

## Ethnic disparities: Genetics vs (social) environment

Yves Jacquemyn

Yves Jacquemyn, Departement of Obstetrics and Gynaecology, Antwerp University Hospital UZA, Wilrijkstraat, 2650 Edegem, Belgium

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Correspondence to: Yves Jacquemyn, MD, PhD, Professor, Head, Departement of Obstetrics and Gynaecology, Antwerp University Hospital UZA, Wilrijkstraat, 2650 Edegem, Belgium. [yves.jacquemyn@uza.be](mailto:yves.jacquemyn@uza.be)

Telephone: +32-38-215945 Fax: +32-34-584774

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### Abstract

To define "ethnicity" in the context of perinatal care is a tough job. The word makes us think: "racial, social, cultural, national...". An ethnic group is generally considered a group of people with a common history, usually (but not always) a common religion and language, sharing aspects of culture such as nutrition and traditions concerning pregnancy, childbirth, the way they care for children. As procreation occurs mostly in-group, every ethnic group will demonstrate a higher prevalence of, more or less well-known, genes and their connected diseases. For some populations, such as Ashkenazi Jewish people, the prevalence and associated risks of these autosomal diseases are well known, as in the case of "Jewish genetic disease", and specific screening programs are available.

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To define "ethnicity" in the context of perinatal care is a tough job. The word makes us think: "racial, social, cultural, national...". An ethnic group is generally considered a group of people with a common history, usually (but not always) a common religion and language, sharing aspects of culture such as nutrition and traditions concerning pregnancy, childbirth, the way they care for children. As procreation occurs mostly in-group, every ethnic group will demonstrate a higher prevalence of, more or less well-known, genes and their connected diseases. For some populations, such as Ashkenazi Jewish people, the prevalence and associated risks of these autosomal diseases are well known, as in the case of "Jewish genetic disease", and specific screening programs are available. Sometimes health risks during pregnancy, such as vitamin D deficiency in dark skinned women wearing a veil and living in Western Europe<sup>[1]</sup>, are easy to predict. However, it can be extremely difficult unraveling genetics from risk exposure to external stimuli or differences in reporting in different ethnic populations<sup>[2]</sup>.

In general it is ethnic minorities that are considered to be at high risk for complications, although this is probably due to a mistaken way of thinking, as we always tend to compare the minority (as the problematic exception) to the "standard" majority. The contrary can actually be the case: we have demonstrated in the past that it is the autochthonous group in Belgium that has a higher risk for preeclampsia and interventions such as induction of labour resulting in (iatrogenic) secondary cesarean section<sup>[3]</sup> than minorities from Mediterranean and African origin. The same is true for cardiovascular disease.

In demographic studies, genetic and socio-economic factors can often be associated with central variables of interest, such as stillbirth rate, sex ratio at birth, twinning rate, *etc.* Which exogenous factors influence these variables? Is it the genetic or the socio-economic factors

which are the dominant ones? In heterogeneous populations there are often strong association between genetic, socio-economic and geographic factors. Consequently, it is difficult to identify the primary factor. Superficial analyses may erroneously identify a factor which is not the dominant and most important one.

Not only can the condition itself be more or less prevalent depending on the ethnic group, but the expression and way of presentation can also differ. It has long been known that hypertensive complications of pregnancy occur more often in women of African descent, but what is less known, especially to western gynaecologists lacking experience with tropical medicine, is that in these women the classic complications seen in white western women, such as hemolysis, elevated liver test and low platelets (HELLP syndrome), seldom occur. This misunderstanding can result in under-treatment of these women and a worse outcome<sup>[4]</sup>.

Ethnic minorities often demonstrate a higher preterm birth rate, although this is not always the case. Both Moroccan and Turkish migrants in Belgium demonstrate a lower preterm birth rate than the autochthonous population<sup>[3]</sup>, a finding that is in contradiction with data from other countries such as Germany<sup>[5]</sup>. The causes of these differences are still not clear, whether they are purely socioeconomic or environmental, due to a different immune response and genetically determined inflammatory reaction or any combination of these factors. Our knowledge is as fuzzy as the definition of "ethnic", one should not be surprised that no clear conclusions can be drawn from unclear concepts.

The most disturbing conclusion of most studies on the obstetric outcome of ethnic minorities, is that in the western world these minorities almost always show an increased infant mortality. It is hoped that these differences will disappear with increasing integration of different ethnic groups, and we have noted the disappearance of the increased rate of perinatal mortality in Belgium for Turkish women. Unfortunately this observation can not be generalized as, for instance, Moroccan women in Belgium continue to loose their baby twice as often as autoch-

thonous or Turkish women<sup>[3]</sup>. The disparities in infant mortality are due to more than just ethnic differences. As noted by Hauck *et al*<sup>[6]</sup>, the greater incidence in minorities is related to a complex interaction of behavioral, social, political, genetic, medical, and health care access factors. Recently it has become clear that there is no real border between genetics and environment, and the further development of our understanding of epigenetics will teach us more about ethnicity and pregnancy complications<sup>[7,8]</sup>.

In the near future countless studies on ethnicity will continue to be carried out. However important these are in increasing our understanding and helping us to deliver health care that is appropriate and fit for those receiving it, we must never forget how transient these findings will continue to be, the more so as ethnicity has never been and will never be a solid concept, but constitutes an ever shifting and sliding part of our evolution as a society.

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