

## **S2 Text. Systematic Review Protocol**

### **Title:**

PANETHNIC DIFFERENCES IN BLOOD PRESSURE IN EUROPE

### **Background & Review question(s)**

The high rate of influx and settlement of migrant populations into Europe is changing the dynamics of regional population growth, and may pose important challenges for public health and clinical care. Migrants from Sub Saharan Africa (SSA) and South Asia (SA) living in Europe have higher risk of stroke than native Europeans (EU). Elevated blood pressure and cardio-metabolic risk factors are conditions that increase the risk of cardiovascular events such as stroke. The goal of this study is to perform a systematic review and meta-analysis of observational studies comparing BP levels of EU with those of SSA and SA.

#### **Aims**

- 1) provide quantitative estimates of BP differences between migrants and native Europeans
- 2) assess the impact of demographic, geographical, and cultural factors on BP differences
- 3) assess the impact of associated cardio-metabolic risk factors and time trends on BP differences

### **Searches**

A comprehensive literature search of the following databases will be conducted using research methodology filters:

1. MEDLINE
2. EMBASE
3. SCOPUS
4. Web of Science

### **Types of study to be included**

Observational studies including:

1. Cross-sectional studies
2. Cohort studies

### **Condition or domain being studied**

Elevated blood pressure is a condition that increases the risk of cardiovascular diseases such as stroke.

### **Participants & studies**

#### **Inclusion**

Adult subjects originating from SSA or SA countries and living in Europe and native Europeans

Studies reporting office systolic (SBP) and diastolic (DBP) blood pressure values with standard deviation, standard error, or 95% confidence intervals (CI);

**Exclusion**

SSA or SA not living in Europe  
Studies not reporting BP values

**Exposure(s)**

Blood pressure  
Diabetes  
Obesity  
Smoking  
Other CV risk factors  
Socio-demographic characteristics

**Context**

European Countries

**Exclusion**

SSA and/or SA migrants living outside Europe

**Outcome(s)**

**Primary outcome**

Differences blood pressure - systolic /diastolic - by gender and panethnic group

**Secondary outcomes**

Temporal trends in BP differences  
Relationship between demographic, geographical, and cultural factors on BP differences

**Data extraction, (selection and coding)**

Titles and abstracts of relevant studies will be retrieved using search strategy and methodology filters from the selected databases (PAM and GReb). Additional searches will be conducted independently by two authors (PAM and EP). Review data will be extracted using standard protocol and data extraction form. Disagreement or any discrepancies will be resolved by consensus, and contact will also be made to the corresponding author for clarity and/or additional data.

**Risk of bias (quality) assessment**

The methodological quality of the studies to be included will be assessed using the Newcastle Ottawa quality score. Disagreements will be resolved by consensus

**Strategy for data synthesis**

All the included studies will be described and estimates of BP differences for the Panethnic groups will be calculated. These will be pooled where appropriate using

random effect meta-analysis. Heterogeneity will be assessed by I-squared statistics (I-squared >50% will be considered as evidence of significant heterogeneity) and publication bias will be assessed using funnel plot asymmetry and regression based tests.

### **Analysis of subgroups or subsets**

Subgroup analyses will be performed to evaluate BP differences across demographic, geographical, and cultural lines. These include;

1. Gender (male/female)
2. Panethnic group (SSA and SA)
3. Country of origin
3. Dominant Religion in the country of origin (Islam vs. Non-Islam)

### **Meta-regression analysis**

Sources of heterogeneity will be investigated by random effect meta-regression analyses. Anticipated potential effect modifiers, besides panethnicity and gender, to be considered will include: survey year, age, diabetes prevalence, body mass index (BMI), and smoking habits.

### **Dissemination plans**

This review is planned to be presented at relevant conferences and published in peer-reviewed journal.

### **Contacts details for further information**

Pietro Amedeo Modesti  
Dept of Medicina Sperimentale e Clinica, University of Florence;  
Largo Brambilla 3, 50134 Florence, ITALY.  
pamodesti@unifi.it;

### **Organisational affiliation of the review**

ESH Working Group on Cardiovascular Risk in Low Resource Settings  
<http://www.eshonline.org/Communities/WorkingGroups.aspx>

### **Review team**

Pietro Amedeo Modesti, University of Florence  
Gianpaolo Reboldi, University of Perugia  
Eleonora Perruolo, University of Florence

### **Collaborators**

Francesco P. Cappuccio, University of Warwick  
Charles Agyemang, University of Warwick  
Giuseppe Remuzzi, Istituto di Ricerche Farmacologiche Mario Negri, Bergamo, Italy  
Gianfranco Parati, University of Milano-Bicocca

### **Anticipated or actual start date**

01 June 2014

### **Anticipated completion date**

PA Modesti et al.  
Panethnic differences in blood pressure in europe: a systematic review and meta-analysis.  
S2 Text

31 January 2015

**Funding sources/ Sponsors**

None

**Endorsment**

ESH Working Group on Cardiovascular Risk in Low Resource Settings  
<http://www.eshonline.org/Communities/WorkingGroups.aspx>

**Conflicts of interest**

None known

**Language**

English

**Countries**

Italy, United Kingdom, The Netherlands,