative data linkage study

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Abstract

Aims

Higher incidence of psychotic disorders in high-income countries for migrants compared to the settled majority has been well established. However, it is less clear to what extent different migrants groups have accessed and utilized mental health care. This study aimed to identify the hazard of anti-psychotic medication use in the largest migrant groups in Finland, compared to a Finnish-born comparison group, using high quality datasets maintained by Statistics Finland and Social Insurance Institution Finland, and linking socio-demographic and economic characteristics to antipsychotic prescription purchases.

Methods

The study draws on a representative sample of 33% of the adult working age population of Finland in 2005 (n=1,059,426, 50.2% male, 2.5% migrant). The use of antipsychotic drugs were followed up from 2005 to 2014.

Results

The results show that the hazard of antipsychotic medication purchases differed between migrant groups, with a higher hazard for migrants from North Africa and the Middle East before socio-economic adjustment (men HR 1.19, CI95% 1.04-1.37; women HR 1.37 CI95% 1.12-1.66), and a lower hazard for all migrant groups after adjustment for socio-economic characteristics compared to the Finland born population.

Conclusions

The findings suggest that attention should be paid to the lower use of medication for psychotic disorders in some migrant groups, as well as a potential role of social disadvantage for migrants from North Africa and Middle East.

Keywords: Psychosis; psychotropic medication; data linkage; migrants; Finland

Word count: 3,185 words

Background

Higher incidence of psychotic disorders and psychotic symptoms for first generation migrants has consistently been found, with migrants risk of psychosis double that of the settled majority [1]. This alarmingly higher incidence has been referred to as a ‘public health tragedy’ [2]. Historical explanations for higher prevalence rates in countries of origin, of selective migration, genetic differences, and methodological limitations, have failed to account for the inequality, with post-migration factors playing a far greater role; in particular disproportionate social stress, exposure to racism, isolation, and disadvantage [3]. For example, migrants are more likely to live in urban settlements, in deprived neighbourhoods, to be exposed to discrimination, and to be socially and culturally isolated, all of which are risk factors for psychoses [4]. This indicates that higher incidences of psychotic disorders are likely to be at least partly attributable to multi-level institutionalised racism in host countries. This is supported by recent evidence that marginalisation and poor acculturation are associated with increased symptom severity for migrants with schizophrenia, mediated by low self-concept and internalised stigma [5].

Within-group differences have been found, with a particularly pronounced effect for African and Caribbean migrants in the UK [6], refugees and asylum seekers [7], and for migrants from low-income countries [8]. The elevated rates for Black and African Caribbean migrants, refugees, and migrants from low-income countries fits with the explanation of increased social marginalisation and discrimination, which disproportionately affect these groups [8]. Despite these significantly higher risks, levels of access to, and use of, treatment have been less well studied. The access and use of mental health services and psychiatric treatments has major implications for public health policy and mental health equality, but current research is

unclear on the differential level of health care dependent on different countries of origin and socio-economic hardships. Less use of mental health services in general has been found for first generation migrants [9] and has been explained by higher levels of stigma, different beliefs about mental illness and help seeking behaviours, barriers of prejudice and discrimination, and lack of knowledge on how to access services [10]. For the treatment of psychotic disorders, however, the picture is much less clear. Poorer access to psychiatric care for first generation migrants with psychotic disorders has been found for migrants born in Caribbean countries [11], for undocumented migrants [12] and migrants living in low-own group neighbourhoods [13] but with comparable use for migrants from non-Caribbean countries [11], and for migrants when compared with non-migrants facing similar socio-economic hardships [12].

Finland, with a rather small but steadily growing migrant population [14], has been rated as having more favourable integration policies than many other European countries [15], including universal access to health care for permanent residents covered by the Finnish National Health Insurance. Research on schizophrenia in Finland is well-established; the Northern Finland Birth Cohort 1966 study has provided robust longitudinal data on incidence and risk factors for schizophrenia [16]. Finland has higher than average prevalence rates of psychotic disorders compared to other EU countries [17], and recent evidence indicates a comparable incidence of psychotic disorders in male migrants and lower incidence for female migrants compared to Finnish controls [18]. However, no known study on access to mental health services has been conducted.

