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Perspective

Migration and infectious diseases: how we should be worried

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Abstract

Migration is an intrinsic phenomenon of population dynamics, driven by socio-economic, political and environmental factors. The vast majority of refugees are hosted by low-income and middle-income countries (Turkey, Pakistan, Lebanon, and Iran alone host a quarter of the world's 20 million refugees). There is no systematic association between migration and importation of infectious diseases. Indeed, migrants tend to be young and fit and so are potentially healthier than the general population. Among the published studies on migrants and infectious diseases, the majority were non-emergent diseases with the exception of MDR tuberculosis and multidrug-resistant bacteria. Far from being a biological threat, which they are often perceived as or accused of for political and social reasons, migrants and above all asylum seekers escaping from precarious situations cannot be systematically associated with the introduction of infectious pathogens in host countries.

Keywords

Emerging infectious diseases, Hepatitis B, Hepatitis C, HIV, Infectious diseases, Migrants, Tuberculosis

Introduction

Migration is an intrinsic phenomenon of population dynamics, driven by socio-economic, political and environmental factors. An important increase in migration flows towards Western Europe has occurred throughout the last decade. According to the most recent statistics, there were about 244 million international migrants worldwide in 2015, of whom about one-third were registered in European Region with eight countries (France, Germany, Italy, Kazakhstan, Russian Federation, Spain, Ukraine and UK) ranking among the top 20 host countries at global level [1,2]. On average, over 60% of these international migrants came from other European countries, about 13% from Asia (especially China, Bangladesh and Pakistan) and as little as 2% from Africa [1]. Besides the political and socio-economic aspects of this phenomenon, health is definitely among the most relevant issues related to the 'migrant crisis' [3].

The mortality pattern of foreign-born individuals living in Europe varies widely among different population groups and compared with the native populations, with higher rates of deaths due to infectious diseases and lower mortality associated with cancer or cardiovascular disorders [4,5]. This is the result of several factors

affecting a person's life at different points in time throughout their migratory experience) [6,7].
Despite that, clinicians should be careful not to fall into prejudice and only think of unusual exotic conditions when dealing with a patient coming from tropical or sub-tropical areas.

Migration and infection diseases

The relation between migration and infectious disease is complicated. On one hand, prejudice against immigration has a long and dark history of baselessly associating immigrants with the spread of infectious disease. On the other, it is important to recognize that some migrants – particularly refugees fleeing war, persecution, or natural disaster – come from regions with weak or disrupted health systems and so face a unique set of challenges to health care. The movement of people is high on the political agenda in Europe and the USA, and in 2015, an unprecedented 65 million people were displaced worldwide. The vast majority of refugees are hosted by low-income and middle-income countries (Turkey, Pakistan, Lebanon, and Iran alone host a quarter of the world's 20 million refugees). There is no systematic association between migration and importation of infectious diseases. Indeed, migrants tend to be young and fit and so are potentially healthier than the general population. Instead, the act of migration should be viewed as an opportunity for improving health – for example, through ensuring immunization for people from countries with disrupted services.
Robert Aldridge and colleagues report the results of a cross-sectional study of active tuberculosis in more than 475 000 people who applied for visas to visit the UK between 2005 and 2013. Screening by chest radiograph followed by sputum culture for those with signs of tuberculosis showed a prevalence of 92 cases per 100 000 individuals. After adjustment for age and sex, an increased likelihood of active tuberculosis was associated with having had close contact with a patient, migration from a country with high tuberculosis prevalence, and application for a settlement and dependent visa. As such, Aldridge and colleagues call for contact tracing in the country of origin, and better coordination between pre-entry screening programs and tuberculosis programs in the applicant's country. Data such as these are essential to ground perspectives on health in migrants and obtain evidence of risks to prevent prejudice and frame policy [8].

Emerging infectious diseases and migration

Migrants could also play a role in importing emerging infectious diseases (EIDs) and could be a sentinel of major epidemics. EIDs are diseases that have appeared recently or that have recently increased in frequency, geographical distribution or both [9]. Since the end of the 20th century, there has been a constant stream of newly identified pathogens and an increasing occurrence of pandemic threats to global health [10].
These infections are due to new agents [HIV-1, Severe Acute Respiratory Syndrome CoronaVirus (SARS-CoV) (2003), avian influenza virus H5N1 (2005), H1N1 (2009)], geographical area in extension (West Nile, Dengue, Chikungunya, and Zika viruses), increased incidence of infectious disease (HIV, tuberculosis, plague), modification of virulence (Neisseria meningitidis) or acquisition of resistance (Extended-spectrum betalactamases – ESBL – or carbapenemase producing enterobacteriaceae and multidrug-resistant – MDR – tuberculosis).
We can also compare the re-emerging infections (polio virus (2014), Ebola virus (2014), etc.) [11,12].
The risk of emerging infections such as dengue in a risk zone was estimated at 1% for one month of travel [13].
We have seen (re-)emergence of diseases imported by migrants in Europe, such as chikungunya and dengue in France and Italy, and malaria in Greece. Apart from these examples, these are rare situations. However, with global travel growth, the risk could become more tangible [14].
A particular concern is that of Multidrug Resistant Enterobacteriaceae (MRE) carriage. MRE

acquisition is very frequent among travellers to tropical regions [15]. The acquisition was higher in Asia (72%) than in sub-Saharan Africa (48%) or Latin America (31%). However, the same study showed that MRE carriage was limited in time and disappeared after a few months. Migrants are considered at higher risk for a range of health problems including infectious diseases as HIV, hepatitis B, tuberculosis, schistosomiasis and malaria [16,17]. This higher risk is partly due to poor socioeconomic conditions and, in some countries, is due to the lack of rights to health coverage for undocumented migrants [18-21].

