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Public Health Aspects of Migration in Europe
- Newsletter -

PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS

Issue 5 - April 2015

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EDITORIAL

Noncommunicable diseases (NCDs) and migrant populations

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The *Global action plan for the prevention and control of noncommunicable diseases (1)* suggests that Member States should:

> [I]ntegrate the prevention and control of NCDs into health-planning processes and development plans, with special attention to social determinants of health, gender equity and the health needs of people living in vulnerable situations, including indigenous peoples, migrant populations and people with mental and psychosocial disabilities.

The stereotypical migrant in epidemiological studies is a member of a fit, self-selected population, in better health than the population left behind, who leaves one country to seek a better life in a new country and, over a number of years, or with successive generations, converges – as regards incidence of and mortality from NCDs – with the rates in the host population.

Undocumented migrants from Africa sitting outdoors at a temporary camp in Sicily, Italy ©WHO/Sara Barragán

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This convergence with the rates of incidence and mortality from NCDs in the host population happens as the effects of the country of origin fade; such effects include losing certain protective factors (for example support from extended family), as well as encountering new exposures and risks.

While this picture may apply to some voluntary migrants, it is worth noting that the reality for many displaced people presents a range of acute challenges. Taking into account the recommendations of the *Global action plan for the prevention and control of noncommunicable diseases*, countries that want to address NCDs among migrants should consider:

- ensuring that their surveillance system is able to identify a broad range of migrant groups and a wider range of chronic conditions than might exist in the host population *(2)*;
- recognizing that new migrants may have a higher prevalence of NCDs than the host population and, while migrants may legally have equal access to health services, they will need a higher level of provision and more tailored services;
- recognizing that undocumented migrants have problems at all levels: they elude detection by surveillance systems and may have no right to access health services – in this regard there is no substitute for outreach and specific efforts to identify them and their needs;
- recognizing that migrant effects may extend across generations, especially if there are genetic influences, early-life exposures to risk, behaviours acquired before migration, or influences owing to poverty and other social determinants. The prevention and control of NCDs thus needs to take a life-course approach and follow migrant populations across decades *(2)*.

It is far from a cliché to say that in order to tackle the migrant population's burden of chronic diseases, the whole of society needs to contribute.

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OVERVIEW

Migration and diabetes: a poorly recognized challenge

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The prevalence of noncommunicable diseases (NCDs) is growing everywhere and in many parts of the world it is doing so at a pace that is catching countries and their national health planning processes when they are ill-prepared to deal with these diseases and the propensity for co-morbidities that they bring. Type 2 diabetes has long been thought of as a disease of well-to-do countries and upper income groups, but it is one of the NCDs now affecting all socioeconomic groups and countries, everywhere. The International Diabetes Federation (IDF) estimates that over 387 million people are now living with diabetes, especially type 2, and it predicts that by 2035 another 205 million people will develop the disease.

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Type 2 diabetes is known to be the product of biogenetic and socio-behavioural process and many of the biological determinants of type 2 diabetes are being increasingly delineated, helping to explain why type 2 diabetes appears to affect so dramatically and disproportionately groups such as the Pima Indians in the United States, natives of the islands of the Western Pacific and populations in South-East Asia. The socio-epidemiologic dynamics of the disease remain far less well understood, and it remains unclear why some people are not only more at risk of developing the disease, but are also likely to experience more serious outcomes than other people.

We know that migration is a determinant of vulnerability to type 2 diabetes, but can only hypothesize why this might be the case. Studies conducted in Australia, Austria, Greece, India, the Netherlands, Norway, the United Kingdom and the United States suggest that migrants are significantly more likely to develop type 2 diabetes than non-migrants and that once they have the disease, in general they fare worse than people who are not migrants.

Some of the reasons for this apparent association are probably related to the nature and character of migration itself. Uprooting, migration and resettlement are replete with the potential for high and often chronic stress. People leave or lose loved ones and step into, or are thrown into, unknown and often hostile environments. Research has meanwhile shown that stressful experiences have a negative effect on glycaemic control and lifestyle[1] and that coping with stress can contribute to the adoption of unhealthy nutritional and physical behaviours, notably increased food and alcohol consumption. Moving from one part of the world and one type of social environment to another can also mean profound lifestyle changes that are complicated by poor acculturation and food misuse. Migrants often adopt eating behaviours that they feel are culturally normative in the host community, but which can be ill-suited to their own biological background. For many migrants, movement into new societies can also mean rapid shifts from high-energy forms of physical work, common in their countries of origin, to mechanized work with low energy expenditure in host countries. The implications of this are considerable for the heightened risk of obesity, and then for the development of type 2 diabetes.

