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Comfy zone hypotheses in migrant health research: time for a paradigm shift



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ABSTRACT

Migration remains a double-edged sword. Emigration can improve migrants' socio-economic circumstances through better education, higher income and by providing a safety net from persecution and violence. However, migrants remain vulnerable particularly in terms of poor health. Keeping migrants healthy is in the best interest of both destination countries and the countries of origin because of the bidirectional contributions they make towards them. Sadly, migrant health still remains an underresearched area in the health arena. This poses a challenge in gaining a better understanding of the causes of the health burden in order to develop effective prevention and intervention strategies to improve health among migrants. Due to poor understanding of the underlying causes of migrant health differentials, several hypotheses have been proposed including 'healthy migrant effect' and/or 'Salmon bias', for explaining migrant health advantage, and low socio-economic status, poor lifestyle and genetics for migrant health disadvantage relative to the host populations. Although largely untested, these hypotheses have become a standard 'comfy zone' explanatory model in migrant health research field. However, the reliance on these hypotheses have become a standing block for the development of the migrant health research field as they provide untested explanations in communicating their findings. To make progress in gaining better understanding on migrant health differentials, researchers need to move out of their 'comfy zone' explanatory model to test potential factors in the real world and to invest in other explanatory models such as the role of migration and the role of context.

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Introduction

Ethnic diversity is an important feature of modern societies, and all the indications are that the magnitude of the ethnic

diversity will intensify due to increasing international migration.^{1,2} Globally, the estimated number of international migrants increased by 41% (173 million in 2000) to 244 million in 2015.² With the current persistent global inequalities in

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wealth, demographic changes, conflicts and environmental degradation, it is expected that the increasing trend will continue.¹

Migration remains a double-edged sword. Emigration can improve migrants' and their families' socio-economic circumstances through better education, higher income and by providing a safety net from persecution and violence among those from war-torn nations. The majority of migrants are workers who are willing to do the work that the destination populations are unwilling to do and, in the process, contribute massively to productivity and growth of both the destination countries as well as their countries of origin. In 2016, for example, the remittances exceeded half-a-trillion USD.³ Despite the beneficial effects of migration to migrants themselves, the destination countries and their countries of origin, they remain vulnerable in many respects including situations of violence, insecurity and poverty, marginalization due to hostility, nativism or poor integration in the host countries. Some of these challenges reflect on the current hostile political climate towards migrants in many countries, whereby the beneficial effects of migration receive little recognition.

Another such vulnerability is poor health, and this vulnerability can perpetuate over time to affect migrants and their descendants for generations.^{1,2,4} Health promotion can go a long way to keep migrants healthy and prevent unnecessary human suffering associated with poor health.¹ In addition to legal and human right obligations to safeguard and promote migrants' health, it makes economic sense to keep migrants healthy. Healthy migrants will boost their social and economic contributions toward destination countries and prevent healthcare costs associated with poor health and provide the crucial support through remittances to their home countries to assist the social and economic development that most of these countries badly need.^{1,3} Thus, keeping migrants healthy is in the best interest of both destination countries and their home countries of origin because of the bidirectional contributions they make towards them. Sadly, for so long, migrant health has remained an underresearched area in the health arena and is scarcely addressed by health system planners, although it is increasingly recognized as a global public health priority.¹ This poses a challenge in understanding the causes of the health burden in order to develop effective prevention and intervention strategies to improve migrants' health.

Due to inadequate and/or lack of appropriate data to help understand the underlying causes of disease burden among migrants, several hypotheses have been proposed.⁴ Many of these hypotheses, particularly the 'healthy migrant effect' and 'Salmon bias', low socio-economic status and genetics have gained prominence, but they are largely untested.⁴ These hypotheses have served researchers in migration and health well for the last few decades in providing potential explanations for the health outcomes in migrants relative to the host populations in the destination countries. However, the reliance on these hypotheses has also become a standing block for the development of the migrant health research field as they provide untested explanations in communicating our findings. For the last few years, the need to test these hypotheses and to consider different models for explaining health differentials in multi-ethnic societies is gaining

momentum. This paper discusses the promises and challenges of hypothesis-driven health research in multi-ethnic societies. This involves current research models for migrant and ethnic minority research, challenges and a way forward.

