INFECTION AMONG IMMIGRANTS AND REFUGEES: PREVALENCE AND PROSPECTS FOR CONTROL

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ABSTRACT

Migration and travel have been a major and dominant human activity over the years for both individual and collective purpose. The desire to seek greener pasture, good education, business, tourism and fear of conflict has been the major driver of migration. The Global Trends Report of the United Nations High Commissioner for Refugees (UNHCR) reported that by the end of 2017 approximately 68.5 million people were forcibly displaced across the globe, including 25.4 million refugees, 40 million internally displaced persons (IDPs), and 3.1 million asylum seekers. Immigrants and refugees are major contributing factors in the spread of infectious diseases from one geographic location to another. This is as a result of exposure to infections exposed to in their country of origin and contact during migration. Infectious diseases notable among immigrants and refugees include sexually and non-sexually transmitted infection such as HIV/AIDS, tuberculosis, syphilis, gonorrhea, hepatitis, malaria, Corona virus, influenza, helminthiasis, leprosy and Ebola virus. These infectious diseases are mainly prevalent in most developing nations with little burdens in developed nations. Poor health conditions of immigrants and refugees usually result in low vaccination coverage, with incomplete history of vaccination and documentation of prior vaccine receipt. Medical screening and immunization are key strategies to reduce the risk of infectious diseases among immigrants and refugee.

Keywords: Immigrant, refugee, infectious disease, prevalence, control

Introduction

Human mobility, as well as transport of animals and vectors, has been long associated with the spread of infectious diseases. The Black Death in Europe and the subsequent implementation of the 'quarantine' strategy by the Republic of Venice in the fifteen century are good examples of the fear of infectious diseases coming from abroad (Castelli and Sulis, 2017). The recent flow of migrants into Europe, following the Central Mediterranean route (mainly from Africa to Italy) and the Eastern Mediterranean route (mainly from the Middle East to Greece) has raised fears that the usual epidemiological

pattern of infectious diseases observed in Europe could be impacted. 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 (Castelli and Sulis, 2017). 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 (World Migration Report, 2015). 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 (International Migration Report, 2016).

However, it is worth noting that there has been a considerable rise in the number of refugees (over 50% of whom come from only three countries (Syria, Afghanistan and Somalia), who amounted to approximately 19.5 million globally in 2014. The proportion of asylum seekers reaching the European Union (EU) borders during 2015 has more than doubled compared with the previous year, reflecting the rising migration flows through the Mediterranean routes (Castelli and Sulis, 2017). Still, in contrast to the common perception, the majority of refugees do not even get close to Europe, being currently registered in Jordan, Lebanon and Pakistan. Besides the political and socio-economic aspects of this phenomenon, health is definitely among the most relevant issues related to the 'migrant crisis' (Rachel *et al.,* 2013). 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 (Reus-Pon *et al.,* 2017). This is the result of several factors affecting a person's life at different points in time throughout their migratory experience (Kentikelenis *et al.,* 2015). 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. Four different steps are usually considered when migration to Europe is analyzed: (a) first arrival to the destination country by sea

or land; (b) short- or long-term stay in refugee camps or other reception centres; (c) resettlement; (d) stable living in the destination country after resettlement.

Concepts of Immigrants and Refugees

Immigration is the international movement of people to a destination country of which they are not natives or where they do not possess citizenship in order to settle as permanent residents or naturalized citizens (Di-Giovanni *et al.,* 2015). Commuters, tourists, and other short-term stays in a destination country do not fall under the definition of immigration or migration; seasonal labour immigration is sometimes included, however. As for economic effects, research suggests that migration is beneficial both to the receiving and sending countries. Research, with few exceptions, finds that immigration on average has positive economic effects on the native population, but is mixed as to whether low-skilled immigration adversely affects low-skilled natives (David *et al.*, 2012). Studies show that the elimination of barriers to migration would have profound effects on world GDP, with estimates of gains ranging between 67 and 147 percent for the scenarios in which 37 to 53 percent of the developing countries' workers migrate to the developed countries (Bodversson and Van, 2013). Development economists argue that reducing barriers to labor mobility between developing countries and developed countries would be one of the most efficient tools of poverty reduction. Positive net immigration can soften the demographic dilemma in the aging global North.

The academic literature provides mixed findings for the relationship between immigration and crime worldwide, but finds for the United States that immigration either has no impact on the crime rate or that it reduces the crime rate (Dustmann and Christian, 2019). Research shows that country of origin matters for speed and depth of immigrant assimilation, but that there is considerable assimilation overall for both first- and second-generation immigrants. Research has found extensive evidence of discrimination against foreign born and minority populations in criminal justice, business, the economy, housing, health care, media, and politics in the United States and Europe (Clemens, 2011).