For a variety of reasons, migrants are often less likely to manage illness as competently as non-migrants. In the process of uprooting and moving, migrants lose self-esteem and the perceived power to intervene in managing chronic illness. ICMHD studies have highlighted how poor glycaemic control in migrants is related to what they perceive and describe as powerlessness to act in order to affect their health status.[2] Migrants often feel – rightly or wrongly – poorly supported to promote and protect their health and their perception of limited power is easily exacerbated by linguistic differences and a real (as well as perceived) inability to seek health care and use local health care services appropriately. Poor adherence to treatment regimens (where these have been prescribed) is common in migrant and ethnic minority populations and reflects a mix of cultural distance from health care providers, and legal and administrative barriers. Culturally defined attitudes to health and health care further exacerbate these already significant limitations.

In a world in which one in 33 people meet the criteria for migrant status and in which diabetes is becoming a leading source of morbidity, disability and death, more analysis of the dynamics of migration and type 2 diabetes could not only help resolve the dilemmas facing people on the move, but also tell us more about type 2 diabetes and social change in non-migrant populations.

Young man selling vegetables in an open air market in Tajikistan ©World Health Organization

Footnotes:

[1] Lloyd C, Smith J, Weinger K. Stress and diabetes: a review of the links. Diabetes Spectr. 2005;18(2):121–127 (http://spectrum.diabetesjournals.org/content/18/2/121).

[2] Of particular relevance is an internal (unpublished) IMCHD inter-country study on migration and health in Europe, produced in 2010 by one of the authors of this piece (M. Carballo).

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Metabolic syndrome among ethnic minority groups in Europe

Dr Charles Agyemang, Vice President, European Public Health Association (EUPHA) Migrant Health Section

Cardiovascular disease (CVD) and type 2 diabetes are major health burdens in Europe. However, there are striking ethnic differences in the health risks for CVD and type 2 diabetes, with most ethnic minority and migrant groups (henceforth ethnic minority groups) being disproportionately affected by both CVD and type 2 diabetes, compared with the local European population(s) *(1)*. Stroke mortality in England and Wales in 1999–2003, for example, was nearly 200% higher in West African-born men, and 100% higher in Caribbean-born men, compared with the general population of England and Wales during the same period *(2)*. Several European studies have also found high incidence of and mortality rates from coronary heart disease (CHD) among several ethnic minority groups, including South Asians, but lower rates in certain other groups, such as populations of African descent *(1,2)*. The prevalence of type 2 diabetes is also higher in all ethnic minority groups and up to sixfold higher in some groups, such as among populations of South-Asian descent, compared with the European local populations *(1)*. Further, ethnic minority groups develop CVD and type 2 diabetes earlier than European local populations. In one study in the Netherlands, the typical age of onset of type 2 diabetes was one and two decades earlier in Turkish and Moroccan migrants, respectively, as compared with the local Dutch populations *(3)*. These ethnic inequalities are difficult to explain, remaining a subject of constant debate, mainly owing to lack of prospective data among ethnic minority groups in Europe. Metabolic syndrome – a constellation of fasting lipids and lipoproteins, waist circumference, glucose, and blood pressure abnormalities – has been associated with increasing risk for developing type 2 diabetes and CVDs and therefore remains a potential factor contributing, at least in part, to the high rate of CVD and type 2 diabetes observed in ethnic minority groups. In a meta-analysis of 16 multi-ethnic cohort studies, the relative risk of developing type 2 diabetes ranged from 3.5 to 5.2, depending upon the definition of metabolic syndrome and the population studied *(4)*. Meta-analyses have also found that the metabolic syndrome increases the risk of CVD incidence, with relative risk ranging from 1.5 to 2.2 *(4)*. Additionally, in several cohorts, the risk of type 2 diabetes increased with the increasing number of components of metabolic syndrome.

