Migration history, minorities status and risk of psychosis: an epidemiological explanation and a psychopathological insight

Storia migratoria, status di minoranza e rischio di psicosi: spiegazione epidemiologica e comprensione psicopatologica

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Summary

Objectives

A marked increased incidence of psychosis in migrants and ethnic minorities is a well established phenomenon. We aim to review data and insights arising from epidemiological and clinical/psychopathological studies regarding the relationship between migration history, minority status and risk of psychosis in order to evaluate the experiences of migrants and minority ethnic groups in host societies.

Method

A qualitative literature review was conducted to identify population surveys, services based studies, and clinical and biological studies on the relationship between migration and/or minority status and psychosis. Studies were identified by searching MEDLINE, PsychINFO and EMBASE. The search was supplemented by references provided by personal bibliographies of the investigators and by hand searching content pages of journals considered relevant to the topic. The search was run in June 2015.

Results

Risk differences related to minority groups vary in different countries. Socio-environmental risk factors faced by origin groups operate differently in the countries, depending on social experiences and available resources to cope with adversities. In addition, social factors can represent environmental risk factors because they might regulate gene expression. Facing severe or chronic social stress, such as isolation, low socio-economic status, late-life social adversities may result in long-term sometimes permanent alterations of the biological stress-response system, which can lead to the development of physical and mental illnesses. A number of studies have taken into account psychopathological and clinical features at psychosis onset and follow-up, and they do not support the suggestion that misdiagnosis can explain the high rates found in those populations.

Conclusions

Reviewed papers cover a period of more than 30 years and highlight that history of migration and minority status might both be important in increasing the risk of psychosis. Clinical studies reported that psychopathological differences and misdiagnosis cannot explain the excess of psychosis found in migrants and ethnic minorities. The excess of psychosis in migrant and ethnic minorities may be at least attenuated by several psychosocial interventions, targeted at social disadvantages and at most at-risk individuals and populations.

Key words

Migration • Ethnic minorities • Psychosis • Cultural competent psychopathology

Background: psychosis, migration and minorities

The first studies showing an increased incidence of schizophrenia and other psychotic disorders in migrants date back to the 1930s, when Odegaard [1] noted a markedly increased incidence of hospital admission rates for schizophrenia in Norwegian immigrants in the United States compared with Norwegians who did not migrate. The author hypothesised that the explanation for the excess of psychosis amongst his fellow immigrants was that the more vulnerable migrated; this theory was called "selective migration". However, several pieces of evidence have disconfirmed this hypothesis, and called the attention of epidemiologists to environmental factors

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that can explain the so-called "excess of psychosis" in immigrants. As second generation migrants have grown up, there has been a further unexpected rise in the incidence of psychotic disorders in the second generation [2] [3], thereby making it likely that social factors may be playing a part in the genesis of psychosis among migrants. Moreover, even Odegaard [1] observed that rates were higher among immigrants who had been in the US for 10-12 years, suggesting that environmental factors in the hosting countries could play an important role. Studies conducted in Jamaica [4], Trinidad [5] and Barbados [6] have revealed incidence rates of psychosis lower than those observed in migrants from these countries to UK. In addition, there is no evidence that biological risk factors for schizophrenia (such as obstetric complications and viral infections) are more common or have a greater effect in the Black-Caribbean immigrant population [7].

Risk differences related to minority groups varies in different countries [3]: in the UK, Black minorities show the highest risk, while in the Netherlands the highest risk is among more recent North African migrants. In Italy, Eastern Europeans are reported to have the highest risk of developing psychosis [3]. Thus, it is intriguing to try to understand what characteristics of each specific host society interact with each specific type of migration and/or minority groups (first- or next-generation; economic or political migrants, etc.) to increase the risk of psychoses. It seems necessary to look for the risk of psychosis in the experiences and circumstances of migrants and minority ethnic groups in majority societies. We aim to review data and insights arising from epidemiological and clinical/psychopathological studies on the link between migration history, minority status and risk of psychosis.

Method

A qualitative literature review was conducted to identify population surveys, services-based studies, and clinical and biological studies on the relationship between migration and/or minority status and psychosis. Studies were identified by searching MEDLINE, PsychINFO and EMBASE. The search was supplemented by references provided by personal bibliographies of the authors and by hand searching content pages of journals considered relevant to the topic. The search was run in June 2015.