Migrant

While there is no formal legal definition of an international migrant, most experts agree that an international migrant is someone who changes his or her country of usual residence, irrespective of the reason

for migration or legal status. Generally, a distinction is made between short-term or temporary migration, covering movements with a duration between three and 12 months, and long-term or permanent migration, referring to a change of country of residence for a duration of one year or more.

Immigrant

Immigrant is the term used to refer to a person who comes to live in a country, other than his/her place of origin or birth. Most immigrants are migrant workers and are employed either formally or more often informally in their countries of destination (OECD, 2018).

Refugee

Refugee is a term used for person or group of persons who has been forced to leave their country in order to escape war, persecution, or natural disaster (Black, 2001). Refugees are persons who are outside their country of origin for reasons of feared persecution, conflict, generalized violence, or other circumstances that have seriously disturbed public order and, as a result, require international protection. The refugee definition can be found in the 1951 Convention and regional refugee instruments, as well as UNHCR's Statute.

Global Migration Patterns and Statistics

Statistics has shown that more than 281 million people (roughly 3.6% of the world's population) currently live outside their country of origin as at 2020, up from 173 million in 2000 and 221 million in 2010 (United Nation, 2020). Currently, United Arab Emirates accounts for the highest number of international migrants with over 200 million persons in 2020 (International Organization for Migration, 2020). As at 2008, United States of America, accounted for the largest number of immigrants, with more than 38 million, with Canada as the sixth largest number of migrants, with just over 6 million (Barnett and Walker, 2008). International travel is also increasing at a record pace. More than 30 million trips outside the United States were made in 2006, an increase of more than 10 million in the decade since 1996. A larger proportion of trips are made by those, usually immigrants and their families, who identify visiting friends and relatives as the primary purpose of their trip. The profile of travel destinations is linked to the changing demographics.

The Global Trends Report of the United Nations High Commissioner for Refugees (UNHCR) reported that by the end

of 2017 approximately 68.5 million people were forcibly displaced across the globe, including 25.4 million refugees, 40 million internally displaced persons (IDPs), and 3.1 million asylum seekers. According to the United Nations High Commissioner for Refugees (UNHCR, 2021), 68% of the global refugees originates from 5 countries with Turkey having the highest number of refugees in their country. The majority of refugees in Africa are in the Horn of Africa and the East region. Uganda has the largest number of refugees, nearly 1.4 million as of 2020. Sudan and Ethiopia are the second and third countries in Africa with more displaced people. Sudan had over one million refugees, while Ethiopia counted around 770 thousand.

Table 1. Key facts and figures from the World Migration Report, 2000 and 2020

	2000 Report	**2020 Report**
Estimated number of international migrants	150 million	272 million
Estimated proportion of world population who are migrants	2.8%	3.5%
Estimated proportion of female international migrants	47.5%	47.9%
Estimated proportion of international migrants who are children	16.0%	13.9%
Region with the highest proportion of international migrants	Oceania	Oceania
Country with the highest proportion of international migrants	United Arab Emirates	United Arab Emirates
Number of migrant workers	-	164 million
Global international remittance (USD)	126 billion	689 billion
Number of refugees	14 million	25.9 million
Number of internally displaced persons	21 million	41.3 million
Number of stateless persons	-	3.9 million

Source: International Organization for Migration, (2020).