Aims

The comprehensive health data records held by Statistics Finland provide an opportunity to conduct large-scale epidemiological research on psychiatric disorders in Finland, using data linkage methodology to link socio-demographic and economic characteristics to psychotropic drug prescription purchases. Anti-psychotics are the first line treatment for psychotic disorders under international guidelines [19] and were therefore used as a proxy for access to, or use of, mental health services. This study used a cohort design to identify the hazard of antipsychotic use for the largest first-generation migrant groups resident in Finland compared to the Finland-born majority population, controlling for key socio-economic characteristics that influence the risk of psychotic disorders.

Methods

Study design

This study used a cohort design to link datasets on individual socio-demographic and economic characteristics to antipsychotic prescription reimbursements. These datasets have a high level of accuracy according to the United Nations Statistical Commission [20]. Data was linked using unique national personal identification numbers and screened for anonymity and non-identifiability. The study was given ethical approval by the Finnish Institute of Occupational Health and adheres to the ethical standards set out by the Helsinki Declaration of 1975, and its later amendments.

Study population

Our sample consists of 33% representative random sample of the working age (18-64) population of Finland in 2005, who were followed from 1 January 2006 until the first

purchase of antipsychotic medication, death, or 31 December 2014, whichever occurred first. The sample was drawn from the Population Registry. Migrant groups were derived from data on country of birth held by the Finnish Population Registry and categorised based on size, with smaller groups amalgamated into larger regions of birth. Therefore, only first generation migrants are included in the sample. In total, it was possible to create five migrant groups; born in 1) Russia or the former USSR, 2) North Africa or the Middle East, 3) Central and Eastern European countries, 4) Western countries (which includes Sweden, Western Europe, and other western countries) and 5) other (which includes sub-Saharan Africa, South and Central America, South Asia, and East Asia); as well as a Finland-born majority group. The breakdown of included countries is listed in Supplementary Table 1.

Outcome variable

Antipsychotic medications were derived from the Finnish Prescription Register kept by the Social Insurance Institution Finland, using the national pharmacy claims database. Prescriptions were identified using the Anatomical Therapeutic Chemical (ATC) code N05A. This code refers to drugs used in the treatment of psychosis [21], and include phenothiazines, derivatives of butyrophenone, thioxanthene, and diphenylbutylpiperidine, diazepam, oxazepam, thiazepam, oxepin, benzamide, and lithium when used as a propulsive in psychotic disorders; and excludes antipsychotic medication used in combination with antidepressants. The sample is therefore unlikely to include co-morbid conditions like depression. The links between migrant status and depression, and for co-morbid conditions, has been less well supported in the literature [22]. Medication use was defined as having purchased at least one N05A medication with the index period.

Co-variates

Key risk factors for psychosis were also identified for this study, to adjust for between-group differences. These include sex, age, marital status, taxable individual income (employment salaries, welfare benefits and capital gains), and occupational status (self-employed, higher [e.g. doctors and teachers] or lower [e.g. shop salesperson, nurses] non-manual workers, manual workers [e.g. construction workers, bus drivers, cleaners], students and other [retired, unemployed, or unknown]), all of which are held by Statistics Finland.

Statistics analyses. Descriptive statistics of socio-demographic and economic characteristics were run for each migrant group and the Finnish majority. After testing for assumptions, Cox proportional hazard models were conducted, with confidence intervals set at 95%, to compare antipsychotic medication purchases between migrant groups and the Finland born majority (set as the reference category). To check the impact of prior events before follow up, an additional analysis was conducted removing all prescriptions purchased in 2005, and a follow up of 2006 to the end of 2014 (see supplementary Table 2), with no notable differences found. Post-hoc analyses found a significant interaction effect for gender for the association between region of birth and antipsychotic medication purchases using the Wald statistic ($X^2(5, n=1,059,426)=226.18, p<.0001$), therefore regressions were stratified by gender. Models were conducted in two stages, the first adjusting for age only and the second for all other socio-demographic and economic characteristics. Data was analysed using SAS software (Version 9.4 of the SAS System for Windows, Copyright © 2013).

Results

The sample consisted of 1,059,426 people (50.2% male), 26,734 (2.5%) of whom were born outside of Finland. Table 1 displays socio-demographic and economic characteristics by migrant group, and shows a lower level of employment in migrant groups compared to the Finland-born group, except for migrants from Western Europe who had a far larger percentage working in high non-manual jobs. Migrants also had a lower income than the Finland-born group, except again for migrants from Western Europe.

