

Advertisement



**JACC**

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

## Journal of the American College of Cardiology

Volume 70, Issue 15, October 2017  
DOI: 10.1016/j.jacc.2017.08.027

PDF Article

Download

### The Importance of Breakfast in Atherosclerosis Disease Insights From the PESA Study

Irina Uzhova, Valentín Fuster, Antonio Fernández-Ortiz, José M. Ordovás, Javier Sanz, Leticia Fernández-Friera, Beatriz López-Melgar, José M. Mendiguren, Borja Ibáñez, Héctor Bueno and José L. Peñalvo

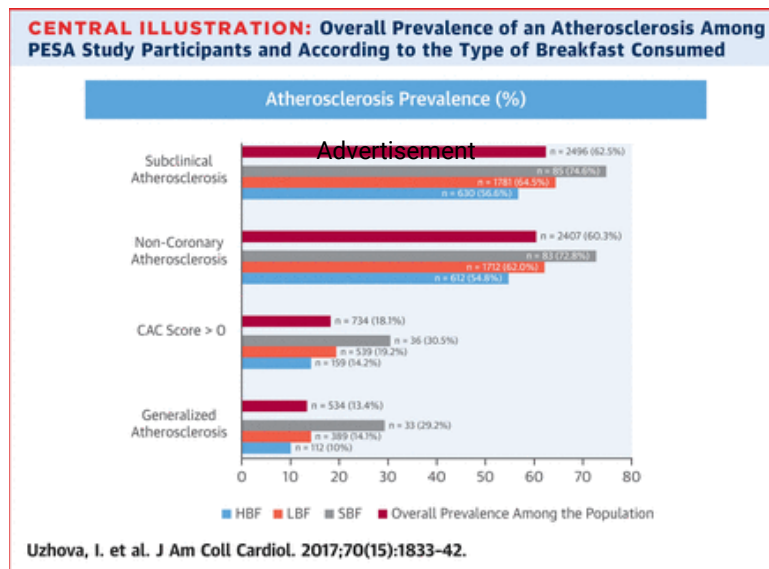
This article requires a subscription or purchase to view the full text. If you are a subscriber or member, click the login link or the subscribe link in the top menu above to access this article.

Add to Cart (\$35)

Author + information

### Central Illustration

---



[Download figure](#) | [Open in new tab](#) | [Download powerpoint](#)

## Abstract

**Background** Daily habits, including the number and quality of eating occasions, are potential targets for primary prevention strategies with large health impacts. Skipping breakfast is considered a frequent and unhealthy habit associated with an increased cardiovascular (CV) risk.

**Objectives** The study sought to explore the association between different breakfast patterns and CV risk factors and the presence, distribution, and extension of subclinical atherosclerosis.

**Methods** Cross-sectional analysis was performed within the PESA (Progression of Early Subclinical Atherosclerosis) study, a prospective cohort of asymptomatic (free of CV events at baseline) adults 40 to 54 years of age. Lifestyle and multivascular imaging data along with clinical covariates were collected from 4,052 participants. Multivariate logistic regression models were used in the analysis.

**Results** Three patterns of breakfast consumption were studied: high-energy breakfast, when contributing to >20% of total daily energy intake (27% of the population); low-energy breakfast, when contributing between 5% and 20% of total daily energy intake (70% of the population); and skipping breakfast, when consuming <5% of total daily energy (3% of the population). Independent of the presence of traditional and dietary CV risk factors, and compared with high-energy breakfast, habitual skipping breakfast was associated with a higher prevalence of noncoronary (odds ratio: 1.55; 95% confidence interval: 0.97 to 2.46) and generalized (odds ratio: 2.57; 95% confidence interval: 1.54 to 4.31) atherosclerosis.