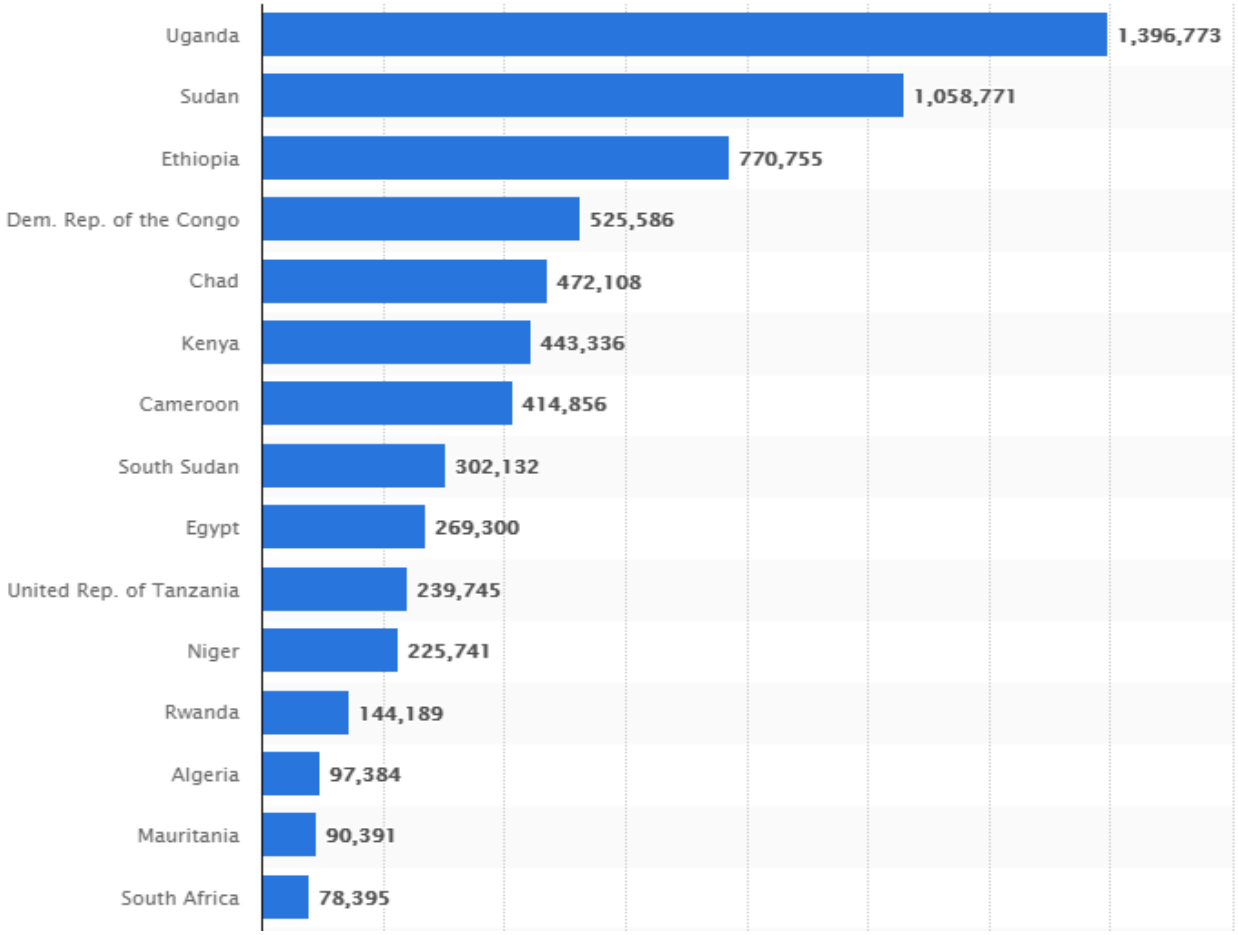

Figure 1: African countries with the most refugees as at 2020.

Source: Varella, (2021).

Challenges Associated with Immigrants and Refugees

The decision to migrate is often accompanied by several preconceived expectations especially that of acceptance by hosts, but with forced migration, the decision is often abrupt, to escape death, famine, and many other fatal conditions (Haug, 2008). The duration it takes a migrant to adapt to the new environment determines how soon to realize integration with the society. Some migrants tend to adjust sooner than others, through social interaction and engagement in economic activities (Botero *et al.*, 2015). However, not all migrants are warmly received by the host communities or are allowed to enjoy similar privileges with members of the host communities. In such instances, migrants become segregated amongst host population or marginalized from economic activities, especially if they are refugees.

Most host communities are not receptive towards refugees, for fear of losing scarce and valuable resources, such as land (Ediev *et al.*, 2014). Although, Uganda demonstrates a different scenario of hosting refugees the country has been seen to have the most progressive refugee policy.

According to the United Nations High Commissioner for Refugees (UNHCR), Uganda recorded over 200,000 refugees registered with the UNHCR in 2020 (Lyytinen, 2015). These statistics indicate that the presence of refugees has had a positive impact on the urban economy in Uganda. In contrast, the refugee situation in Kenya has been problematic, as refugees have been involved in insurgent activities in the northeastern region, which shares a border with Somalia. Some individuals from Somalia have blended in with the local Somali population in northeastern villages, posing challenges for security agencies in distinguishing between Somali residents in Kenya and new arrivals from Somalia (Anderson and McKnight, 2014).

