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Review Article

Hazards of mental illness in migrants from low to high income countries: a review

Lawrence Maayan

Abstract *Sociopolitical events have led to an increase in migration in the first decades of the 21st century. Understanding this phenomenon and its relationship to mental illness will benefit immigrants and provide a better understanding of psychopathology. We reviewed literature on immigration, in particular from high income countries (HIC) to low-income countries (LIC) and examined individual behavioral illnesses to determine how migration affects their prevalence and presentation.*
We found that different illnesses show varying presentations depending on migratory circumstance. Obesity seems to increase along with the number of years in a HIC with an obesogenic environment. Mood and anxiety disorders are more prevalent in individuals from LIC migrating to Europe and Oceania, but not to North America. Memory Disorders are impacted by country of origin. Psychosis tends to be higher in immigrants to European countries, but not, in general, to Israel. Migrating to an area of low population density of one's ethnic group or race tends to worsen the outcome.
It appears that while migration can be seen overall as a stressor that increases likelihood of behavioral disturbance, important exceptions help explicate the environmental impact of expectation, isolation and discrimination on mental illness. Further study of these aspects of immigration and contributions to mental illness are warranted.

Keywords: Migration, race, ethnicity, depression, anxiety, discrimination.

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INTRODUCTION

Exposure to early adversity has been correlated with vulnerability to a wide range of illness (Felitti, et al., 1998). These include obesity, substance abuse (Dube, et al., 2003), mood, and cardiovascular disorders (Danese, et al., 2011). Much of this research has been done in Western Educated Industrialized Rich and Democratic (WEIRD) populations. It is not clear how well these relationships, mediated by an exposome including traumatic experience as well as nutrition, infectious agents and toxicants, hold in the rest of the world with

Correspondence to: Lawrence Maayan, New York State Psychiatric Institute, 1051 Riverside Drive New York, NY 10032

Email: Lawrence.maayan@nyspi.columbia.edu

very different sanitation and socioeconomic surroundings or in individuals who migrated from Low-income countries (LIC) to high income countries (HIC) with WEIRD populations. The link between early adversity and later mood disorders demonstrated in WEIRD populations appears to be mediated, in part, by inflammation and to a lesser extent, obesity (Maayan & Maayan, 2024).For migrants, however, there is often the added burden of adverse phenomenon occurring in adulthood. Understanding the impact of adversity both on a physiological and diagnostic level has eluded psychiatry. Many of the events of recent migration present an opportunity to better understand these problems and ameliorate their effects. In the following we will examine the challenges posed by migration, the impact of country of origin and country and specific environment of migration. We will then examine obesity, mood, anxiety and traumatic disorders, memory disorders and psychotic disorders as they play out in migrants from LIC to HIC.

Migration and its Challenges

In the last decades several factors including civil war in Syria and Sudan, the failure of the Arab spring to improve conditions in North Africa and a series of coups d'état and upheaval in Sub-Saharan Africa as well as easier access to imagery from wealthy nations depicting lives of ostensible ease and plenty have spurred an increase in migration. The International Organization for Migration Estimates that there are 281 million migrants (over 89 million of these displaced persons) worldwide in 2021 alone (McAuliffe & Triandafyllidou, 2021). Many survive bodily and psychological threats both in their place of origin and during their passage. Iraq is a well described relatively recent case. There were 4.2 million Iraqi refugees in 2009, many of those were persecuted ethnic minorities in Iraq who, in their new, sometimes temporary homes in nearby Arab capitals of Amman, Damascus and Cairo, were forced into near slave labor or sex work to survive. The UN High Commission for refugees estimated that less than 40% of children were attending school and an even lower percentage of heads of household were employed with 80% totally dependent on charity, or for the lucky few, savings (Mowafi & Spiegel, 2008). Some of these individuals moved on to HIC, arriving in a wealthier nation but bringing with them a history of suffering. Many refugees leave their host country in the context of political upheaval and repressive governments that often engage in torture of their inhabitants. A recent systematic review and meta-analysis showed that torture was found in 105 countries worldwide with the most common methods being blunt force trauma, electrical torture and starvation or dehydration, women were most likely to suffer rape and men sleep deprivation. Individuals endured an average of 2 types of physical and 1 psychological torture. 25% were sexually and 11% sensorially tortured (Milewski, et al., 2023). Their conditions in their countries of origin can also be a source of environmental and public health stress. For example, currently only 40% of people in South Sudan have access to regular water or bathroom facilities (Lasseko, Willemot, & Schultz, 2021).