**Conclusion** Skipping breakfast is associated with an increased odds of prevalent noncoronary and generalized atherosclerosis independently of the presence of conventional CV risk factors. (Progression of Early Subclinical Atherosclerosis [PESA]; NCT01410318)

## Key Words

atherosclerosis    atherosclerotic plaque    coronary artery calcification    lifestyle    skipping breakfast

## Footnotes

The PESA (Progression of Early Subclinical Atherosclerosis) study is co-funded equally by the Fundación Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC) (Madrid, Spain) and Banco Santander (Madrid, Spain). The study also receives funding from the Institute of Health Carlos III (PI15/02019) and the European Regional Development Fund. The CNIC is supported by the Ministry of Economy, Industry and Competitiveness (MINECO) and the Pro-CNIC Foundation, and is a Severo Ochoa Center of Excellence (MINECO award SEV-2015-0505). Dr. Bueno was funded by the Instituto de Salud Carlos III (PIE16/00021); has received research funding from

AstraZeneca, Bristol-Myers Squibb, Janssen, and Novartis; consulting fees from Abbott, AstraZeneca, Bayer, Bristol-Myers Squibb/Pfizer, and Novartis; and speaking fees or support for attending scientific meetings from AstraZeneca, Bayer, Bristol-Myers Squibb/Pfizer, Ferrer, Novartis, Servier, and theheart.org/Medscape. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose. Dr. Peñalvo is currently an employee at Merck KGaA. P.K. Shah, [Addis Ababa](#) as Guest Editor for this paper.

Listen to this manuscript's audio summary by JACC Editor-in-Chief Dr. Valentin Fuster.

Received July 24, 2017.

Accepted August 16, 2017.

2017 American College of Cardiology Foundation

[View Full Text](#)

🔒 This article requires a subscription or purchase to view the full text. If you are a subscriber or member, click [Login](#) or the [Subscribe](#) link (top menu above) to access this article.

🛒 [Add to Cart \(\\$35\)](#)

[Login](#)

⏪ [Previous](#)

[Next](#) ⏩

⬆️ [Back to top](#)

## Toolbox

🖨️ [Print PDF](#)

✉️ [Email](#)

➦ [Share](#)

(X) [Citation](#)

🔔 [Alerts](#)

© [Permissions](#)

📊 [Metrics](#)



🛒 [Add to Cart \(\\$35\)](#)

## Audio Summary

[Subscribe to Podcast](#)

[Download MP3](#)

Advertisement

Leading the Way in  
Cardiology Research

ELSEVIER [LEARN MORE](#)

Advertisement

## Similar Articles

Coronary Artery Calcification:  
Mahesh V. Madhavan, Madhusudhan Tarigopula, et al

Coronary Artery Calcification:  
Walter Swardfager, Sandra E. Black

Coronary Artery Calcification Testing:  
Luis C.L. Correia, Laudenor P. Lemos

Advertisement

**JACC**  
JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

**THE RHYTHM DISORDERS ARTICLE COLLECTION**

**BROWSE ARTICLES** *new*  
Educational Resources for  
Cardiovascular Specialists

## JACC

[Home](#)  
[Topics](#)  
[CME/MOC](#)  
[Author Instructions](#)  
[Submit Your Manuscript](#)  
[JACC Journals Best of 2016](#)



## JACC Journals

[JACC: Basic to Translational Science](#)  
[JACC: Cardiovascular Imaging](#)  
[JACC: Cardiovascular Interventions](#)  
[JACC: Clinical Electrophysiology](#)  
[JACC: Heart Failure](#)

**General Information**

- [About the Journals](#)
- [Subscribe](#)
- [eTable of Content Alerts](#)
- [Renrints/Permissions](#)

Advertisement



**JACC AUDIO SUMMARIES**  
**>4 MILLION DOWNLOADS TO DATE**  
Discover what thousands of others  
already have – listen today!

Available on iTunes and Player FM

**Valentin Fuster, MD, PhD, MACC**  
JACC Editor-in-Chief

[Privacy Policy](#)

## American College of Cardiology

---

- [ACC.org](#)
- [Image and Slide Gallery](#)
- [CardioSmart](#)
- [Cardiology Career Network](#)
- [Cardiology](#)
- [Cardiology: Interventions](#)

© 2017 JACC: Journal of the American College of Cardiology