Models for assessing migrant and ethnic minority groups' health

The key current approaches for assessing migrant health include (i) comparing migrants with the host populations in the countries of settlement (ethnic inequality); (ii) comparing similar migrant populations living in different countries (the role of context); and (iii) comparing migrants with the population in their home countries (the role of migration).⁴

Comparison of migrants with the host populations

Of the three main approaches, the 'ethnic inequality in health' approach remains dominant. These studies typically compare migrants with the host majority populations. In North America, Australia and New Zealand, the host majority populations are largely of European descent as the original native populations of these countries have been marginalised to minority status. Studies comparing migrants with the host majority populations have been invaluable in terms of mapping disease burden and directing policy on migrant health.^{1,2} The interpretation of findings from these studies, however, remains complex. All-cause mortality data, although not all, tend to be favourable to migrants,^{5–7} but disease-specific mortality data show different results depending on the disease outcome and the country of destination. For example, Swerdlow analysed mortality and cancer incidence in a 3327 Vietnamese refugee's cohort who migrated to Britain after the end of the Vietnam War. The study found the overall mortality of the Vietnamese refugees to be lower than English and Welsh national rates.⁶ When the analyses were stratified by specific diseases, Vietnamese refugees had lower mortality rates from ischaemic heart disease and colorectal cancer but increased mortality rates from tuberculosis, cancer of the stomach, nasopharynx and liver in males and peptic ulcer in women than their English and Welsh national counterparts.⁶ Similarly, morbidity data show complex results. In a recent systematic review, Sohail et al. found that the risk of cardiovascular diseases differed by country of origin, country of destination and duration of residence with most migrant groups in Western Europe having similar or higher risk of cardiovascular diseases compared with the host destination populations in Europe.⁸ However, there were also important differences between groups. For example, migrants from North Africa had a lower risk of stroke than the host populations; Chinese migrants in the Netherlands had a lower risk of stroke, but in Sweden, the risk was higher among Chinese migrants compared with the host population.⁸ In addition, a systematic review on cancer among migrants in Europe shows that migrants have lower overall cancer mortality than the host populations in Europe.⁹ The data, however, show a complex picture of the individual cancer types. These data show that migrants have lower rates for cancers that are strongly associated with Western lifestyles such as

colorectal cancer and cancers of the pancreas, lung and breast, but higher rates for infectious disease-related cancers such as hepatic cancer and Kaposi's sarcoma compared with European host populations.⁹ Diabetes prevalence, incidence and mortality show higher rates in almost all migrant groups than the host populations in the destination countries.^{10–13}

The relatively low all-cause mortality rate in migrants has been linked to the healthy migrant effect and/or Salmon bias.⁵ The healthy migrant effect is postulated to be due to a self-selection process whereby healthy individuals migrate leaving behind the chronically ill and disabled individuals. Consequently, migrants, on average, are healthier than the population they originate from and often healthier than the populations of the destination countries. However, the validity of the healthy migrant effect¹⁴ has long been challenged due to the poorer quality of mortality data on migrants compared to the host populations.^{14,15} Uncertainties about the validity of the healthy migrant effect led to formulation of the 'Salmon bias' hypothesis, which suggests that the observed mortality risks among migrants are due to selective return-migration of the sick and elderly.¹⁶ Despite the uncertainties of the healthy migrant effect, the concept has thrived and remains very popular in migrant health research so much so that it has been extended from mortality data to morbidity data.

While the relatively low mortality rates for certain diseases among migrants have generally been attributed to the healthy migrant effect and/or Salmon bias, the relatively high mortality for other causes are generally pinpointed to factors such as low socio-economic status, unhealthy lifestyle and genetics.^{17–20} The two opposing explanations have consciously or unconsciously created a 'comfy zone' explanatory model for migrant health researchers (Fig. 1). Researchers do not have to think hard for the potential explanations for their findings because of the 'comfy zone' explanatory model; migrant health advantage is simply due to healthy migrant effect, and poor health outcomes are due to low socio-economic status, unhealthy lifestyle or genetics. The 'comfy zone' explanatory model has gained so much popularity that it is not uncommon to see its application in the same migrant population. For example, the healthy migrant effect is usually used as an explanation for the lower all-cause mortality or lower cardiovascular disease mortality while genetics, behavioural factors and early life factors such as higher low birth weight are usually used to explain the higher rate of diabetes

mortality among Moroccan migrants compared with the host populations.¹⁷ The question is if selective migration is responsible for the favourable cardiovascular mortality among Moroccan migrants, then why does this not apply equally to diabetes mortality?