Though metabolic syndrome is recognized as an important risk factor for type 2 diabetes and CVD, differences of opinion exist regarding the precise definition, including the risk factors that are considered to be key components of the syndrome and what threshold values are characterized as abnormal. This makes it somewhat difficult to compare data, particularly from studies that use different criteria to define (a) metabolic syndrome, and (b) the ethnic minority groups themselves. The criteria for metabolic syndrome include those developed by the National Cholesterol Education Program (NCEP), Adult Treatment Panel III (ATP III), WHO and the IDF. A major drawback of the NCEP-ATP III and the WHO definitions lies in their failure to take into account ethnic variations in the components of metabolic syndrome. Consequently, in 2005 the IDF introduced a new definition of metabolic syndrome, which incorporated ethnicity-specific cut-off points for waist circumferences, in order to address this issue. More recently, the IDF and the American Heart Association/National Heart, Lung, and Blood Institute – joined by the World Heart Federation, the International Atherosclerosis Society, and the International Association for the Study of Obesity – developed one unified definition for metabolic syndrome, taking into account ethnicity-specific cut-off points for waist circumferences, mainly for Asian populations, as cardiovascular morbidities occur at lower waist circumference values among Asians compared with other populations *(5)*.

Insulin resistance is commonly regarded as the pivotal lesion for metabolic syndrome because of its association with abnormal glucose metabolism, dyslipidaemias, hypertension and obesity. Several reports have shown greater insulin resistance in ethnic minorities than the European local populations. Consequently, it

Silhouettes © iStockphoto

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is expected that metabolic syndrome is consistently higher in ethnic minorities than European populations; and might underlie the high rates of CVD and type 2 diabetes in ethnic minority groups. Interestingly, however, this is not the case in all ethnic minority groups and it seems to depend on ethnicity and gender. Among South Asians (that is, Indians, Bangladeshis and Pakistanis), the prevalence of metabolic syndrome is higher than among Europeans, regardless of the criteria used *(6,7)*. Among African Caribbeans, however, the data show a lower prevalence of metabolic syndrome in men, but a higher prevalence in women *(6,7)*.

In the SUNSET study carried out in the Netherlands, using IDF criteria, the prevalence of metabolic syndrome was 50% in South-Asian Surinamese men and 19% in African Surinamese men, compared with 33% in European Dutch men in the Netherlands *(6)*. Among women, the prevalence was 49% in South-Asian Surinamese, 35% in African Surinamese and 26% in European Dutch. The differences remained, even after adjustments for age and education (Fig. 1) *(6)*. Similar observations have also been made among South-Asian and African Caribbean populations in the United Kingdom *(7)*. Furthermore, the association between metabolic syndrome and CVD also seems to depend on ethnicity and gender. In one United Kingdom study, metabolic syndrome was found to be associated with CHD in South-Asian men and European men. However, the associations with CHD were weak in African Caribbean women and were inconsistent among European women. The data also show important differences between similar ethnic groups living in different European countries. Agyemang et al.'s study of non-diabetics found a higher prevalence of metabolic syndrome among Dutch South-Asian Indians and African Caribbeans in the Netherlands compared with their English South-Asian Indian and African Caribbean counterparts in England, highlighting the importance of national contextual factors and their impact on health *(8)*.

Inconsistent findings have also been observed in the United States. National Health and Nutrition Examination Survey III data, for example, showed the prevalence of metabolic syndrome to be higher in Mexican Americans, but lower in African American men compared with white American men *(9)*.

An intriguing question is why do such ethnic differences exist in metabolic syndrome and its association with CVD? Answering this question is difficult, owing to a general lack of prospective data among ethnic minority groups in Europe. Nevertheless, based on cross-sectional data (Fig. 1), the differences appear to be driven by variations in the components of metabolic syndrome *(6)*.