In total, 6.8% of both men and women purchased an antipsychotic medication during the follow up period. However, this varied by country or region of birth and gender, from 3.3% for male migrants from other non-European countries, to 8.2% for male migrants from North Africa and the Middle East; and 3.2% for female migrants from other non-European countries, to 9.0% for female migrants from North Africa and the Middle East.

Table 2 shows the results of Cox proportional hazard models stratified by gender. Models show that migrants from North Africa and the Middle East had a significantly higher hazard of antipsychotic prescription purchases than the Finland born majority (men HR 1.19, CI95% 1.04-1.37; women HR 1.37 CI95% 1.12-1.66), but this converted to a significantly lower hazard after adjustment for socio-demographic and economic characteristics (men HR 0.63, CI95% 0.55-0.73; women HR 0.72 CI95% 0.60-0.88).

In a similar way, all other migrant groups had significantly lower purchases of antipsychotic medication after adjustment for socio-demographic and economic characteristics. The largest difference was for migrants from the 'other' country category which included sub-Saharan Africa, South and Central America, South Asia, and East Asia (fully adjusted model, men HR 0.32, CI95% 0.26-0.40; women HR 0.29 CI95% 0.23-0.37). After adjustment for socio-

demographic and economic characteristics, female migrants from other Western countries (Sweden, Western Europe, and other Western countries) had a comparable hazard of antipsychotic medication purchases compared to their Finnish peers, whilst men from these regions had a lower hazard.

Discussion

The present study is the first to identify access to, and use of, mental health services for working-age migrants resident in Finland, using antipsychotic medication prescriptions. The results show that overall, migrants in Finland do not have an elevated hazard of antipsychotic use, although between group differences were found. Migrants from North Africa and the Middle East had a significantly higher hazard of purchasing antipsychotic medications than the Finland-born majority, but this difference was lost after adjustment for socio-demographic and economic characteristics. In the fully adjusted model, migrants from North Africa and the Middle East, alongside all other migrant groups, had a significantly lower hazard of antipsychotic medication purchases after adjustment for socio-demographic and economic characteristics. The largest difference was found for migrants from sub-Saharan Africa, South and Central America, and South and East Asia, who had a 68% lower hazard of purchases for men and 71% for women compared to the Finnish born. However, female migrants from 'other Western countries', had a comparable rate to Finland-born women. Finally, gender was found to have a significant modification effect on the association between region of birth and antipsychotic medication purchases.

The higher hazard of antipsychotic medication purchases in the unadjusted model for migrants from North Africa and the Middle East, a group who are likely to include a high

proportion of refugees, may be explained by the higher incidence of psychotic disorders in migrant groups [1], particularly for refugees and asylum seekers [7] and for migrants from low income countries [8]. Asylum seekers fleeing war, violence, and persecution are more likely to have suffered traumatic incidences, prolonged terror, and loss, as well as social disadvantage and discrimination in their receiving country [7], all of which are associated with higher incidence of psychotic disorders [23]. Indeed, in Finland, 75% of refugees from the Middle East or North Africa have been found to have experienced a traumatic event in their former home country [24]. However, the finding that this higher hazard not only disappears but inverts to a significantly lower hazard of antipsychotic prescription purchases compared to the Finland-born population, indicates a particularly powerful effect of social disadvantage and poverty for this group in accessing mental health services. Higher use of mental health services for socially disadvantaged migrants from low and middle income countries is in keeping with consistent findings of higher use of specialist health care for these migrant groups [18], particularly pronounced in countries of residence with universal access to health care [25]. The higher specialist health care use may be attributable to having access to quality health care that was not available in the country of origin [25] and delayed access to primary care leading to more serious health conditions [18]. This may explain why adjustment for socio-economic disadvantage reduced the hazard of antipsychotic purchases for migrants from North Africa and the Middle East.

The lower rates of antipsychotic medication purchases for other migrants groups, particularly for migrants from the 'other' category (sub-Saharan Africa, South and Central America, and South and East Asia) is in keeping with lower or comparable incidence of psychotic disorders for migrants in Finland [18] and with underuse of psychiatric care for migrants in general [9]. The lower or comparable hazard of antipsychotic purchases for migrants from the 'other Western' group (Sweden, Western Europe, and other Western countries) may also be

explained by the higher socio-economic status in these groups. Migrants from other Western countries may be less at risk of psychotic disorders than the Finnish controls, who themselves have a higher risk of psychotic disorders than in other European countries [17]. This explanation is supported by past research on the risk of schizophrenia in Finland, that found a protective effect of high socioeconomic status for the Swedish-speaking minority [26].