Questioning the dominant hypotheses

Although the concepts of healthy migrant effect and Salmon bias seem plausible and attractive and have served the migrant health field well for decades, the data to substantiate these hypotheses are limited, and the limited data do not generally support this theory. First, the notion that only healthy people migrate and leave the chronically ill people behind seems simplistic given the complex nature of migration. Motivation to migrate is driven by a combination of several factors such as natural disasters, wars, economic (e.g. lack of employment opportunities, especially for the young, poverty; and income inequality), re-union and health reasons. Many of these reasons for migration such as re-union and health do not fit the classic portrayal of healthy selective migration. Furthermore, the segmentation of labour markets into a higher skilled, formal sector and a lower skilled informal sector, together with rising living standards and levels of education has led to a demand for both unskilled and skilled migrant labour across different sectors in destination countries.^{21–23} Additionally, it is not uncommon for people to migrate to seek better health care. In one French study, 9% of migrants of African nationality migrated to France for health reasons.²⁴ This means that migrants are made up of individuals from all walks of life.

The hypothesis that migrants are healthier than those they leave behind in their countries of origin because of selective migration has been difficult to test due to the lack of standardized comparable data. Few studies, mainly in the United States of America, have examined the healthy migrant effect relative to the host population in the destination countries, but the evidence from these studies is rather weak.^{25–28} In a more recent study in Denmark, Norredam et al.²⁹ examined the potential role of the healthy migrant effect by assessing the association between residence duration and disease occurrence using a unique data set on a cohort of refugees and family reunited migrants and Danish-born individuals. They found that both refugees and family reunited migrants already had a higher disease burden within 5 years of arrival

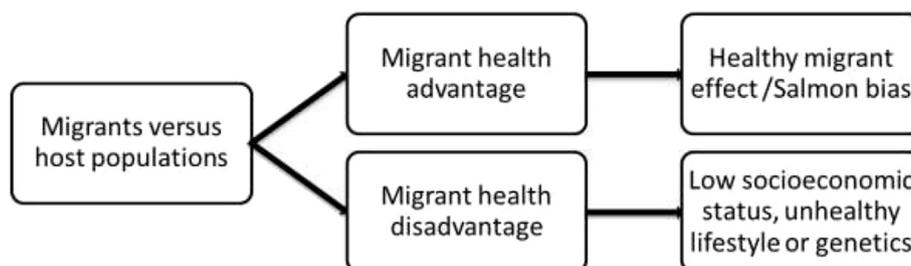


Fig. 1 – Comfy zone explanatory model for migrants' health inequalities.

for most diseases except stroke and cancer compared with Danish-born individuals. Thus, their results generally do not support the healthy migrant effect theory. One study in France that stratified the analysis by sex and age further shows the complexity of the healthy migrant effect theory.²⁴ In that study, Boulogne et al.²⁴ found mortality differentials by gender and age with a higher mortality among younger migrants and women compared to the local population, whereas older migrant men had lower mortality compared to the French local population.

The issue of Salmon bias or remigration bias as a potential factor underlying the lower overall mortality among migrants compared with locally born individuals also remains contentious.⁴ The idea that severely ill migrants or those who expect to die in the near future tend to go back to their countries of origin in order to be cared for by their relatives in a familiar environment has been challenged.^{4,26,28} There are two sides to every story. While the Salmon bias theory seems attractive, it also poses important questions. For example, why would migrants with access to superior health care in high-income countries go back to their countries where access to essential care is often difficult especially at a time when they need it most? It is not surprising therefore that the limited evidence to corroborate this theory is weak.^{26,28,30,31} Norredam et al.³¹ assessed whether migrants with severe disease were more likely to emigrate compared with migrants without severe disease. Contrary to the popular theory, the authors found a general tendency towards fewer emigrations among migrants with low, moderate or high disease scores compared with individuals without disease.³¹ In addition, they found higher disease severity to be associated with fewer emigrations.³¹

