

## Abstract

# The Relationship between High Sensitivity C-Reactive Protein and Metabolic Syndrome and Its Association with Lifestyle Factors among Physicians in the Gaza Strip <sup>†</sup>

Israa J. Al Najjar <sup>1,\*</sup>, Marwan O. Jalambo <sup>2</sup>  and Mahmoud H. Taleb <sup>3</sup><sup>1</sup> Department of Clinical Nutrition, Palestinian MoH, Gaza P.O. Box 1647, Palestine<sup>2</sup> Department of Nutrition and Health, Palestine Technical College-Deir El-Balah, Gaza P.O. Box 6037, Palestine; moj\_biology@yahoo.com<sup>3</sup> Faculty of Pharmacy, Al-Azhar University Gaza (AUG), Gaza P.O. Box 405, Palestine; mahtaleb@hotmail.com

\* Correspondence: israanajjar2020@gmail.com

<sup>†</sup> Presented at the Second International Conference on Applied Medical Sciences 2023 (ICAMS-II) and the International Conference on Enhancing Clinical Nutrition in Palestine (ECNAD), Gaza, Palestine, 14–16 March 2023.

**Abstract:** Metabolic syndrome (MetS) is considered the most significant global health issue that is defined as constellations of interrelated cardiometabolic disorders including central obesity, insulin resistance, dyslipidemia, and hypertension. Studies indicated that high-sensitivity C-reactive protein (hs-CRP) has a role in the development of MetS and vice versa. No studies illustrated this association among physicians in the Gaza Strip, Palestine. The aim of this paper is to determine the prevalence of MetS among physicians and to identify the relationship between hs-CRP and MetS and lifestyle factors. A cross-sectional study design was adopted among healthy physicians in MOH, Gaza Strip. Data were collected from 300 participants (48.7% female and 51.3% male); they did not suffer from chronic disease or current infection or inflammation. Demographic data, anthropometrics, blood pressure, biochemical measurements, and lifestyle data were obtained from all participants. NCEP ATP III criteria were used to diagnose MetS. The majority of the study population (67.4%) were having high BMI > 25 kg/m<sup>2</sup>. 63.0% with low HDL. The prevalence of MetS was 34.0%, and about half of the remaining participants had two diagnostic criteria for MetS. There were statistically significant differences in gender and age with MetS ( $p < 0.05$ ). Also, the finding indicated a significant mean difference in hs-CRP and MetS groups. Moreover, there were no statistically significant differences between the MetS group in all food group consumption scores except in the fruits group, moreover, a significant correlation between hs-CRP and FBS, TG, BMI, and WC in females. The prevalence of MetS among healthy physicians was more than a third of the participants. More importantly, this study indicated a relationship between hs-CRP in participants with MetS. In addition, participants with MetS were found to have higher BMI, WC, WHR, FBG, TG, and lower HDL than non-MetS, and there was a relationship between the last components and hs-CRP.

**Keywords:** metabolic syndrome; inflammatory markers; lifestyle habits; lipid; Gaza

**Citation:** Al Najjar, I.J.; Jalambo, M.O.; Taleb, M.H. The Relationship between High Sensitivity C-Reactive Protein and Metabolic Syndrome and Its Association with Lifestyle Factors among Physicians in the Gaza Strip. *Proceedings* **2023**, *88*, 8. <https://doi.org/10.3390/proceedings2023088008>

Academic Editors: Amal Elfaseeh and Ihab A. Naser

Published: 1 August 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

**Author Contributions:** Conceptualization, I.J.A.N. and M.O.J.; methodology, I.J.A.N.; software, I.J.A.N.; validation, I.J.A.N., M.O.J. and M.H.T.; formal analysis, I.J.A.N.; investigation, M.O.J.; resources, M.O.J.; data curation, I.J.A.N.; writing—original draft preparation, I.J.A.N.; writing—review and editing, I.J.A.N. and M.O.J.; visualization, I.J.A.N.; supervision, M.O.J.; project administration, M.O.J.; funding acquisition, I.J.A.N. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of local Helsinki committee (PHRC/HC/810/21).

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

**Disclaimer/Publisher's Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.