Assimilation

The decision to cross an international boundary for the purpose of relocation, presents various opportunities as well as challenges. The foremost challenge a migrant encounter is culture shock, which is often caused by initial physical experience on arrival at destination. The culture of host communities often differs from that of the migrant, hence the difficulties in adapting to the language, religion, values and lifestyle choices of the host community. The challenges in assimilation are experienced by both host and migrants. The hosts may not easily comprehend the culture of the migrant, hence the resistance in accommodating migrants, especially refugees (Whitaker, 2015).

In the case of refugees, they are escaping volatile conditions and do not choose where they relocate, as such, they have no predetermined expectations or preparedness while crossing international borders (Gibney, 2015). They suffer mentally stability therefore their assumptions, expectations as well as the outcomes of their residence within host communities are new experiences. Some refugees, however are inflicted with psychological trauma, due to conflicts in their home countries. Therefore, are withdrawn, hence, not sociable on arrival at the host community (Familiar *et al.*, 2016). For example former child militants, who have been forced to kill close relatives to

qualify for recruitment in the militia as evident in Sierra Leone Civil War (1991-2002). After the war, these child militants crossed the border to join their relatives in neighbouring countries without going through any rehabilitation or demobilization and disarmament program (Derluyn *et al.*, 2013).

Female refugees face more psychological challenges while settling down in host communities, due to mental and physical injuries sustained from rape during conflicts in their countries. For example, female refugees from South Sudan, are mostly victims of rape, due to the rampancy of the gory activity during the prolonged conflict. Majority of women from the Upper Nile State of South Sudan, living in Akoka, Bailet, Fashoda, Longochuk, Maban, Maiwut, Malakal, Manyo, Melut, Luakpiny / Nasser, Panyikang, Renk and Ulang have fallen victims of rape by militants (Tankink, 2013). These human right violations destroy the productive capacity of refugee women in host communities, due to injuries sustained from rape, such as damaged uterus. In addition, men from those communities marry outside their community, and therefore not extending their lineage in the host communities (Clark, 2014).

Employment Opportunities

Migrants have very high expectations that may not be fulfilled at destination, hence, the disappointment and frustrations that ensue (Creighton, 2013). The first expectation of a migrant is to secure a meaningful job for immediate sustenance while they seek more sustainable opportunities. Migrants often to consider the probability of finding employment in the host country overlooking potential barriers that may prevent access to the jobs they desire. They often ignore an assessment of the nature of the labour market before migrating. Some labour markets do not permit migrants, due to the limitations that exist, such as an overwhelming labour market, youth bulge, limited vacancies and government restrictions. Migrants are usually not permitted to work with their visitors' visa in many countries, which is a reason for migrant engagement in criminal activities, as a resolve to generating income for themselves and for the families left behind (Menjívar and Lakhani, 2016).

Housing

Housing is usually a major concern for migrants in terms of finding the right neighbourhood that is safe for their families, affordable with good transport links. Major

cities which are primarily destinations for internal and international migrants offer different types of housing depending on affordability. Those migrants that are financially constrained often seek informal accommodation in congested areas, such as slums, which are mostly affordable. The increased slum population impacts on available infrastructure, such as sewage, water supply, medical services and sanitation services. These services are in short supply to informal settlements, due to the unplanned and unstructured living situations within informal settlements that do not meet required standards of the city council (Mberu *et al.*, 2013).

Refugees are not privilege to enjoying similar benefits as other migrants, who have a choice to where they reside. Refugees are settled in host communities determined by the government where they have access to social services provided by a number of international agencies such as UNHCR, World Health Organization and UNICEF. Their movement is managed by the government and UNHCR and in some countries, such as Uganda and to a certain extent Ethiopia, the refugees have the right to seek employment and opportunities in other locations within the country. Kenya hosts the largest refugee population in the world in two major camps, namely; Kakuma Refugee Camp5 and Dadaab Refugee Camp6. Since the inception of the camps, the refugees have mixed with the host population and intermarried with them, to nationalize their immigration status (Oka, 2014).

Infections Associated with Immigrants and Refugees

Immigrants and refugees are major contributing factors in the spread of infectious diseases from one geographic location to another. This is as a result of exposure to infections exposed to in their country of origin and contact during migration. Owing to the available statistics of travels caused by immigrants and refugees, there is a high tendency of infectious disease dynamic. The distribution and transmission of these diseases across space and time is tied to the pattern of reception and available facilities. After first arrival, refugees, asylum seekers and displaced persons are often assembled in camps where they reside for weeks or months (Castelli and Sulis, 2017). The status of these camps may be a major infections disease dynamic. Camps may be crowded, possibly favoring the occurrence of

epidemic outbreaks of respiratory or gastrointestinal infections, sometimes caused by incomplete vaccine coverage for preventable diseases (Williams *et al.*, 2016). Violence in the parts of refugees and camp keepers may trigger conflicts, resulting in physical abuse and fight which may result to injuries and blood contact. Also, sexual activities by immigrants and refugees may also result to transmission of sexually transmitted infectious diseases.