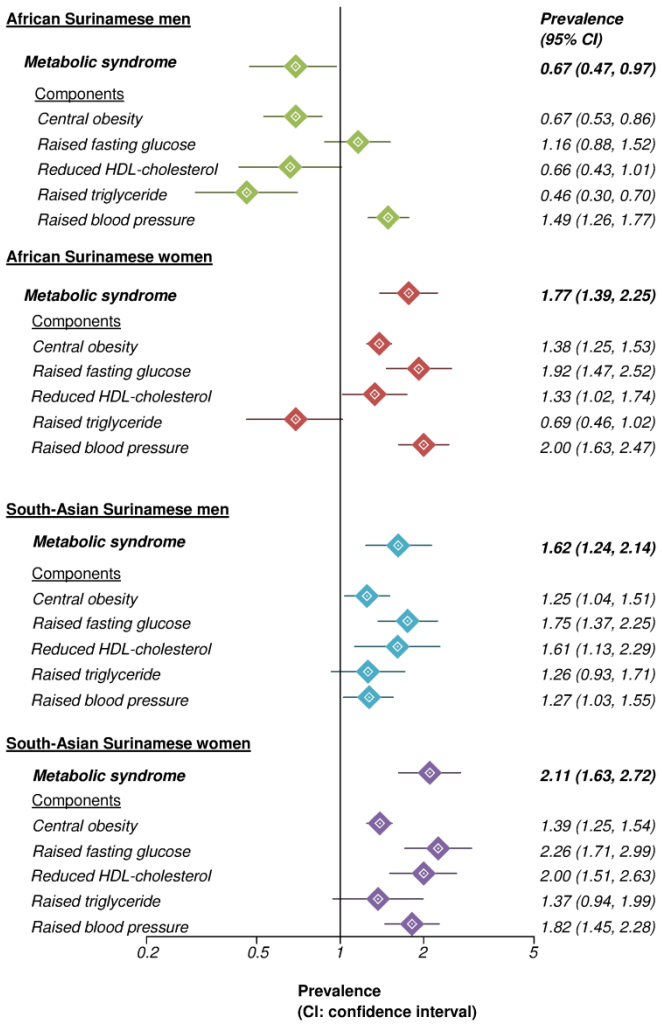

Fig. 1. Age- and education-adjusted prevalence ratios of metabolic syndrome and components between Dutch (reference) and ethnic minorities in the Netherlands *(6)*

Among South Asians, the higher prevalence of metabolic syndrome is driven by higher levels of all metabolic syndrome components in both men and women. The relatively high prevalence of metabolic syndrome in African women seems to be driven by their high levels of central obesity, raised fasting glucose and raised blood pressure. By contrast, the relative low prevalence of metabolic syndrome in African men appears to be driven by their low prevalence of central obesity and dyslipidaemias. The lower prevalence of metabolic syndrome in African men remains a paradox, since a key pivotal lesion supposed to underlie metabolic syndrome is insulin resistance, which has been shown to be higher in African men than in European men.

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This raises the question of whether the current thresholds for adverse effects of metabolic syndrome components (particularly dyslipidaemias) are the same among the ethnic groups. Answering these critical questions requires prospective data from cohort and longitudinal studies, as well as placing emphasis on the urgency for investment in developing these types of studies among ethnic minority groups in Europe.

In conclusion, the prevalence of metabolic syndrome varies among ethnic groups in Europe. South Asians, and women of African descent have higher prevalence rates, while men of African descent have a lower prevalence rate compared with the European local populations. Data are currently lacking relating to other ethnic minority groups, requiring more studies to be carried out. The paradoxical findings in men of African descent suggest that ethnicity-specific cut-off points and criteria for metabolic syndrome may be needed in order to affirm the predictive values of metabolic syndrome on future CVD and type 2 diabetes in each ethnic group. In addition, these findings reiterate the urgent need for prospective studies among ethnic minority groups in Europe in order to help understand the key risk factors driving these ethnic differences in health. This is highly relevant because ethnic minority groups are increasing in Europe, and they are ageing. A better understanding is needed of their diseases to help pave the way for designing effective prevention and clinical management strategies to directly inform clinical practice and policy in Europe.

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NEWS

RESTORE Conference. Implementing migrant care initiatives, beyond language and cultural barriers, 26–27 March 2015, Limerick, Ireland

http://www.euro.who.int/en/health-topics/health-determinants/migration-and-health/news/news/2015/04/implementing-migrant-care-initiatives,-beyond-language-and-cultural-barriers

Countries of South-eastern Europe come together to discuss common policy approaches to health and migration, 19–20 March 2015, Tirana, Albania

http://www.euro.who.int/en/health-topics/health-determinants/migration-and-health/news/news/2015/04/countries-of-south-eastern-europe-come-together-to-discuss-common-policy-approaches-to-health-and-migration

Symposium. The role of physicians and national medical associations in addressing the social determinants of health and increasing health equity, 24–25 March 2015, London, United Kingdom

https://www.instituteofhealthequity.org/presentations/global-symposium-2015-

WHO/Europe organizes a workshop to finalize the first toolkit addressing the health-system capacity to manage large and sudden influxes of migrants, 19–20 February 2015, Palermo, Italy

http://www.euro.who.int/en/health-topics/health-determinants/migration-and-health/news/news/2015/03/whoeurope-organizes-a-workshop-to-finalize-the-first-toolkit-addressing-the-health-system-capacity-to-manage-large-and-sudden-influxes-of-migrants

Photo story. Assessing public health aspects of migration in Bulgaria. Public Health and Migration, Division of Policy and Governance for Health and Well-being, WHO Regional Office for Europe

http://www.euro.who.int/en/health-topics/health-determinants/migration-and-health/multimedia/assessing-public-health-aspects-of-migration-in-bulgaria