Low socio-economic status, lifestyle and genetic factors have been suggested as potential explanatory factors for migrants' health disadvantage. The effect of low socio-economic status on health outcomes has long been established in high-income countries. However, available evidence indicates that it does not entirely explain ethnic differences in health.^{32,33} In fact, some studies show complex relationships between low socio-economic status and health among migrant populations.^{34–37} Unlike the clear inverse relationship between low socio-economic status and health outcomes such as cardiovascular diseases that has been observed in European populations, studies among migrants show inconsistent results,^{34–39} although the general expectation is that a socio-economic gradient will eventually emerge in migrant groups.^{37–39} This is in line with the diffusion theory of the epidemic of coronary heart disease, which postulates that coronary heart disease affected more affluent communities of the rich nations first as they were the first who could afford unhealthy behaviours, which increased the risk of coronary heart disease.³⁹ However, as the epidemic matured, the disease spread to the poor people as their living standards improved. When the epidemic started to decrease, people with higher socio-economic positions were again the first to benefit as they were the first to adopt the healthy lifestyle changes.

Lifestyle factors such as physical inactivity, smoking, alcohol consumption and unhealthy diet have also been shown to influence health outcomes among migrants, but they do not explain ethnic inequalities in health.^{39–42} Data on

how genetics contribute to ethnic health inequalities are also lacking. Thus, to thoroughly assess ethnic inequalities in health, we need to take into account all the necessary factors including early life factors, psychosocial, socio-economic, lifestyle, nutrition, genetics and contextual factors. Assessing all these factors in a single study is hard and costly and requires considerable investment.

Moving out of our 'comfy zone'

To make progress in understanding health differentials between migrants and the host populations, we need to move beyond our current 'comfy zone' explanatory model and test these hypotheses in the real world and to pay more attention to other models including the role of migration and the role of context. Better understanding is crucial in addressing the inequalities between migrants and the host populations. For the last few years, the need to move beyond the 'comfy zone' explanatory model for ethnic inequalities in health is increasingly being recognised with several explanatory models having been proposed such as the adipose tissue overflow hypothesis and the life-course approach although most of these hypotheses remain to be confirmed.^{43–45}

Furthermore, the need to broaden the scope to other methods, i.e. the role of migration and the role context, is increasingly gaining momentum as such studies have more potential to facilitate better understanding of the causes of migrants' health inequalities.^{4,46}

Role of context

The role of context offers an approach in assessing ethnic minority and migrant groups health inequalities due to exposure to different contexts in the destination countries in terms of opportunities in life (e.g. opportunities for socio-economic development of migrants), lifestyle and prevention policies (e.g. nutritional supply and migrant access to prevention programmes and health care) and integrational policies (e.g. migrants access to integration programmes).^{47–50} These factors are known to have an impact on health outcomes and may contribute to pinpointing the key environmental exposure contributing to migrant health inequalities.⁵⁰ An example of studies assessing the role of context is a comparative analysis of cardiovascular disease (CVD) and risk factors among similar migrant populations living in different European countries.^{48,52–54} In a series of analyses, Agyemang et al.^{51–53} demonstrated important differences between African Caribbean and South Asian Indian origin people living in England compared with their corresponding African Caribbean and South Asian Indian origin counterparts living in the Netherlands. These differences were similar to the variations in CVD risk factors between the European English and European Dutch people.^{52–54} For example, African Caribbean and South Asian Indian people living in the Netherlands had a higher prevalence of smoking than their corresponding counterparts in England due to higher rates of smoking initiation and lower rates of smoking cessation.⁵¹ The differences reflected a similar difference between locally born English and the Dutch populations.⁵¹

Bhopal et al.⁴⁷ also compared circulatory mortality by specific country of birth in six European countries including Denmark, England and Wales, France, the Netherlands, Scotland and Sweden and found the lowest mortality rates in French locally born populations. The circulatory mortality rates were consistently lowest among all migrant groups living in France compared to their corresponding migrants groups living in other European countries.⁴⁷ Studies on context have a huge potential to generate new hypotheses into the causes, consequences and control of CVD and risk factors among migrant populations. Although the current studies have shed light on the importance of the role of context on health among migrants, they were limited by cross-sectional designs and therefore highlight the need for longitudinal studies to assist in identifying specific contextual factors that are driving the health differentials across countries.