Within other migrant groups, lower antipsychotic purchases may be better explained by poorer health service access and use. Lower service use is a particularly worrying trend in the data and implies that most migrant groups with a psychotic, or related, disorder in Finland have poor access to mental health care. This is in keeping with patterns of general mental health service use across conditions [9]. Despite Finland's favourable integration policies and universal health care, other barriers such as stigma, and prejudice and discrimination, may be sufficient to prevent or delay access to treatment. This is particularly troubling for access to antipsychotic medications, given the severe impact of psychotic disorders on functioning.

It should also be considered that the lower rates of antipsychotic medication purchases may reflect a lower prevalence of psychotic disorders in some migrant groups. The healthy migrant effect may account for a protective advantage, in which newly arrived migrants have better health than the receiving country population. This effect is thought to be due to the healthiest populations migrating in the search for opportunity, and a delay in the effect of social disadvantage and social stress on mental health [27]. This effect may explain the low rates in this study for migrant groups from non-Western countries, given that these groups have the highest number of newly arrived migrants [14]. The lower rates may also be explained by other characteristics of these groups, including a stronger culture of family and social support, which has been associated with a lower severity of psychotic symptoms and fewer hospitalizations [28]; and characteristics of the country of residence, such as the

favourable integration policies compared to other European countries [15]. However, given past research on general access to mental health care [9], it is likely that less use of antipsychotics is reflective of poorer access to services, and therefore that psychotic, and related, disorders are not an exception to this inequality.

The modification effect of gender is unsurprising given consistent findings of different service use by gender, particularly for mental health service use [9]. The findings indicate that these gender differences are also relevant for migrants living in Finland with psychotic, or related, conditions. The results indicate generally higher prescription purchases by women, and this is indicative of men's under use of mental health care and delay in treatment for severe psychiatric disorders [29], despite an overall higher incidence of psychotic disorders for men [30].

Strengths and limitations

This is the first study to use data linkage methodology to estimate the hazard of antipsychotic medication use among the largest working-age migrant groups resident in Finland, and is strengthened by its large and representative sample, and its high quality real-world data. However, antipsychotic medication may be prescribed for a range of psychosis related symptomatology, and may not correspond to diagnosable psychotic disorders [16], which means the study cannot make statements about condition-specific access to treatment. The ATC code also excludes the possibility of co-morbid presentations and therefore the findings cannot be generalized to these populations. While the inclusion of a single prescription has been used in previous research [e.g. 13] this methodology may risk including one-off use of antipsychotic medication not indicative of an established psychotic disorder. The study is further limited by a lack of knowledge on emigration of cases during the follow-up, on

undocumented migrant and second-generation migrant risk, and on the duration of residence for the different migrant groups included in the study, variables which may have been important in understanding the lower rates for some groups.

Conclusions

This study found lower or comparable antipsychotic prescription purchases by the largest first-generation migrant groups in Finland, compared to the Finnish-born group and after adjustment for socio-economic characteristics. The findings indicate overall poorer access and use of mental health services, with some country-of-origin dependant differences. Better sub-classification of migrants within administrative systems that allow differentiation of important subgroups of migrants, particularly for refugees and asylum seekers, might enable better identification of those likely to be at greater need, targeting of resources, and monitoring for equity of access and use of these services. In conclusion, this novel study has found mental health care access disparities between migrant and non-migrant groups in Finland, and points to the need for urgent exploration of mental health service access for first-generation migrants with psychotic, or related, conditions.

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Declaration of conflicting interests

The authors declare no conflict of interest.

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Ethical approval

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. The study was given ethical approval by the Finnish Institute of Occupational Health.

Data statement

The data that support the findings of this study are available from Statistics Finland but restrictions apply to the availability of these data, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Statistics Finland.

Authorship

Anne Kouvonen and Ari Väänänen designed and conceptualized the study, and directed the implementation of the study. Tania Bosqui drafted the article. Ari Väänänen and Aki Koskinen contributed to acquisition of data. Andre Buscariolli and Aki Koskinen performed the data analysis. Tania Bosqui, Ari Väänänen, Andre Buscariolli, Aki Koskinen, Dermot O'Reilly, Auli Airila, Minna Toivanen, and Anne Kouvonen contributed to the study design, interpreting findings, reviewing the article and revising it critically for important intellectual content.

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