Results

The excess of psychosis in minorities: the epidemiological explanation

Recently, the excess of psychosis among migrants and minorities has been considered a phenomenon linked to the complex interactions between biological vulnerabilities and environmental factors (cultural and socio-economic) during the entire migration process and settlement [8]. The proposed environmental factors, which can act both individually and socially, can schematically be placed in the three phases of the migration process [9]: the pre-migration phase (obstetric complications, infectious factors, nutritional deficiency), the migratory phase (trauma of the journey, preparing to migrate, etc.) and during post migration phase (discrimination, unemployment, low socio-economic status, racism, isolation, "urbanicity" and ethnic density). Of course, for second and subsequent generation migrants, all factors occur in the "post-migration" phase, i.e. during the period of living as a minority in a majority society. As already noted [9], most of the available studies have been carried out in the post-migratory phase, and thus refer to settled minorities more than migrants. The AESOP study [10] has pointed out the following factors can be considered as possible candidates for the excess of psychosis in migrants: death or separation from parents before the age of 16 years; social isolation, social disadvantage and the perception of social disadvantage; the "mismatch" between expectations and achievements; strong cultural identity (which exacerbates the distance between minorities and majorities, found more frequently in minority cases rather than in controls).

To our knowledge, the study by Boydell et al. [11] is the first one to explore contextual variables. This historical cohort study (1988-97) carried out in South East London highlighted a "dose response" variation of incidence of psychosis with respect to the ethnic minority density in the area. The relative risk of psychosis for minorities who live in areas with low ethnic density (less than 22%) was about twice (RR 4.4) the risk of those living in areas of high density (RR 2.4). According to the authors, this finding may indirectly confirm the epidemiological importance of social networks in protecting individuals from stress factors that can contribute to psychosis onset.

Later, several studies have evaluated the effect of neighbourhood variables, showing that the incidence of schizophrenia is heterogeneous and lower in areas where white British and minority groups live in more cohesive and less fragmented milieu [12]. Consequently, the variance in the incidence of psychosis in South East London cannot be explained only on the basis of individual variables such as age, gender and ethnicity. Socio-environmental risk factors, measured at the level of neighbourhood (such as voter turnout, ethnic density, ethnic fragmentation, socio-economic deprivation) may help to explain this heterogeneity [12]. One hypothesis is that social capital may mediate the effect of these variables, in agreement with the hypothesis made by Faris and Dunham [13], who speculated that the highest rates of schizophrenia were in more disorganised cities, not necessarily in the poorest.

History of migration, stress and psychosis

Some studies added weight to the evidence about the relationship between cumulative stress during life following migration and excess of psychosis in migrants. In Malmo, researchers found that in first generation immigrants who developed psychosis, over 50% had resided in Sweden for 10 years or longer, prior to their first contact for psychotic symptoms, suggesting that the risk associated with migration might accumulate over time [14]. Moreover, the highest risk for psychotic disorders among immigrants in the Netherlands was predicted by younger age at the time of migration [15]. These studies contradict the selective migration hypothesis and propose instead that younger age at migration and duration of migration are predictive of the risk for psychosis, suggesting that duration of exposure to the host country is relevant.

Cantor-Graae and Pedersen [16] examined the full range of psychiatric disorders associated with any type of foreign migration background among persons residing in Denmark, including foreign-born adoptees, first- and second-generation immigrants, native Danes with a history of foreign residence and persons born abroad to Danish expatriates. They found that all categories of foreign migration background, except persons born abroad to Danish expatriates, were associated with increased risk for at least one psychiatric disorder. They confirmed the two-fold risk for developing schizophrenia and schizophrenia spectrum disorders for first- and second generation immigrants in Denmark. In particular, first- and second-generation immigrants having two foreign-born parents showed significantly elevated incidence rate ratios (IRRs) for schizophrenia and schizophrenia spectrum disorders. The authors hypothesised that persons having two foreign-born parents may have greater visibility than those with only one foreign-born parent because of greater differences in physical or behavioural characteristics, and that they might be particularly vulnerable to feel different or excluded from the rest of society. Therefore, some migrants may be especially challenged by their greater visibility or "otherness" in the Danish society. Another important result of this study is that the migrant group most at risk of developing mental illness was constituted by foreign-born adoptees. This group of people could represent "the extreme" of the migration dimension within the psychosis risk-perspective and to be foreign-born adopted could mean a greater exposure to all the social and environmental factors that make migrants particularly vulnerable to psychosis, such as separation from parents and early age of migration.

The Italian context

The Italian scenario is interesting because migration is a recent phenomenon, with the consequence that almost all migrants are first generation migrants. A higher incidence rate of psychosis among migrants compared to natives has been reported in Bologna [17]. In a large epidemiologically based cohort study of first-episode individuals (Psychosis Incident Cohort Outcome Study, PICOS) collected in the Northern-Eastern part of Italy, it was found that immigrants (the majority of whom came from Eastern Europe) had markedly high incidence rates for all psychoses than the Italian population (IRR 2.26, 95% CI 1.85-2.75) [18]. In Bologna, migrants with FEP were more often married and living outside the family of origin, while they showed a lower substance and alcohol use rate compared to natives with FEP [19]. Data from Italian studies suggest that not only belonging to a minority group is a condition associated with higher risk of psychosis, but also being a recent migrant.