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EVENTS

EXPO Milano 2015: "Feeding the Planet, Energy for Life", 1 May – 31 October 2015, Milan, Italy
http://www.expo2015.org/

Launch of the report "Chronic diseases and migration in Italy – report on health behaviours, prevention and health inequities" [in Italian], 18 May 2015, Venice, Italy
http://www.euro.who.int/en/media-centre/events/events/2015/05/launch-of-the-report-chronic-diseases-and-migration-in-italy-report-on-health-behaviours,-prevention-and-health-inequities

Turkish Migration Conference, 25–27 June 2015, Charles University, Prague, Czech Republic
http://www.turkishmigration.com/

9th Conference of the Hungarian Association of Public Health Training and Research Institutions, 26–28 August 2015, Pécs, Hungary
http://nke2015.pte.hu/index2_en.html

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OPINION

This article represents the opinion of the author(s) and publications and does not necessarily represent the views of WHO, the University of Pécs or the Editorial Board of this newsletter.

New aspects in the treatment of hypertension in ethnically diverse population groups

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Zoltán Katz, Assistant Professor, Chair of Migration Health, University of Pécs Medical School, Pécs, Hungary

This article seeks to draw attention to the relevance of ethnic background as a variable in the therapeutic decision-making process for patients with hypertension or other chronic cardiovascular diseases (CVDs).

The Human Genome Project and subsequent programmes on sequencing the diploid human genome confirmed the existence and significance of genetic variants in our genome, which affect susceptibility to and prognosis of the major chronic noncommunicable diseases (NCDs). Hypertension is an important direct cause of mortality, but it also acts as a leading risk factor for several other CVDs, such as coronary heart disease and stroke *(1)*.

Doctor measuring a patient's blood pressure © Fotolia

Hypertension is responsible for 7.5 million deaths and the loss of more than 57 million disability-adjusted life-years (DALYs) worldwide in 2004 *(2)*. On the one hand, the known higher incidence of elevated blood pressure in certain ethnic groups is attributed to the unequal distribution of its major lifestyle-related risk factors (obesity, high salt intake, low potassium intake, alcohol consumption, stress, and so on) but, on the other hand, genetic factors can also be found in the background to these race-specific differences *(3)*.

Not only the risk, but also the prognosis of the disease and the efficiency of medical therapy can be influenced by genetic variants. These polymorphisms affect the activity of the encoded enzymes, transport proteins, protein channels, receptors, and so on, and thus they may interact with the effects (and side-effects) of therapeutic agents. In the era of personalized medicine, these genetic factors must also be taken into consideration when planning therapy for patients with elevated blood pressure. The genetic differences may be present at the ethnic group level, and huge efforts are being made to define race- or ethnicity-specific therapeutic characteristics and principles.

Certain reports and trials recommend thiazide diuretics or long-acting calcium channel blockers (CCBs) as first-line monotherapy for hypertension in African American patients, because of their lower renin-angiotensin-aldosteron system activity *(4,5,6)*, which contributes to the lower efficiency of treatment with angiotensin-converting enzyme inhibitors (ACEIs) *(5)*. The race-specific effect of certain functional allelic polymorphisms has been described in relation to the response to hydrochlorothiazide *(7)*. The effect of atenolol, a beta-receptor blocker, was also found to be different in Caucasians and African Americans, and the contribution of certain genetic variants has also been described *(8)*. The permeability-glycoprotein plays a key role in transporting around the body various drugs and xenobiotics, and its polymorphism exhibits large interethnic differences *(9)*. Racial differences in other blood pressure-related pathways have also been described *(10)*.

Genetic variations related to the metabolism of therapeutic agents often also lead to a different response to antihypertensive therapy. For example, eplerenone, a potassium-sparing diuretic, is metabolized by the cytochrome P450 3A4 (CYP3A4) enzyme *(11)*.

Angiotensin II receptor blockers (such as losartan and irbesartan) are primarily metabolized by CYP2C19 *(11)*. Several beta-blockers are substrates for the CYP2D6 enzyme *(12)*.

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Since the aforementioned metabolizing enzymes possess allelic polymorphisms, ethnic differences in their distribution may also be responsible for the race-specific therapeutic responses. The effect of verapamil (a CCB) is modified by a CYP3A5 functional polymorphism in African Americans and Hispanics, but not in Caucasians *(13)*.