While traumatizing occurrences are all too common in both Low- and High- income countries, there are certain biological exposures that are distinct between groups. By definition of their immigration status, migrants have the additional stress of acculturation. Therefore, there are three types of stressors at play with migrants, 1. the increased prevalence of adversity experienced prior to migration, 2. the differential effect of migrating from an area with one set of hygienic, nutritional and occupational exposures to a novel environment and 3. the additional stress of acculturation following migration. Examining some of the prevalence of differing disorders may help elucidate the phenomenological sequelae of migration.

Country of Migration

This has an obvious impact as it defines the socio-economic and cultural milieu into which the migrant is placed. Factors ranging from length of time in detention to the existence of local family and ethnic community to economical and education opportunities influence the impact of a country of migration, depending on illness.

Country of Origin

This also dictates the level of education, environmental preparation as well as the possible depredations, torture and stressors endured prior to migration. Likewise certain cultures of origin are more similar and better represented in the country of migration, which also influences outcome.

Special cases: US and Israel

Differential race appears to be of additional import as do special circumstances where the individual is immigrating to a place of more familiarity.

The United States as well as, to a lesser extent, parts of Canada and Australia, have what may be described as a culture of immigration. There are areas that either are relatively underpopulated or have a plurality of cultures that are non-indigenous. This makes some, but not all of the tasks of acculturation less pronounced than in countries of similar wealth and even more generous social service programs, but a more entrenched native culture, like Europe.

Israel is also a special case, where, although it is economically, culturally and technologically different from the countries individuals have migrated from, in particular the many from North Africa, Yemen and Ethiopia, it offers a relief from the anti-Jewish persecution that most refugees had experienced prior to their immigration. That along with the fact that many communities

emigrated to Israel en masse, intact and as noted above to an environment that although vastly different, was also familiar and safe, changes some of the stressors of LIC to HIC immigration.

As we go through different conditions, we will examine how these variables play out in rates of illness in migrants.

MOOD, ANXIETY AND DEPRESSIVE DISORDERS

A large meta-analysis of 66 studies encompassing migrants from Europe, Asia and Africa to Europe, North America and Oceania found increased rates of anxiety, depression and PTSD in migrants compared to non-migrants, even those who stayed in their country during the time of war. While self-report found higher rates of diagnosis than the use of externally applied ratings, neither country of origin nor country of destination had any effect on rate of illness (Henkelmann, et al., 2020). Other work looking at individual experiences found that the impact of time in detention as well as the perception of discrimination in the country to which the population was migrating had an impact on rates of depression for Southeast Asian migrants to Canada (Noh, Beiser, Kaspar, Hou, & Rummens, 1999), as well as for Somali teen migrants to the US (Ellis, et al., 2010).

Studies specific to the U.S showed that migration in adolescence and adulthood may actually be protective for populations from Africa, Eastern Europe and Latin America, but not from Puerto Rico and Western Europe (Breslau, Borges, Hagar, Tancredi, & Gilman, 2009) amongst other factors, authors speculate whether those who successfully migrate are more healthy. They also wonder whether there is something about migrating to the US which may be experienced as more permissive for immigrants, as it has a less well entrenched culture (Salas-Wright, Vaughn, Goings, Miller, & Schwartz, 2018).

OBESITY

While obesity is not a psychiatric illness per se, it has behavioral aspects in common with psychiatric illness and is comorbid and at times causative of much of the morbidity and even pathophysiology of psychiatric illness. There is some evidence of individuals from LIC adapting to the obesogenic diet in the HIC where they settle (Mensah, et al., 2022) with data from the US (Byiringiro, et al., 2022) saying that each year of age in the US leads to more obesity risk. However, a recent review found no evidence of increased rates of obesity for immigrants compared to their host populations (Kibibi, et al., 2023). Children of migrants to Europe, however, do seem to be at higher risk of obesity and metabolic syndrome compared to children of native born European parents (Lindblad, et al., 2023).

DEMENTIA

A small European cohort in the Lazio region of Italy, including Rome and its environs, found less Alzheimer's Dementia in migrants from high migratory pressure countries than those from high income countries or native Italians (Cascini, et al., 2023).In Sweden, immigrants from Europe, Asia and Africa (Wändell, et al., 2019) also have a lower incidence of dementia than native Swedes. Studies of African – Caribbean immigrants to the UK (Adelman, Blanchard, & Livingston, 2009), however, show higher rates for immigrants than for those who were native born. A meta-analysis of migrants from low to high income countries similarly found that migrants from African and Asian countries had the highest risk of dementia (Selten, Termorshuizen, van Sonsbeek, Bogers, & Schmand, 2021). Some possible explaining factors were exposure to a western diet with concomitant increased risk of cardiovascular disease and a decrease in social status which also may have increased the likelihood of inflammatory contributions to Alzheimer's pathology.