Psychopathological insight and cultural competent view of the phenomenon

A strong critique to the studies of psychosis in minorities comes from cross-cultural perspectives. Several studies show possible misdiagnoses of mental disorders in migrant patients [20 21], which might be due to a peculiar clinical presentation and/or to the different expressions of suffering across cultures [22]. Some authors have suggested that there are possible misunderstandings between doctors and patients with religious beliefs and traditions different from Western ones and, as a consequence, emotional distress in these populations may be misdiagnosed as schizophrenia or psychosis [23]. Consistently, Cantor-Graae et al. [14] found that 25% of first episode psychosis patients have different diagnoses at 3 to 5 years; the majority of patients with a diagnosis of conversion at follow-up were immigrants. On the other side, previous research has shown unusual psychopathological expressivity of psychotic disorders in first-generation migrants; such disorders might present themselves either with core somatic symptoms or with more prominent mixed affective symptoms than native patients [24]. Moreover, in a sample of psychotic patients, King et al. [25] identified a higher prevalence of unusual psychotic syndromes in first-generation migrants than in native patients. This evidence might be due to the action of what Kirmayer and Young call "cultural idioms of distress" that are "culturally prescribed modes of understanding and narrating health problems and broader personal and social concerns" [26]. In this view, "symptoms can be understood as moves within a local system of power": in migrants, "certain symptoms have been interpreted as being forms of 'resistance' or 'weapons of the weak', used to evade or attenuate injustices or to undermine otherwise unassailable power holders" [26]. In this regard, a recent study carried out in Italy showed that among migrants distress due to post-migratory liv-

ing difficulties amplified the tendency to somatisation [27]. In a cross-cultural perspective, this evidence shows the phenomenological centrality of the bodily experience, "which may often become the primary or only channel of communication in a migratory context"[24]. However, a number of studies do not support the suggestion that misdiagnosis can explain these high rates. For example, in the UK AESOP study diagnostic changes following a first episode were not more evident in black minority groups [28]. Moreover, there were no marked differences in clinical profiles [29], a finding that mirrors what Harrison et al. [30] found in Nottingham. Finally, one of the few studies to directly assess diagnostic bias found no evidence of misdiagnosis in ethnic minority patients [31].

The impact of social regulation of human gene expression

The results of these studies show that the period of migration, or the migration process itself, may confer an increased risk for schizophrenia and other psychoses regardless of whether the parents are foreign-born or natives. Some studies have addressed whether the high rates found in migrants could be due to higher genetic or biological vulnerabilities: no evidence was found. Two studies conducted using the AESOP sample investigated minor physical anomalies [32] and neurological abnormalities [33] across ethnic groups and found no differences. Furthermore, greater differences in brain structure, such as reduced global grey matter and increased gyros grey matter, were detected between black patients and black controls than between white patients and white controls [34]. The authors, however, concluded that explaining these findings is at best speculative because they could be related to exposure to earlier neurological insults, but they could also be the consequence of greater exposure to adversities and trauma or to exposure to antipsychotics (notably, the current dosage of antipsychotic medications was significantly higher in the black Caribbean and black African patients). A study conducted in Netherlands [35] addressed the problem of migrants' genetic predisposition to psychosis. The authors administered the *Family Interview for Genetic Studies* to a sample of Morocco migrants and Dutch natives FEP patients and found that age and sex-adjusted risk for non-affective psychotic disorders (NAPD) were similar in both parent groups. However, among siblings, the adjusted risk for NAPD was significantly higher in the Moroccan-Dutch group than in the Dutch group. The authors concluded that their results suggest that environmental factors in the Netherlands have a greater impact on the psychosis risk for male immigrants from Morocco.

In addition, recent analyses have highlighted that social factors can represent environmental risk factors because they might regulate gene expression. Facing severe or chronic stress [36] such as social isolation, low socio-economic status, late-life social adversity may result in long-term, sometimes permanent, alterations of the biological stress response system may take place [37].