Side-effects of antihypertensive drugs can also be modified by genetic factors, and this can have an influence on the compliance of the patients, as has been described in relation to hydrochlorothiazide and atenolol treatment *(8,14,15)*. The GRK5 (G-protein-coupled receptor kinase) Leu41 allele reduces the risk of adverse cardiovascular outcomes in treated hypertensive patients *(16)*. Furthermore, African Americans and Asians have a three- to fourfold higher risk of angioedema as side-effect of ACEI treatment than Caucasians *(1,4,5)*.

Prevention of cardiovascular morbidity and mortality in immigrants and other minority groups is an important issue, whereby culturally competent health care could play an essential role, for example by influencing the compliance of patients toward the therapy. No clear guidelines exist yet, regarding how specific antihypertensive therapies should be developed and applied in minority populations, but increasingly more publications draw attention to the significant differences in therapeutic responses based on genetic background *(17)*.

As well as identifying genetic variations between different ethnic groups, it is also worth noting that such variations exist within racial groups as well. In our increasingly globalized world, with increasingly heterogeneous societies, the validity of the term ethnicity – or race – is being challenged, so we should not stop at ethnic or race-based treatment decisions *(1)*. The ultimate goal is to achieve even more personalized treatment for patients.

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- Newsletter -

PÉCSI TUDOMÁNYEGYETEM
UNIVERSITY OF PÉCS

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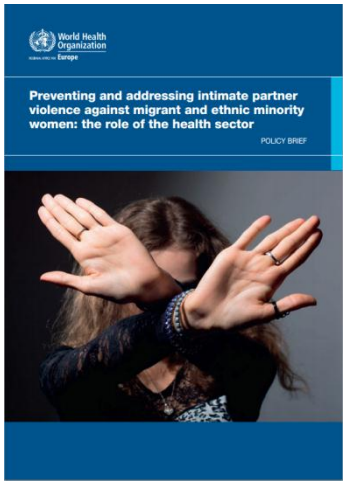
RECOMMENDED READING

PUBLICATION: Vives-Cases C, La Parra D, Goicolea I, Felt E, Briones-Vozmediano E, Ortiz-Barreda G et al. **Preventing and addressing intimate partner violence against migrant and ethnic minority women: the role of the health sector. Policy brief. Copenhagen: WHO Regional Office for Europe; 2014**
(http://www.euro.who.int/en/health-topics/health-determinants/roma-health/publications/2014/preventing-and-addressing-intimate-partner-violence-against-migrant-and-ethnic-minority-women-the-role-of-the-health-sector.-policy-brief-2014)



Violence against women is an extreme manifestation of gender inequality in society and a serious violation of fundamental human rights. Intimate partner violence (IPV) is the most common type of such violence and takes place within couples. IPV can lead to death, physical injury, functional impairment, mental health problems, negative health behaviour, chronic conditions and reproductive health problems. Institutional discrimination, lack of access to or knowledge of services, and cultural differences can prevent women – who are not only experiencing IPV but also migrants or members of ethnic minorities – from seeking help.

ARTICLES: Fosse-Edorh S, Fagot-Campagna A, Detournay B, Bihan H, Gautier A, Dalichampt M et al. **Type 2 diabetes prevalence, health status and quality of care among the North African immigrant population living in France. Diabetes Metab. 2014;40(2):143–150. doi:10.1016/j.diabet.2013.11.005.** (http://www.sciencedirect.com/science/article/pii/S1262363613002310)

Modesti PA, Bianchi S, Borghi C, Cameli M, Capasso G, Ceriello A et al. **Cardiovascular health in migrants: current status and issue for prevention. A collaborative multidisciplinary task force report. J Cardiovasc Med. 2014;15(9):683–692. doi:10.2459/JCM.0000000000000069.**
(http://journals.lww.com/jcardiovascularmedicine/Abstract/2014/09000/Cardiovascular_health_in_migrants__current_status.1.aspx)

Brinks R, Landwehr S. **Age- and time-dependent model of the prevalence of non-communicable diseases and application to dementia in Germany, Theor Popul Biol. 2014;92:62–68. doi:10.1016/j.tpb.2013.11.006.**
(http://www.ncbi.nlm.nih.gov/pubmed/24333220)

Agyemang C, Beune E, Meeks K, Owusu-Dabo E, Agyei-Baffour P, Aikins A de-G et al. **Rationale and cross-sectional study design of the Research on Obesity and type 2 Diabetes among African Migrants: the RODAM study. BMJ Open 2014;4(3):e004877. doi:10.1136/bmjopen-2014-004877.**
(http://bmjopen.bmj.com/content/4/3/e004877.full)

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