

## *Atherosclerosis*

### **Call for original papers on “Influence of sex and gender on biology of atherosclerotic cardiovascular disease”**

There are differences in the risk for atherosclerotic cardiovascular diseases (ASCVD) between men and women. These differences stem from various biological aspects related to sex and gender and should be considered when assessing the risk for ASCVD in clinical practice, planning clinical trials, and performing *in vivo* and even *in vitro* experiments in research settings. *Atherosclerosis*, the journal of the European Atherosclerosis Society (EAS), is now **calling for the submission of Original Research Papers for a Special Issue related to the role of sex and gender biology in ASCVD**. These manuscripts will undergo a regular review process and in case of acceptance will go online within the usual time of processing. Submissions are encouraged from all fields related to the topic including clinical, translational, and basic research.

The submitted Original Research Articles will be handled by Elena Osto, Jeanine Roeters van Lennepe, and Lale Tokgözoğlu as Guest Editors and Katariina Öörni as Co-Editor of *Atherosclerosis*. They will decide on the peer reviewers of the submitted articles. If a manuscript is accepted for publication, these Original Research Articles will appear printed together in a combined issue of the journal containing roughly a dozen in-depth review articles on the sex and gender biology of ASCVD. The collection aims to provide the most comprehensive, insightful, and current overview of the clinical and translational aspects and basic research related sex and gender differences in ASCVD. The topics and authors for these review articles have already been decided for this project. The publication is planned for spring/summer 2023 and is expected to receive a high visibility. **Accepted papers will be published with promotional open access for a one-year period, free of charge.**

For preparation of the Original Research manuscripts please see the "[Guide for authors](#)"

**Deadline for submission of the first draft of Original Research Papers is December 31<sup>st</sup>, 2022.**

This call is only open for Original Research Articles and no review articles are allowed. Please select "Special issue: Gender biology in ASCVD" as article type at submission.

**To submit your paper go to: [Editorial Manager](#)<sup>®</sup>**

## **Atherosclerosis newsletter**

Simona Negrini and Arnold von Eckardstein

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Although no components of systematic risk assessment tools, socioeconomic and psychological factors as well as life style are important contributors to cardiovascular morbidity and mortality. This is underscored by the findings of observational studies previously reported in our journal.

### **The impact of socioeconomic status on the burden of atherosclerosis, and the effect of intensive preventive therapy on its progression: A retrospective cohort study**

Socioeconomic status (SES) is associated with cardiovascular disease. However, social studies of atherosclerosis are scarce due to the lack of cohort data, and to confounding factors between individual and socioeconomic data. In this study, Woolsey et al. aimed to evaluate the association between social deprivation, the burden of plaque atherosclerosis at baseline, and plaque progression.

This retrospective cohort study conducted in London, Ontario Canada included 6,907 subjects from a vascular prevention centre at baseline, with long-term follow up from 1989 to 2021 (total ultrasound examinations 27,103). The burden of atherosclerosis was assessed as total plaque area (TPA) by carotid ultrasound. The Ontario Marginalization Index (OMI) was used to identify SES of participants' neighborhoods. A Bayesian hierarchical regression and mixed effects model measured associations between SES, baseline TPA, and plaque progression. Since in 2003 the authors implemented a more intensive therapy of vascular risk factors (called "Treating arteries instead of risk treating factors"); they compared their findings before and after that date.

SES was found to have a significant association with TPA, with lower SES associated with higher TPA. While they observed a higher rate of plaque progression with lower SES in those treated before 2003, there was no significant association between plaque progression and SES after implementation of a more intensive therapy.

In conclusion, SES has a strong association with atherosclerosis and should be considered an important risk factor in clinical practice and vascular disease research. Intensive preventive therapy can block plaque progression irrespective of baseline SES.

## Joint exposure to positive affect, life satisfaction, broad depression, and neuroticism and risk of cardiovascular diseases: A prospective cohort study

Cardiovascular disease (CVD) is the leading cause of mortality worldwide. Apart from classical risk factors, psychological wellbeing can impact cardiovascular health. Sun et al. aimed to evaluate the joint association of multiple psychological wellbeing factors with CVD and examine whether this association was modified by genetic susceptibility.

126,255 participants from the UK Biobank, free of CVD at baseline, who completed a questionnaire on psychological factors, were included. The psychological wellbeing score was calculated by four factors: happiness, life satisfaction, broad depression, and neuroticism. Cox proportional hazard models were used to assess the association between psychological wellbeing score and CVD risk.