A role of primary importance is played by the hypothalamic pituitary-adrenal (HPA) axis and its final product, glucocorticoid hormones [38]. The activation of the glucocorticoid receptor inhibits the transcription of many immune response genes via suppressive binding of the glucocorticoid receptor to gene promoter sequences, glucocorticoid receptor-mediated transcriptional induction of anti-inflammatory genes and non-genomic antagonism of pro-inflammatory transcription factors [39]. HPA axis alterations indicative of low cortisol, increased glucocorticoid sensitivity and functional desensitisation of the glucocorticoid receptor have been demonstrated in severely stressed adults [40]. Additional insights into the immunological effects of long-term social stress have come from transcriptional profiling of circulating leukocytes in human population [41]. People confronting long-term social adversities such as extended periods of stress [40], threat and social isolation have repeatedly been found increased expression of pro-inflammatory immune response genes with elevated circulating levels of IL-6, IL-1β and IL-8 and decreased expression of genes involved in INF antiviral responses [42]. This pattern of pro-inflammatory/antiviral transcriptome skewing has also been observed in experimental animal models of social instability [43]. Although it is well demonstrated that this biological pattern can promote inflammation-related cardiovascular, metabolic, neurodegenerative and neoplastic diseases [44], more extensive social genomics studies are necessary to define the possible impact on vulnerability to mental disorders, such as psychosis. Interestingly, a recent meta-analysis suggests the presence of an inflammatory syndrome in schizophrenia [45]. Finally, epigenetic mechanisms can provide another pathway by which social environmental might regulate gene expression: human studies have documented associations between DNA methylation profiles and socio-enviromental risk factors such as low socio-economic status and childhood stress exposure [46].

Since migration is an important stressful life event, and difficulties in integration in host countries may remain chronic, this can be conceptualised within the vulnerability stress model of risk for psychosis. Although individual risk is still considered to be mediated through susceptibility, the biological evidence highlights the importance of social regulation of the expression of human genes. This raises new conceptual questions, such as, "What role does host-culture or social isolation or migration process play in modulating gene expression in migrants?", "What is their impact on vulnerability?".

Discussion

The reviewed studies covering a period of more than 30 years and highlight the history of migration in all its dimensions (personal or parental; current or past) and the role of minority status in increasing the risk of psychosis. Clinical studies add the important insight that psychopathological differences and misdiagnosis do not explain the excess of psychosis found in migrants and ethnic minorities. Most studies reveal different levels of risk depending on the minority with different geographical origin. It is interesting to note that the origin group at risk for psychosis varies in different countries [3]. This may indicate that socio-environmental risk factors faced by origin groups operate differently in different countries, depending on social experience and available resources to cope with adversities. Considering the relevance of migration in Western countries, primary epidemiological studies should be carried out to identify in each context the most vulnerable minority groups and to implement targeted prevention interventions.

The risk factor most commonly investigated and with a certain level of cross-cultural consistency is ethnic density: in both UK and Netherlands, the risk of psychosis is higher in minorities who live in areas with low ethnic density and who are exposed to conditions of low social capital and greater isolation. Interestingly, this risk factor at the area level corresponds to an individual risk factor, strong cultural identity, and to a family risk factor, dual foreign born parentage, as a dimension which exacerbates the distance between minorities and majorities [10] [16]. It is possible to hypothesise that low ethnic density at the area level, dual foreign born parentage at the familial level and strong cultural identity at the individual level are proxies for social isolation of minorities. Social isolation can lead to dopaminergic dysfunctions and thus increase the risk of psychosis.

Other social and psychological risk factors in minorities include the social disadvantages and discrimination [8] and the "mismatch" between expectations and achievements [10]. With regard to migrants, younger age at the time of migration predicts a higher risk for psychotic disorders, and there is evidence that selective migration cannot explain the higher risk found among migrants [15]. Moreover, the risk associated with migration may accumulate over time [14]. From studies conducted in Italy, we know that recent first-generation migrants are also at higher risk of developing psychosis [17] [18]. These findings could suggest a lower degree of biological vulnerability and, perhaps, a higher burden of psychosocial disadvantages in migrants and minorities compared to natives, confirming the socio-developmental pathway to psychosis proposed by Morgan et al. [8], who suggested that the high rates of psychosis are largely social in origin. Following the gene and environment interaction model, these social factors could interplay with the regulation of gene expression in the onset of psychosis. The results of the EU-GEI study [48], a Europe-wide incidence and case–control study of psychosis conducted in 12 centres chosen to include areas with large first and subsequent generation migrant populations, will give us the opportunity to directly test components of this model.

Conclusions

In conclusion, misdiagnosis as the cause of the excess of psychosis found in minorities and migrants seems to be ruled out by the available evidence, and several psychopathological follow-up studies have shown that psychosis diagnosis is consistent over time [28]. In addition, there is evidence that the quality of health and psychosocial care for migrants may be affected by barriers to psychiatric care access, such as administrative structures, linguistic and communicative skills, cultural distance and the mismatch between users' health-care expectations and those of healthcare providers.

The current literature shows that the migration experience as well as the minority status are risk factors for psychosis. As Morgan & Hutchinson argued in 2009 [49], this is a public health tragedy, and one that remains neglected. This tragedy could be at least attenuated by several psychosocial interventions, targeted at social disadvantages and at those individuals and populations who are at highest risk [50].

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