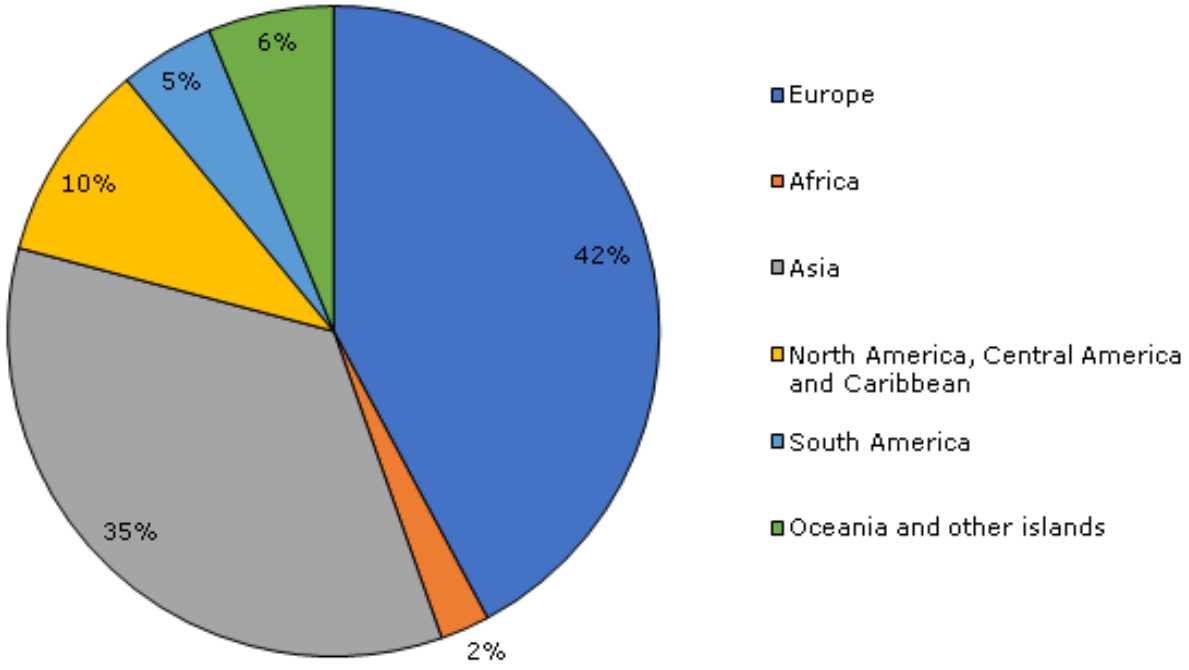

Figure 2: Percentage distribution of infectious caused by travelers to Canada

Source: Statistics Canada, (2021).