Existing evidence from different European countries highlights the difficulties to access health services that migrants are facing [22-25]. These infectious diseases unequally expose the majority population, from none at all (e.g., malaria) to a little (e.g., tuberculosis).

One can take the examples of epidemics of Middle East Respiratory Syndrome Coronavirus – (MERSCoV) and Ebola, for which no secondary case has been reported in France.

Among the published studies on migrants and infectious diseases, the majority were non-emergent diseases with the exception of MDR tuberculosis and multidrug-resistant bacteria [26,27].

Endemic disease, as tuberculosis, impose a far higher public health burden than epidemic disease [28]. Denmark experienced an increase in the incidence of tuberculosis in the 1990s in relation to the increase in the number of cases among migrants [29]. The rate of tuberculosis in France is 10 times higher among immigrants than in the majority population. Refugees and asylum seekers may have a heightened risk of MDR-TB infection and worse outcomes but the data remains poor [30].

Thus, there is little evidence to support the theories by which migrants would expose the host population to significant infectious risk. However, human diseases acquire a social status based on their perceived risk that determines their acceptability [28]. Thereby, apart from infections such as tuberculosis and multidrug-resistant bacteria, the introduction of EIDs into human populations seems to be more often a consequence of economic development that brings zoonotic reservoirs in closer proximity to people.

Indeed, most pandemic threats are caused by viruses from either zoonotic sources or vector-borne sources [31].

ECDC strategy to contrast imported infectious diseases

The ECDC report *Public health guidance on screening and vaccination for infectious diseases in newly arrived migrants within the EU* [32], provides EU member states with evidence-based scientific advice for a number of key infectious diseases. The report suggests that it is likely to be both effective and cost-effective to screen child, adolescent and adult migrants for active and latent tuberculosis, HIV, hepatitis C, hepatitis B, strongyloidiasis and schistosomiasis. It also suggests that there is a clear benefit to enrolling migrants in vaccination programs and ensuring catch-up vaccination where needed. This is, however, often conditional on the burden of disease in migrants' countries of origin. Migrants do not generally pose a health threat to the host population. However, some subgroups of migrants, including refugees, asylum seekers, and irregular migrants are particularly vulnerable to infectious diseases and may have worse health outcomes than the host population. In a number of EU Member States, subgroups of migrant populations are disproportionately affected by infectious diseases such as tuberculosis, HIV, and hepatitis B and C.

The guidance has been developed using a series of systematic evidence reviews, as well as drawing on the opinions of an ad hoc scientific panel through a consultation and assessment process.

Conclusions

Far from being a biological threat, which they are often perceived as or accused of for political and social reasons, migrants and above all asylum

seekers escaping from precarious situations cannot be systematically associated with the introduction of infectious pathogens in host countries.

It should be highlighted that infectious diseases among migrant populations largely reflect poor living conditions and social marginalization, and are therefore likely to remain confined to their communities without spreading to the indigenous people. Although their overall impact on European epidemiology is substantially negligible, careful surveillance is key, not only to better understand the trends and set priorities for action but also to prevent the potential re-introduction of vector-borne pathogens such as malaria parasites. Screening programs for the major infectious conditions need to be systematically implemented and adapted to the different stages of the migratory process.

However, without a systematic implementation and improvement of migrant-friendly health services, any intervention would be useless and mostly short-sighted. Undocumented migrants often face the greatest difficulties in access to care, which means that common health needs are not met and therefore are likely to get worse and lead to further complications. The resulting deterioration of the overall health status is definitely against the basic principles of human rights and largely disadvantageous in the light of the considerably high costs (both direct and indirect) that this would generate for the affected individuals, their families and the entire society.

Appropriate access to care regardless of the legal status to ensure early diagnosis and treatment is crucial for both the individual and the community to improve the health status and prevent the occurrence of secondary cases. Last but not least, preventive interventions should be put in place at all levels to raise awareness of travel-related diseases among visiting friends and relatives and their families.

A three point plan of how the global health community can respond to the refugee crisis in Europe, which has seen more than 1 million people cross its borders, can be summarized as follow: first, building inclusive health services that prevent stigmatization and persecution to ensure Europe's health security and reduce costs by early diagnosis of illness; second, reducing health and socioeconomic inequalities worldwide to prevent the need for mass migration; third, providing a sound evidence base for health risks to counter misinformation.

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