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# **MODERN METHODS OF SOLVING SCIENTIFIC PROBLEMS OF REALITY**

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## **POLYCYSTIC OVARY SYNDROME AND CARDIOMETABOLIC RISKS**

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Cardiovascular disease (CVD) is the main Cause of Death in the world, causing about 15.2 million deaths per year, according to the World Health Organization (WHO). This is the same for both men and women, even in some developed countries more women than men die from CVD. However, there is great ignorance of this reality both in the medical community and in the general population, women do not perceive that their main health problem is CVD [1]. Polycystic ovary syndrome (PCOS) should be considered as a gender-specific cardiovascular risk factor [2].

PCOS is the most common endocrine disorder among women of reproductive age and is hallmarked by hyperandrogenism, oligo-ovulation, and polycystic ovarian morphology [3, 4]. An estimated 20% of reproductive-age women are affected by PCOS [2, 5, 6, 7]. PCOS is a major public health issue [8]. Other than the criteria established at the Rotterdam consensus, in these last few years a new issue, insulin resistance, has been found frequently, and at a very high grade, in patients with PCOS [9]. Insulin resistance (IR) is a prominent feature of PCOS with a prevalence of 35%-80% [10]. Insulin resistance occurs for several factors, such as overweight and obesity, but it is now clear that it occurs in patients with PCOS with normal weight, thus supporting the hypothesis that insulin resistance is independent of body weight.

Current evidence shows that a complex pathophysiological situation occurs that impairs post-receptor insulin signalling, especially in patients with PCOS and diabetes.

In addition, patients with PCOS have a high incidence of non-alcoholic fatty liver disease related to the hyperinsulinaemia [9].

PCOS is a common hormonal, metabolic and reproductive disorder. Women with PCOS at reproductive age have increased risk and prevalence of prediabetes and diabetes and have multiple risk factors for cardiometabolic disease and other comorbidities such as obstructive sleep apnoea, endometrial cancer and mood disorders, which contribute to the overall health [11, 12].

PCOS has been suggested to be a specific female reproductive risk factor for cardiometabolic diseases such as type 2 diabetes, myocardial infarction and stroke, which are the leading causes of death in women [3, 13, 14, 15, 16, 17, 18, 19, 20]. The current longitudinal data available suggest that from age 15 to 69 years the risk of developing 2 diabetes mellitus is significantly higher in women with PCOS compared to those without PCOS [8].

The risk of hypertension in PCOS women is twice that in non-PCOS women, which may be related to insulin resistance or hyperinsulinemia that damages vascular smooth muscle cells and leads to the thickening and decreased elasticity of vascular walls [21, 22].

Current evidence indicates a role of PCOS in the development of metabolic and increased cardiovascular risk factors with implications for compromised cardiovascular endpoint disease, which may have a considerable impact on health and health care costs [23]. Given the links between PCOS and CVD, guidelines from the International PCOS Network, endorsed by the European Society of Human Reproduction and Embryology and the American Society for Reproductive Medicine, recommend screening for cardiometabolic risk factors including obesity and hypertension in women with PCOS. It is however still unclear if it would be more effective for screening to be tailored to specific PCOS phenotypes based on their differing CVD risk profiles and how this might be approached [24, 25].

Overall, evidence in PCOS is low to moderate quality. Based on high prevalence and significant health impact, greater priority, education, models of care, funding, and research are recommended [26].

Polycystic ovary syndrome is associated with a significant percentage of cardiac, metabolic, and oncological risks and, accordingly, is not a purely gynecological problem. Yes, obesity and arterial hypertension are, without exaggeration, cardiometabolic risk factors for this contingent of women. This view of the problem of PCOS, namely in the prism of cardiometabolic risks, indicates the expediency of a comprehensive approach to both diagnosis and further management tactics, including taking into account the phenotype of this syndrome.

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