The effects of supplements on metabolic parameters in PCOS patients

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Polycystic ovary syndrome (PCOS) is a highly prevalent medical issue in Pakistan, affecting approximately 52% of women, almost twice the prevalence reported in Western countries.[1] Besides being a reproductive disorder, it is also a long-term metabolic disease which has severe health consequences if overlooked. Women with PCOS are at increased risk of developing impaired glucose tolerance, non-alcoholic fatty liver disease, diabetes mellitus type 2, chronic systemic inflammation, high blood pressure, and potential coagulation disorders in the future due to its effect on the body's metabolism.[2] Therefore, it is crucial for physicians to address the diverse aspects of this disease and take measures to improve the deranged metabolic parameters, that contribute to the development of complications. Research suggests that over-the-counter supplementation can be extremely beneficial in this regard.

In a triple-blind, randomized clinical trial, women aged 15 to 35 with PCOS were assigned either a magnesium supplement or a placebo to assess serum insulin levels and insulin resistance. Both parameters were measured initially and then compared after 2 and 20 months. The intervention group showed significant reductions in serum insulin levels (P=0.036) and insulin resistance (P=0.032).[3] Another randomized controlled trial involving of sixty women with PCOS and vitamin D deficiency compared vitamin D supplementation with placebo. Parameters such as waist-to-hip ratio (WHR), body mass index (BMI), oral glucose tolerance test (OGTT), and lipid metabolism indices were assessed. After three months, the vitamin D group demonstrated significant improvements in insulin concentrations, BMI, WHR, triglycerides, low-density lipoprotein cholesterol (LDL-C), and total cholesterol compared to the control group ($p<0.05$).[4]

These studies suggest that incorporating simple over-the-counter supplements into one's diet may significantly impact various parameters like insulin resistance, BMI, LDL, and total cholesterol levels, thereby enhancing the health and well-being of women suffering from this disease. For women in Pakistan, where over-the-counter supplements may not be a cost-effective option, adequate counselling for dietary modification to include not only Vitamin D and magnesium-rich foods, as well as getting adequate sunlight is a preferable alternative. Despite the evidence-based clinical benefits, utilisation of such interventions in Pakistan remains negligible. Healthcare professionals should therefore encourage women with PCOS to adopt these accessible measures to reduce the risk of long-term complications.

DOI: https://doi.org/10.47391/JPMA.31328

Acknowledgement: We would like to appreciate Dr. Abdullah Ahmad for his mentorship and his valuable input on the topic and manuscript.

Disclaimer: None.

Conflict of Interest: None.

Source of Funding: None.

References

1. Akram M, Roohi N. Endocrine correlates of polycystic ovary syndrome in Pakistani women. J Coll Physicians Surg Pak 2015;25:22-6.
2. Anagnostis P, Tarlatzis BC, Kauffman RP. Polycystic ovarian syndrome (PCOS): Long-term metabolic consequences. Metabolism 2018;86:33-43. doi: 10.1016/j.metabol.2017.09.016.
3. Shahmoradi S, Chiti H, Tavakolizadeh M, Hatami R, Motamed N, Ghaemi M. The Effect of Magnesium Supplementation on Insulin Resistance and Metabolic Profiles in Women with Polycystic Ovary Syndrome: a Randomized Clinical Trial. Biol Trace Elem Res 2024;202:941-6. doi: 10.1007/s12011-023-03744-7.
4. Wen X, Wang L, Li F, Yu X. Effects of vitamin D supplementation on metabolic parameters in women with polycystic ovary syndrome: a randomized controlled trial. J Ovarian Res 2024;17:147. doi: 10.1186/s13048-024-01473-6.

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Submission complete: 02-06-2025 **First Revision received:** 14-06-2025
Acceptance: 20-09-2025 **Last Revision received:** 19-09-2025

AUTHOR'S CONTRIBUTION:
MA, US & MUR: Concept, design, data acquisition, analysis, interpretation, drafting, revision, final approval and agreement to be accountable for all aspects of the work.