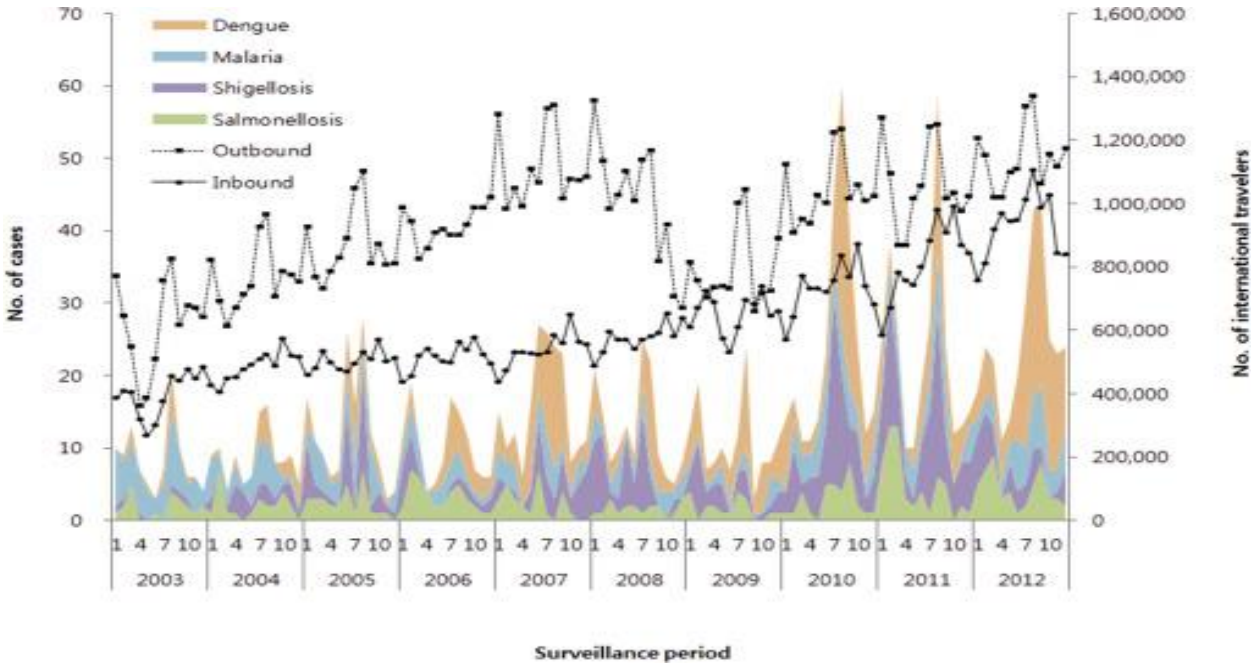

Figure 3: Trend of imported infectious disease cases and the number of international travelers in South Korea, by months and surveillance years 2003–2012

Source: Choe *et al.* (2017).

Infectious diseases notable among immigrants and refugees include sexually and non-sexually transmitted infection such as HIV/AIDS, tuberculosis, syphilis, gonorrhea, hepatitis, malaria, Corona virus, influenza, helminthiasis, leprosy and Ebola virus. Travelers' diarrhea is the most common travel-related illness and occurs worldwide, especially in most of Asia, Mexico, Central and South America, Africa, and the Middle East. Bacterial pathogens are the typical cause, led by enterotoxigenic *Escherichia coli*. Hepatitis A is the second most common vaccine-preventable travel-associated infectious disease and hepatitis A virus (HAV) is the most common cause of viral hepatitis. The incidence of infection is closely related to sanitary conditions and the level of economic development (Dong, 2013).

HIV infection occurs worldwide. As of June 2017, an estimated 36.7 million people were living with HIV infection. Sub-Saharan Africa is the most affected part of the world (25.5 million cases or 69% of all people living with HIV infection), and the Eastern Europe and central Asia region has

experienced the largest increases in new HIV infections (60% increase from 2010 to 2016) (CDC, 2019). The risk of HIV infection for international travelers is generally low. Travelers' risk of HIV exposure and infection is determined less by geographic destination and more by the behaviors in which they engage while traveling, such as unprotected sex and injection drug use (CDC, 2019).

Pulmonary tuberculosis (TB) is among the greatest concerns, as the poor travel conditions together with a generally suboptimal health status of many individuals (especially the youngest and the elderly escaping from conflict areas) soon after arrival are important risk factors for the acquisition or re-activation of infection and the rapid progression to active disease (Eonomopoulou *et al.*, 2017). Mites (causing scabies) can easily spread among migrants during travel on overcrowded boats or soon after arrival, and should be identified promptly to avoid further diffusion. Though not representing a serious health threat in itself, cutaneous lesions resulting from scabies infestation may lead to bacterial superinfections and their complications.

Coronavirus (COVID-19) is a travel related infectious disease. On 31 December 2019, WHO was informed of cases of pneumonia of unknown cause in Wuhan City, China A novel coronavirus was identified as the cause by Chinese authorities on 7 January 2020 and was temporarily named "2019-nCoV". At present, 219 million cases with 4.55 million death has been recorded globally. In Nigeria, a total of 206,000 cases with 2,724 death has been recorded (CDC, 2021). Food- and water-borne infections such as typhoid fever or acute viral hepatitis A and E (i.e. those transmitted through the faecal–oral route) are also a major disease of travelers caused by immigrants and refugees which should also be taken into account (Benzeguir *et al.*, 1999).

Malaria is generally unusual because most people get to Europe several months after leaving endemic areas (which considerably exceeds the average incubation period), and they are mostly semi-immune and therefore unlikely to develop life-threatening forms of the disease. However, the possibility of relapsing malaria (which is caused by persistent forms of *Plasmodium vivax* or *Plasmodium ovale*) should be taken into consideration (Roggelin *et al.*, 2016).