Role of migration

Another important study approach to shed light on the potential causes of migrant health differentials is by comparing health outcomes of migrants in the destination countries to similar populations in the countries of origin.⁴ The role of migration studies are essential to assess the extent to which the health of migrants is affected by the migration process and the exposure to the new environment in the destination countries.⁵⁴ Studies on the role of migration can thus inform how exposure to different environmental circumstances might influence health outcomes among migrant populations. They can also inform policy in migrants' home countries as changes in health outcomes upon migration to high-income countries may provide indications of the potential future health threat as these countries continue to westernise.⁴ Although the importance of assessing the role of migration has long been demonstrated for major health outcomes such as CVD,⁵⁵ only a limited number of studies have actually compared health risk of migrants to the populations of the countries of origin.^{56–60} The limited studies have, however, provided valuable insights into the health differences between migrants and their compatriots in their countries of origin and the potential factors that may drive the high risk of chronic diseases in migrants.^{56–59} For example, the recent Research on Obesity and Diabetes among African Migrants (RODAM) study among Ghanaian migrants living in three European cities (Amsterdam, Berlin and London) and their compatriots living in urban and rural Ghana have revealed important differences in health outcomes such as diabetes,⁵⁹ hypertension⁶⁰ and estimated cardiovascular risk⁶¹ as well as differences in the potential factors that may explain the differences such as dietary behaviour,⁶² insulin resistance and beta-cell dysfunction⁶³ and epigenetics^{64,65} between Ghanaian migrants in Europe and their urban and rural peers in Ghana. In addition, Bhatnagar et al. compared coronary risk factors among migrants from the Indian subcontinent of Punjabi origin living in West London and their siblings living in Punjab in India.⁵⁷ The West London cohort had unfavourable coronary risk profiles compared with their siblings in Punjab in India.⁵⁷ Although the studies on the role of migration have yielded important insights, the current studies are mainly based on cross-sectional designs limiting our ability to

assess causal relationships. Establishment of longitudinal studies among migrating and non-migrating populations will provide unique opportunities to identifying factors that are driving the health differentials between migrants and the populations in their home countries.

A key advantage of studies on the role of migration and context is that because migrants are being compared directly with the source population who did not migrate and are living in their country of origin or similar population who have migrated to another high-income country, the findings are taken more seriously by migrants due to close cultural ties and affinity with people in their home countries compared with studies that compare migrants with the host populations who are often perceived by migrants as genetically and culturally different.⁶⁶ Findings from studies on the role of migration and context may also provide more convincing arguments to migrants about the impact of unhealthy lifestyles and their impact on health and thereby facilitate the prevention efforts among these populations.

Carrying out studies on the role of migration and context is, however, complex and requires committed multidisciplinary partners, application of standardised methodology, and more resources to carry them out than a single-country study. However, the benefits of multicentre studies among migrating and non-migrant populations far outweigh the benefits of single-centre studies in terms of knowledge acquisition, capacity building and societal impact. Experience from previous studies such as RODAM study and Migrant and Ethnic Health Observatory (MEHO) project indicates that studies on the role of migration and the role of context are feasible.^{47,56} The recipe for success includes building on pre-established links between institutions in destination countries and migrants' countries of origin, intense coordination of project activities and time investment.⁵⁶ Migrant health researchers need to engage with the funding bodies about the benefits of such studies. The European Commission initiative on "Diabetes—A world-wide challenge. Towards a global initiative on gene–environment interactions in diabetes/obesity in specific populations" is a very good example.⁶⁷ National funding bodies should give similar consideration to these types of studies to facilitate better understanding about the causes of poor health outcomes in migrants in order to facilitate effective prevention efforts.

