

# Socioeconomic status, cardiovascular disease, and health care services: highlighting the gender gap

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Article Kozela et al., see p. 1516

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It is known that the vast majority (almost 75%) of non-communicable diseases and 80% of premature deaths occur in low- and middle-income countries [1]. It seems that socioeconomically disadvantaged communities bear a disproportional share of cardiovascular disease (CVD) burden, and the incidence rates are ranked highest [2]. On the basis of large-scale epidemiological studies and accumulated statistics from various organisations, it is concluded that low socioeconomic status (SES) is associated with less favourable health characteristics and, consequently, significantly higher CVD risk [3, 4]. One of the most profound reasons for which low SES individuals are more susceptible to disease is the limited access to health care services, compared to their higher SES counterparts. Several investigators have made attempts to identify the SES-CVD paths suggesting the existence of an independent association while making implications for the mediating effect of various demographic, clinical, and environmental factors [5].

However, the influence of the interaction between SES and gender on the CVD outcome has not been adequately clarified in the literature. Inconclusive evidence suggests that the impact of low SES on cardiac health and related cardiometabolic factors is more profound in women compared with their male counterparts [6]. The contributors of the Multi-centre National Population Health Examination Survey (WOBASZ II study) assessed the relationship of SES with various factors related to holistic access to health care services, i.e. medical consultations, hospitalisations, and counselling on CVD risk factors [7]. This analysis was interestingly performed from the standpoint of gender differences, providing a better understanding on this literature gap. The WOBASZ II study was a nationwide, cross-sectional study conducted in Poland

between 2013 and 2014. In the recruitment phase, 2760 male and 3410 female residents of Poland were enrolled in the study. SES was defined as a combined variable including educational, financial, and occupational status. As for the main outcomes of interest, the utilisation of health care services was evaluated according to the hospitalisation as well as any form of medical consultation within the last year and through specific questions as regards the counselling on major CVD risk factors, e.g. nutrition and physical activity advice, smoking cessation, and blood pressure measurements. The contributors of the study also focused on the subsample of participants who were informed by their personal doctor regarding the diagnosis of specific CVD risk factors such as hypercholesterolaemia, hypertension, and diabetes mellitus; in this context, the successful control of these risk factors — according to the European Society of Cardiology guidelines — was an additional outcome of interest. The results from the WOBASZ II study confirmed that participants from the high SES group had more medical visits compared with those with low SES. Surprisingly, when gender was used as a stratum, the association between high SES and the level of counselling on the aforementioned CVD risk factors was stronger in the case of men; implying that women are less likely to receive adequate counselling in the CVD prevention and management spectrum, irrespective of their high SES.

The observation revealed by Kozela et al. [7], regarding the interaction of gender with SES on the CVD-related health care services, is an interesting finding, which raises substantial health implications. It is indicated that CVDs in women were always sidelined over the unanimously propagated claim that this chronic disease was supposed to be a male privilege [8]. In this context, the lack of women's awareness

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regarding this threat is shocking. Women are reported to wait longer between seeking and receiving medical advice; for example, there is evidence showing that women arrive 1 h later at hospital than men [9, 10]. At the same time, female patients are susceptible to under-diagnosis and inappropriate therapeutic decisions, or even remain untreated because physicians usually underestimate their risk burden [11, 12]. The striking part here is that all these observations have been revealed irrespective of women's SES. It is probably time to ask several questions: (i) Is the gender gap in CVD prevention/management and the accompanied health care services retained in all SES classes?; (ii) Could the fact of being in a high SES group protect women from inadequate health care services?. Kozela et al. [7] revealed a privilege of high SES men regarding the quality of counselling services, but no significant gender-specific observations were highlighted when it came to the control of CVD risk factors. Moreover, Muszyńska et al. [13], studying the contribution of CVD to all-cause mortality in Poland in 2006–2010, revealed that easy access to medical care in large cities, and in particular to cardiology units, is an important factor behind the levels of all-cause and CVD mortality in Poland.

In a world with finite resources where the annual costs related to CVDs in Europe reach \$210 billion, health disparities in terms of SES, gender, race/ethnicity etc. have to be addressed to maximise the cost-effectiveness of prevention and management strategies [14, 15]. The case of women in CVD care remains an ongoing public health concern, and despite the substantial efforts of the past two decades there is still room for improvement.