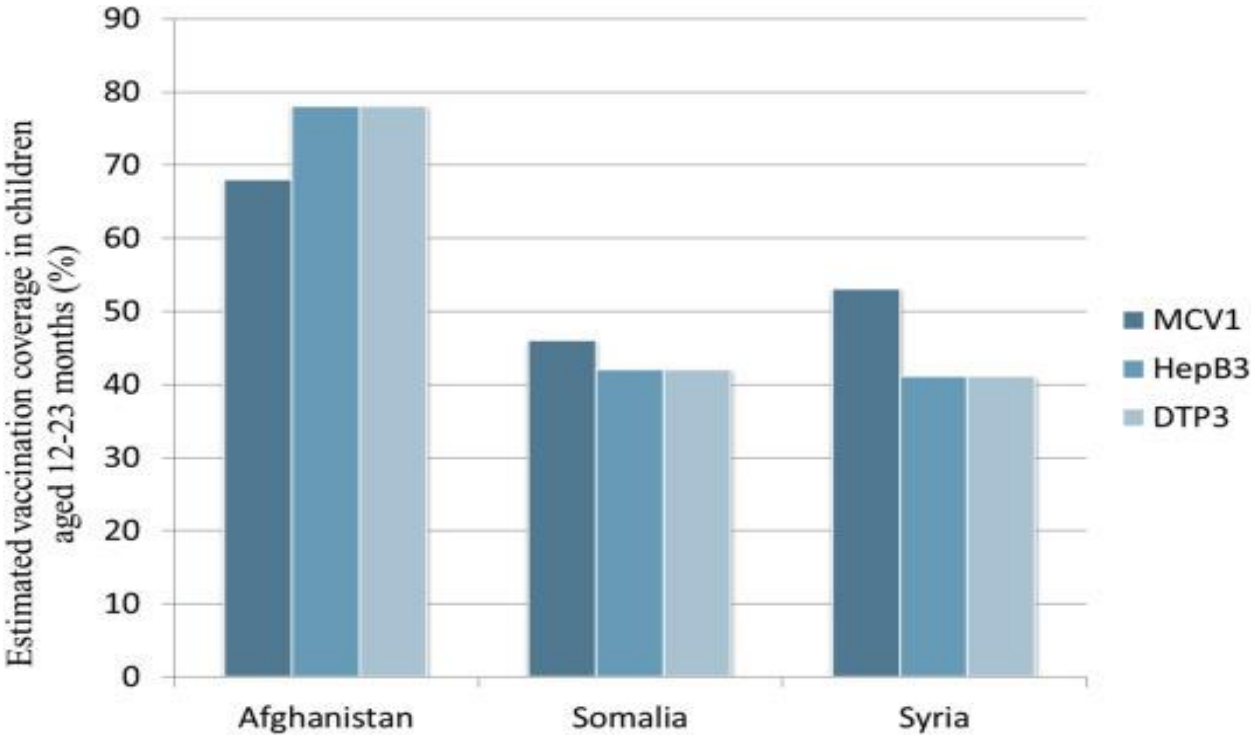

Figure 4: Estimated coverage rates for Measles (MCV1), Hepatitis B (HepB3) and Diphtheria/ Tetanus/ Pertussis (DTP3) in the top three countries of origin for refugees and asylum seekers in 2015.

Source: Castelli and Sulis, (2017)