Conclusions

Migrant populations form an important segment of modern societies and they can play a pivotal role in both the destination countries as well as in the countries they originate from in terms of social and economic development. However, they remain vulnerable particularly in terms of poor health. It is in the best interest of both destination countries and their countries of origin to keep migrants healthy in order to sustain their societal contributions. This requires a better understanding on the causes of poor health among these populations. Achieving this will require migrant health researchers to move out of their 'comfy zone' explanatory model to test and identify the potential factors including environmental factors (e.g., migration-related lifestyle

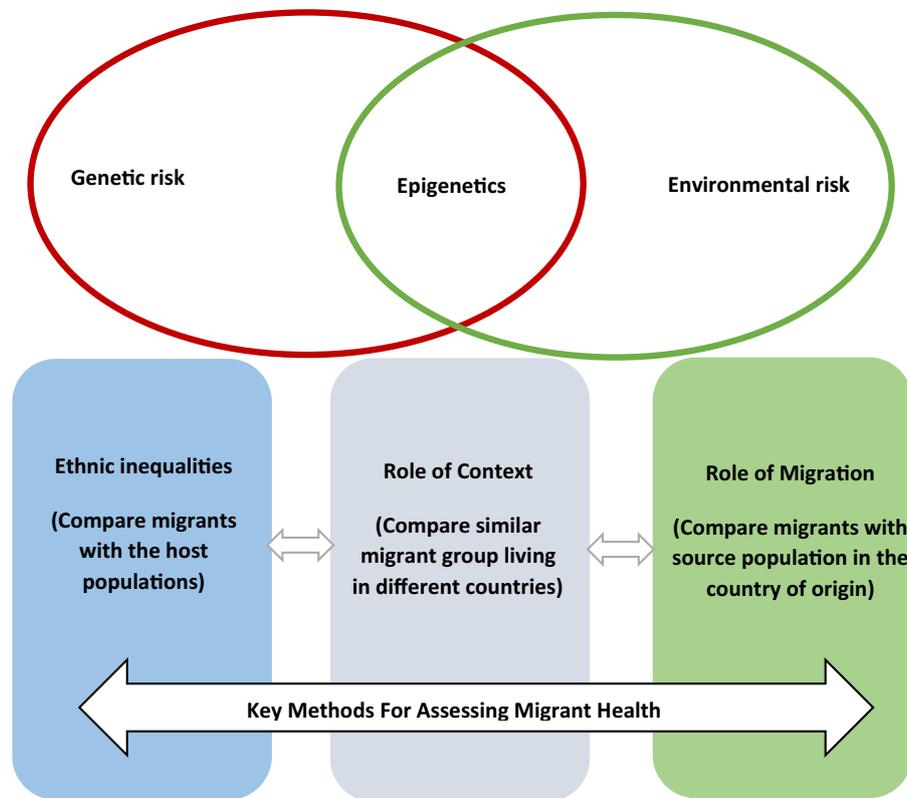


Fig. 2 – Key methods to gain insight into migrant health.

changes, social and economic circumstances, psychosocial stressors and structural level factors), genetics and the interactions between the environment factors and genetics (epigenetics) that may be driving the health inequalities between migrants and non-migrants in a real-world situation and to invest in other models such as the role of migration and the role of context (Fig. 2). As most of the current studies are based on cross-sectional designs, there is a need for longitudinal study designs to identify key factors driving the high poor health outcomes observed in migrants. Each of the three key methods for assessing health of migrants has a unique role to play in helping to understand migrant health. Comparing migrants with the host majority populations, for example, may help in formulating or adjusting policies to improve the health of migrants. For better understanding of the key factors driving the health differences, it is valuable to invest in studies on the role of migration and context. Current funding streams are mainly focussed on comparing migrants with host majority populations in individual host countries. Funding bodies therefore need to give attention to studies on the role of migration and context. Such investment will provide not only a better understanding on migrant health inequalities but also valuable critical health data to low- and middle-income countries where most migrants originate from and where data are often lacking. Investments in studies on the role of contexts and migration can also promote or strengthen collaboration among the host countries, as well as the host countries and countries of origin of migrants.

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