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### References

- Mendis S. Global status report on noncommunicable diseases. 2014. <http://www.who.int/nmh/publications/ncd-status-report-2014/en/> (23 May 2018).
- Williams J, Allen L, Wickramasinghe K, et al. A systematic review of associations between non-communicable diseases and socioeconomic status within low- and lower-middle-income countries. *J Glob Health*. 2018; 8(2): 020409, doi: [10.7189/jogh.08.020409](https://doi.org/10.7189/jogh.08.020409), indexed in Pubmed: [30140435](https://pubmed.ncbi.nlm.nih.gov/30140435/).
- Panagiotakos DB, Pitsavos CE, Chrysohoou CA, et al. The association between educational status and risk factors related to cardiovascular disease in healthy individuals: The ATTICA study. *Ann Epidemiol*. 2004; 14(3): 188–194, doi: [10.1016/S1047-2797\(03\)00117-0](https://doi.org/10.1016/S1047-2797(03)00117-0), indexed in Pubmed: [15036222](https://pubmed.ncbi.nlm.nih.gov/15036222/).
- Notara V, Panagiotakos DB, Kogias Y, et al. The Impact of Educational Status on 10-Year (2004-2014) Cardiovascular Disease Prognosis and All-cause Mortality Among Acute Coronary Syndrome Patients in the Greek Acute Coronary Syndrome (GREECS) Longitudinal Study. *J Prev Med Public Health*. 2016; 49(4): 220–229, doi: [10.3961/jpmph.16.005](https://doi.org/10.3961/jpmph.16.005), indexed in Pubmed: [27499164](https://pubmed.ncbi.nlm.nih.gov/27499164/).
- Kollia N, Panagiotakos DB, Georgousopoulou E, et al. Exploring the association between low socioeconomic status and cardiovascular disease risk in healthy Greeks, in the years of financial crisis (2002-2012): The ATTICA study. *Int J Cardiol*. 2016; 223: 758–763, doi: [10.1016/j.ijcard.2016.08.294](https://doi.org/10.1016/j.ijcard.2016.08.294), indexed in Pubmed: [27573601](https://pubmed.ncbi.nlm.nih.gov/27573601/).
- Walsemann KM, Goosby BJ, Farr D. Life course SES and cardiovascular risk: Heterogeneity across race/ethnicity and gender. *Soc Sci Med*. 2016; 152: 147–155, doi: [10.1016/j.socscimed.2016.01.038](https://doi.org/10.1016/j.socscimed.2016.01.038), indexed in Pubmed: [26854625](https://pubmed.ncbi.nlm.nih.gov/26854625/).
- Kozela M, Polak M, Doryńska A, et al. Socioeconomic and sex differences in health care utilisation, counselling on cardiovascular disease (CVD) risk factors, and CVD risk factors control in the Polish population. The WOBASZ II Study. *Kardiol Pol*. 2018; 76(11): 1516–1524, doi: [10.5603/KP.a2018.0176](https://doi.org/10.5603/KP.a2018.0176).
- Kouvari M, Yannakoulia M, Souliotis K, et al. Challenges in sex- and gender-centered prevention and management of cardiovascular disease: implications of genetic, metabolic, and environmental paths. *Angiology*. 2018; 69(10): 843–853, doi: [10.1177/0003319718756732](https://doi.org/10.1177/0003319718756732), indexed in Pubmed: [29430964](https://pubmed.ncbi.nlm.nih.gov/29430964/).
- Stephens P, Ross-Degnan D, Wagner AK. Does access to medicines differ by gender? Evidence from 15 low and middle income countries. *Health Policy*. 2013; 110(1): 60–66, doi: [10.1016/j.healthpol.2013.01.016](https://doi.org/10.1016/j.healthpol.2013.01.016), indexed in Pubmed: [23422029](https://pubmed.ncbi.nlm.nih.gov/23422029/).
- Panagiotakos DB, Georgousopoulou EN, Polychronopoulos E, et al. Beliefs and attitudes regarding cardiovascular disease risk factors: a health survey in 10,141 Greek men and women (2006-2012). *Int J Cardiol*. 2013; 168(5): 4847–4849, doi: [10.1016/j.ijcard.2013.07.070](https://doi.org/10.1016/j.ijcard.2013.07.070), indexed in Pubmed: [23890885](https://pubmed.ncbi.nlm.nih.gov/23890885/).
- Lee SK, Khambhati J, Varghese T, et al. Comprehensive primary prevention of cardiovascular disease in women. *Clin Cardiol*. 2017; 40(10): 832–838, doi: [10.1002/clc.22767](https://doi.org/10.1002/clc.22767), indexed in Pubmed: [28846803](https://pubmed.ncbi.nlm.nih.gov/28846803/).
- Panagiotakos DB, Pitsavos C, Kourlaba G, et al. Sex-related characteristics in hospitalized patients with acute coronary syndromes--the Greek Study of Acute Coronary Syndromes (GREECS). *Heart Vessels*. 2007; 22(1): 9–15, doi: [10.1007/s00380-006-0932-2](https://doi.org/10.1007/s00380-006-0932-2), indexed in Pubmed: [17285439](https://pubmed.ncbi.nlm.nih.gov/17285439/).
- Muszyńska MM, Sulkowska U, Zatoński WA. Regional variation in mortality from ischaemic heart disease in Poland, 2006-2010. *Kardiol Pol*. 2015; 73(3): 207–215, doi: [10.5603/KP.2015.0040](https://doi.org/10.5603/KP.2015.0040), indexed in Pubmed: [25791969](https://pubmed.ncbi.nlm.nih.gov/25791969/).
- Wilkins E, Wilson L, Wickramasinghe K, et al. European Cardiovascular Disease Statistics. European Heart Network, Brussels. 2017.
- Bono F, Matranga D. Socioeconomic inequality in non-communicable diseases in Europe between 2004 and 2015: evidence from the SHARE survey. *Eur J Public Health*. 2018 [Epub ahead of print], doi: [10.1093/eurpub/cky165](https://doi.org/10.1093/eurpub/cky165), indexed in Pubmed: [30169634](https://pubmed.ncbi.nlm.nih.gov/30169634/).