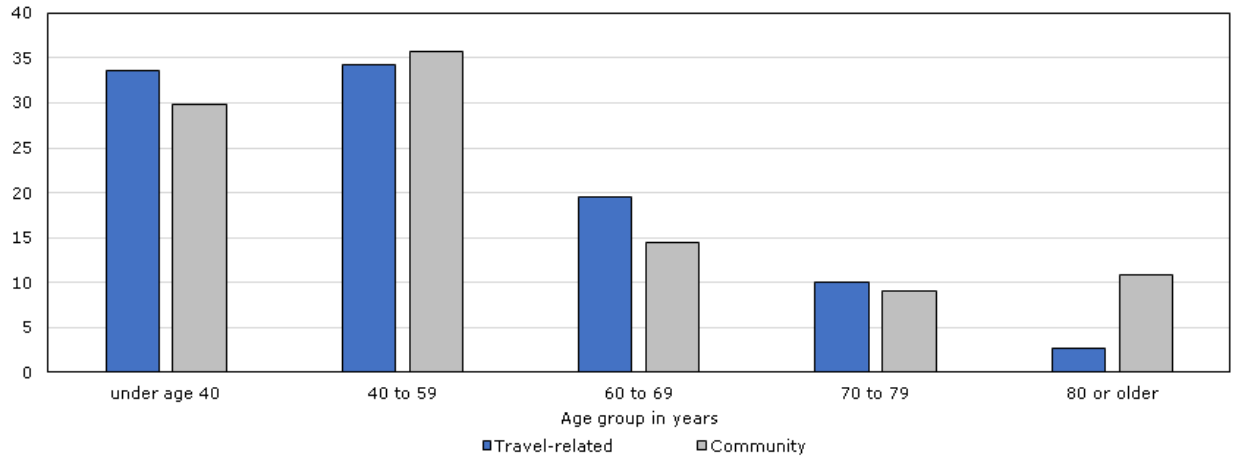

Figure 5: Percentage distribution of Global COVID by travelers as at April, 2020 by age group

Source: Statistics Canada, (2021).

Health Risks of Immigrants and Refugees

The health problems of refugees and migrants are similar to those of the rest of the population, although some groups may have a higher prevalence. The most frequent health problems of newly arrived refugees and migrants include accidental injuries, hypothermia, burns, gastrointestinal illnesses, cardiovascular events, pregnancy- and delivery-related complications, diabetes and hypertension. Female refugees and migrants frequently face specific challenges, particularly in maternal, newborn and child health, sexual and reproductive health, and violence. The exposure of refugees and migrants to the risks associated with population movements – psychosocial disorders, reproductive health problems, higher newborn mortality, drug abuse, nutrition disorders, alcoholism and exposure to violence – increase their vulnerability to non-communicable diseases (NCDs). The key issue with regard to non-communicable diseases is the interruption of care, due either to lack of access or to the decimation of health care systems and providers; displacement results in interruption of the continuous treatment that is crucial for chronic conditions.

Vulnerable individuals, especially children, are prone to respiratory infections and gastrointestinal illnesses because of poor living conditions, suboptimal hygiene and deprivation during migration, and they require access to proper health care. Poor hygienic conditions can also lead to skin infections. Furthermore, the number of casualties and deaths among refugees and migrants crossing the Mediterranean Sea has increased rapidly, with over 3100 people estimated to have died or gone missing at sea in the first 10 months of 2015, according to the United Nations High Commissioner for Refugees (UNHCR, 2015).

Table 2. Main factors affecting the health status of migrant population

Migratory Phase	Risk Factors for Health
Pre-departure	Biological characteristics
	Local patterns of chronic conditions (communicable and non-communicable)
	Environmental factors
	Depletion of healthcare
Travel	Transports and travel conditions
	Sexual violence
	Epidemiological characteristics of transit areas
Destination	Socio-economic deprivation
	Access to care
	Occupational risks
	Exposure to risk behaviours (alcohol abuse, injection drug use, criminal organizations, etc.)

Source: Castelli and Sulis, (2017).

Diagnosis and Symptoms of Infections Among Immigrants and Refugees

i. Travel-related infectious diseases are often hard to diagnose and often require evaluation by an infectious disease specialist.
ii. Common screening tests may include:
iii. A complete blood count (CBC) blood test, which measures the number and type of white blood cells in the blood
iv. A stool specimen to test pathogens (bacteria, viruses or other microorganisms that can cause an illness)
v. Blood specimens to test for malaria and other parasites
vi. Blood specimens for antibody tests for various germs, such as hepatitis viruses

The symptoms of travel-related infectious diseases vary and may include:

i. Persistent diarrhea
ii. Skin conditions or rash
iii. Fever
iv. Respiratory infections
v. Chronic cough

Control of Infection Among Immigrants and Refugees

i. Documentation and adequate database of immigrant and refugees are important aspect of infectious disease prevention and control. Also, medical screening and immunization are key strategies to reduce the risk of infectious diseases among immigrants and refugee.
ii. The vaccination status of newly arrived migrants is usually very difficult to assess because documentation is generally unavailable. For this reason, immunization programmes should be implemented without delay at reception sites in host countries.
iii. Vaccines for HIV/AIDS, tuberculosis, syphilis, gonorrhea, hepatitis, malaria, Corona virus, influenza, helminthiasis, leprosy and Ebola virus should be prioritized to limit the contagious potential and avoid severe complications especially among the most fragile individuals.

Conclusion

Travel related infectious diseases is mostly associated with immigrant and refugee who are either displaced or seeking for greener pasture and largely reflect poor living conditions and social marginalization. However, with a systematic implementation and improvement of migrant-friendly health services, all intervention channeled towards prevention and control of possible infectious diseases would be relevant and effective.

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