PSYCHOSIS

Consistent findings regarding the pernicious mental health impact of migration come from studies on the development of psychosis. Several meta-analyses of immigration to Europe, Canada, Israel and Australia have shown that immigrants overall have higher rates of psychotic disorder than native born individuals (Bourque, van der Ven, & Malla, 2011), and that the effect lasts into the second generation, suggesting a role for post-migration environment in addition to those of pre-migration.

In terms of countries of migration, the United Kingdom had the highest disparity in psychosis rates between native born and immigrant, followed by Scandinavia and the Netherlands and finally by Israel (Bourque, van der Ven, & Malla, 2011). While some of these factors can be related to aspects of early adversity, others regarding the post-migration environment seemed to be caused, at least in part, by environmental insults coming later in life.

When migrants are separated into groups from Europe and those from Africa and the Caribbean it appears that Black immigrants to non-Black majority countries have the highest rates of psychosis (Cantor-Graae & Selten, 2005). The detrimental effects of immigration in these groups seem to enlarge from first to second generation (Selten, et al., 2020). With first generation migrants to Australia and Northern Europe having a 2.7 relative risk (95%CI: 2.3-3.2) and second generation a 4.5 relative risk (95%CI 1.5-13.1) compared to non-migrants. Countries of origin figured prominently with those from developing countries having a 3.3 relative risk or countries where the majority of the population was Black having a 4.8 relative risk compared to migrants from HIC (Cantor-Graae & Selten, 2005). This effect was also found in Moroccan

and Turkish immigrants to the Netherlands (Veling, et al., 2006). Research in Sweden (Hollander 2016) seeking to differentiate between individuals who immigrated as refugees, and therefore ostensibly experienced greater hardship prior to immigration and those who were not refugees found that refugee status did predict a higher rate of schizophrenia in migrants from Europe, but not in those from Africa. The authors explore several possible explanations including that non-refugees from Africa may have also experienced hardship, but they also consider the possibility that these results may be driven by additional hardship incurred by African migrants following migration.

A survey of the Jerusalem perinatal Study of 92408 births in Jerusalem between 1964 and 1976 (Harlap, Davies, Grover, & Prywes, 1977) (Harlap, et al., 2007) showed second generation immigrants to have the same rate of schizophrenia as native born Israelis (NBI) (Corcoran, et al., 2009). The authors note two factors driving this anomalous result, one being that many immigrants to Israel were coming from an environment of being a minority to one in which they were no longer a minority. Furthermore, many groups from relatively Low-income countries of Morocco and Iraq migrated along with their community, possibly easing their isolation.

Looking at later cohorts shows that this halo effect cannot be applied universally. In terms of psychiatric illness, studies comparing native born Israelis to immigrants from the Former Soviet Union (FSU) and those from East Africa (Ethiopia and Eritrea) found significant differences in rates of schizophrenia. East African immigrants (EAI) had a 1.8% prevalence with an odds ratio (OR) over NBI of 1.6 (95%CI:1.4–1.8) followed by immigrants from the FSU (1.2%) OR= 1.1 (95%CI:0.9–1.2) and NBI (1%). Their children (2nd generation had even more stark differences: EAI 1.3% OR = 2.1 (95%CI:1.6 -- 2.7), FSU = 0.8% OR= 1.3 (95%CI:1.0 -- 1.8). When East African first-generation immigrants were separated into cohorts, based upon when they emigrated, the early arrivals had the highest prevalence 2.4% followed by the second 1.9% and third waves 1.0% (Eger, et al., 2022). In trying to explain these results the authors note that, unlike the original cohort, later groups of Ethiopian refugees were able to find pre-existing communities to settle into when they arrived in Israel. Work in Europe also shows the potential protection provided by the ethnic density of neighborhoods for later immigrants cushioning the effects of immigration (Veling, et al., 2008). This phenomenon was also shown in a Danish study showing an inverse effect between ethnic density and psychosis for migrants to urban neighborhoods (Schofield, et al., 2017). There is some suggestion that the power of ethnic density or its opposite, isolation, may be best modeled by a social defeat paradigm. Neuroimaging work supports this model suggesting that elevated striatal dopamine in a social defeat paradigm may be increasing risk of psychosis (Egerton, et al., 2017).