During the median follow-up of 11.5 years, 10,815 participants had newly diagnosed CVD. Low life satisfaction, depression, and neuroticism score  $\geq 1$  were significantly associated with an increased risk of CVD in a multivariable-adjusted model. Participants with the lowest psychological wellbeing score had the highest risk for CVD. Women were more susceptible to worse psychological wellbeing status for CVD than men. The association of psychological wellbeing score with CVD was consistent across genetic risks. When considered jointly, participants exposed to high-risk psychological wellbeing and genetic status had a 2.70-fold risk for CHD.

Joint exposure to multiple psychological wellbeing factors was associated with increased risks of incident CVD in an additive manner, regardless of genetic susceptibility.

The impact of psychological status on cardiovascular diseases is discussed in the accompanying [editorial](#) of P. Scicchitano.

## Adherence to Life's simple 7 is associated with better carotid properties

Cardiovascular health scores have emerged as a simple way to assess the risk to suffer from a cardiovascular disease. The Life's Simple 7 is a cardiovascular health score created by the American Heart Association defining the most important lifestyle habits that should be implemented to achieve optimal cardiovascular health. Previously, adherence to the Life's Simple 7 has been shown to be associated with lower CVD risk in elderly North American, and European populations. In Finland, the risk of suffering a cardiovascular event is amongst the highest in Europe. While Life's Simple 7 and the assessment of carotid properties have been used separately to calculate CVD risk, their association has yet to be investigated in the Finnish population. In this study, Nève et al. determined the association between the adherence to Life's Simple 7 and carotid properties in middle-aged to elderly Finns.

A representative sample of Finnish men and women aged 55–74 years was included in the analysis. Carotid intima-media thickness (cIMT), lumen diameter (cLD), and carotid distensibility were

measured by transcutaneous ultrasound using state-of-the-art wall contour detection techniques. The Life's Simple 7 cardiovascular health score was calculated using seven categories (body mass index, cholesterol, systolic blood pressure, fasting plasma glucose, smoking status, physical activity, and diet). In accordance to the American Heart Association, for each category, an ideal score was given 2 points, intermediate scores 1 point, and poor scores 0 points.

In total, 1400 subjects were included in the analyses. After adjusting for age and sex, subjects with an ideal cardiovascular health score had lower cLD than those with an intermediate score and a poor score. Similarly, subjects with an ideal health score had higher carotid distensibility than those with an intermediate score and a poor score. No differences regarding cIMT were found.

In middle-aged to elderly Finns, higher adherence to the Life's Simple 7 is associated with lower cLD and higher distensibility, but not with cIMT. Adherence to healthy lifestyle habits is therefore associated with better carotid structure and carotid function in this population.

### Physical activity in leisure time and at work and risk of dementia: A prospective cohort study of 117,616 individuals

Worldwide dementia incidence number is projected to be higher than 130 million by 2050, making dementia a major challenge for health and social care. Up to 40% of all dementia cases may be preventable, primarily by treating or acting on well-established cardiovascular risk factors such as diabetes, hypertension, smoking, and physical inactivity. Whether physical inactivity is associated with risk of non-Alzheimer's dementia – a disease influenced by cardiovascular risk factors – and whether a given association differs for physical activity in leisure time and at work remains unknown. Rasmussen et al. conducted a prospective cohort study including 117,616 individuals from the Copenhagen General Population Study and the Copenhagen City Heart Study (two similar, prospective studies including individuals from the general population in Denmark) with up to 43 years of follow-up.

Multifactorially adjusted hazard ratios for low *versus* high physical activity at leisure time was 1.60 for non-Alzheimer's dementia and 0.94 for Alzheimer's disease. Corresponding values for non-Alzheimer's dementia after additional adjustment for physical activity at work or apolipoprotein E (APOE) genotype were 1.60 and 1.82. Multifactorially and APOE adjusted hazard ratios for high *versus* low physical activity at work were 1.50 for non-Alzheimer's dementia and 1.62 for Alzheimer's disease. When combining the two types of physical activity, physical activity in leisure time had the strongest relationship to risk of non-Alzheimer's dementia.

Physical inactivity in leisure time was associated with increased risk of non-Alzheimer's dementia, independent of modifiable risk factors and physical activity at work. The present study thus provides evidence for public health advice on physical activity in leisure time for the vascular part of dementia.