MECHANISTIC UNDERPINNINGS

There is a translational literature going back over 50 years demonstrating the link between early handling in rat pups and later function of the HPA axis (Levine, 1957). More recent findings form the Adverse Childhood Events study (Dube, et al., 2003) have reinforced the significance of early experience and the concept of allostasis whereby adverse experiences accumulate and alter biological function. Further work in this area has suggested differential effects following particular threat related trauma having a different impact than neglect related trauma (McLaughlin, et al. 2021). In the last decades, findings in patients who endured marked trauma or abuse have demonstrated the existence of epigenetic change- post-translational changes in how the individual's genome is expressed- that alter the way that they process stress. On a molecular level these are often evinced in the presence of methylation affecting transcription of genes like NR3C1 the gene for the glucocorticoid receptor (McGowan, et al. 2009), that are important in the way the body handles stress. One possible phenomenon that migrants may be particularly vulnerable to is the second hit of overwhelming stressors on top of a stress response system that has been altered, perhaps adaptively initially, but under their current isolating circumstances, in a way that makes certain pathological outcomes more likely. This may be at play, particularly in the increased rate of psychotic illness in refugees in Sweden. Therefore, the isolation, frustration and consistent existential threat (challenges to employment, sustenance, the accessibility of community and companionship) may, on top of an altered stress-response system, create a vulnerability to psychotic and dementing illness.

Another way that the increased prevalence of psychosis can be viewed, particularly in the context of isolation and lack of community, is as an adaptive response. While there is evidence that psychosis and more firmly schizophrenia, has certain binary aspects – i.e. a neurodegenerative condition with irreversible deficits, particularly in cognitive function- that cannot be easily remedied- there is other research that suggest its existence on more of a continuum. The work of van Os and others have shown some level of continuity between psychotic experience in otherwise psychiatrically healthy controls and schizophrenia (van Os, Linscott, Myin-Germeys, Delespaul, & Krabbendam, 2009). This suggests that, like type 2 diabetes which exists on a continuum with glucose resistance, psychosis may also have aspects that are continuous with normal function. The experience of being in a foreign culture where there are extensive cultural cues not readily understandable, and where the ability to quickly identify a communication as a threat is vital, is often the situation of an isolated immigrant. The line between this hypervigilance and paranoia may be thin in certain circumstances and may increase the likelihood of disordered thinking. This might be ameliorated by the ready availability of social cues which can blunt the impact of isolation. A mechanistic pattern like this is in line with findings of increased psychosis in those without the benefit of social context i.e.

migrants like the aforementioned first wave of Ethiopian Jews- who arrive without the benefit of a community. Part of this vulnerability taps into a rich literature on loneliness and the pernicious aspects of isolation. As noted immigration presents the special challenge of a possibly enriched background of stress colliding with post-migration isolation.

CONCLUSION

Immigration presents special challenges with the presence of both early and later life adversity. While studies done in HIC have shown a greater impact for early adversity in terms of the development of later illness, studies of migrants show that a number of conditions, most notably psychosis, are markedly impacted by immigration and post-migration factors. Our brief review shows a consistent effect of acculturation, evinced by higher post-migration rates of psychosis and dementia in Black immigrants to Scandinavia and the UK and in Moroccan immigrants to the Netherlands.

Several exceptions to this trend are worth noting. In terms of pathology, obesity appears to simply be at worst affected by the number of years in an obesogenic environment or may not be impacted by migration status at all. This is in contrast to findings in early adversity which are linked to the development and presentation of obesity (Felitti, et al. 1998). Indeed, even the findings of obesity being simply based on years in the country speak to the diminished likelihood of it being related solely to concurrent environmental findings. It may be that obesity helps define some of the differential environmental impact of early versus late trauma.

The above noted protective factor of being a migrant to the US in terms of mood and anxiety disorders bears examination, both in terms of how it helps clarify the role of the migrant and their expectation and in terms of how it can inform knowledge about what constitutes a supportive environment post-migration (Salas-Wright, Vaughn, Goings, Miller, & Schwartz, 2018).

Another notable exception to our findings of the challenges of migration in terms of the development of mental illness was in Israel where, as we noted, migrant status and origin displayed almost no effect on psychosis prevalence in the Jerusalem Neonatal Cohort. This, the authors surmised may have been due to the change in status from persecuted minority to majority upon immigration. The one group where this was not as prominent was in Ethiopian and FSU immigrants to Israel. Both had higher rates of psychosis. Interestingly, The first wave of Ethiopian Immigrants had the highest rate, with successive waves having lower rates, perhaps in part due to the ameliorative effects of ethnic density, allowing more support for migrants coming to already formed cultural enclaves.

In terms of prevention and treatment, special care should be taken to allow for immigrants to integrate into a familiar and supportive cultural milieu. Further study and understanding of the mechanisms underlying these phenomena may improve both the treatment and prevention of mental illness in migrants and in the general population.

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