

Linking metabolism and psychosexual health: a prospective study of metformin in PCOS

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Objective

Polycystic Ovary Syndrome (PCOS) is an endocrine-metabolic disorder affecting 5%–18% of women globally. Metabolic disturbances, particularly insulin resistance and obesity, play a central role in its severity and prognosis. Current guidelines recommend metformin for managing metabolic complications in PCOS. However, the impact of metformin on psychosexual health (PSH) in PCOS is not yet fully understood. This study examined the potential effects of metformin therapy on PSH in patients with PCOS.

Design

This study included PCOS patients from the Fertility Center at the University Medical Center Mainz. Participants were divided into two groups based on their individual metabolic profiles: those with metabolic impairment undergoing metformin therapy and those receiving alternative treatments or no treatment.

Methods

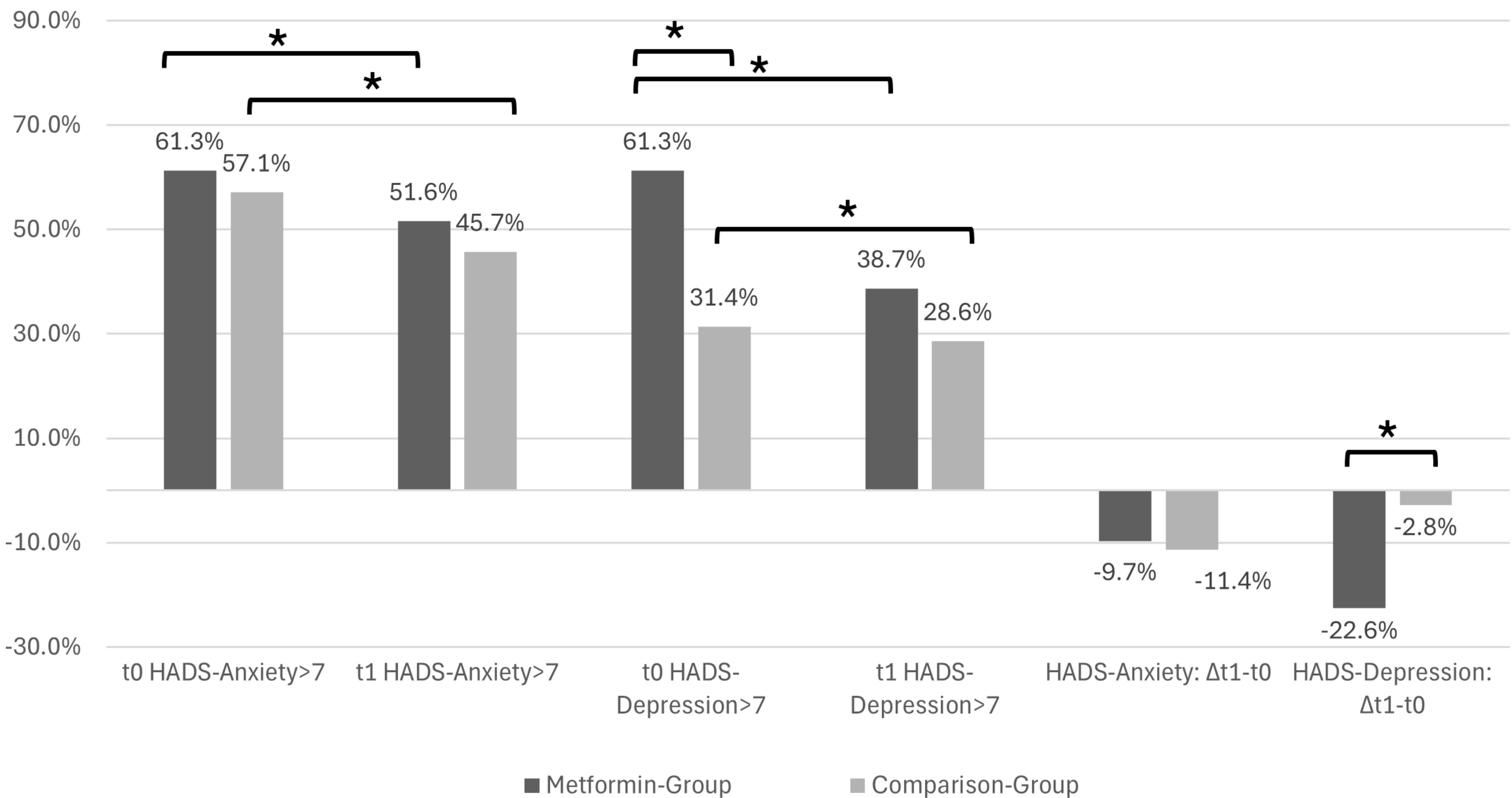
PSH and distress levels were evaluated at baseline and after 24 weeks using the Female Sexual Function Index (FSFI) and the Hospital Anxiety and Depression Scale (HADS). Metabolic markers were measured comprehensively in all participants to monitor their metabolic responses to the treatments. Multivariate regression analyses were performed to investigate the relationship between metabolic improvements and changes in PSH and distress.

Conclusions

Metformin therapy is associated with a significant improvement in PSH of women with PCOS, with these effects potentially being mediated by reductions in BMI and enhancements in metabolic health. Clinicians should consider metformin as a valuable therapeutic option for women with PCOS, particularly those with metabolic disturbances or elevated BMI, to address both physical and psychosexual health challenges.

Results

The study enrolled 66 PCOS patients, with 31 in the metformin group (M-group) and 35 in the comparison group (C-group). The latter included patients using Myo-Inositol, contraceptive methods, or no treatment. Both groups reported significant improvements in HADS-Anxiety and HADS-Depression scores, with a reduction in the proportion of participants in the pathological range.



However, the M-group reported a greater reduction in distress compared to the C-group (Δ HADS-Depression > 7: $p=0.02$). PSH improved in both groups, with significant group differences in the change in FSFI-Arousal ($p=0.01$), FSFI-Satisfaction ($p=0.02$), and FSFI-Total ($p=0.04$). Metabolic markers, including Fatty Liver Index (FLI) ($p=0.04$), Body Mass Index (BMI) ($p=0.02$), and weight ($p=0.01$), improved significantly more in the M-group.

Multivariate analysis showed that a change in BMI was a significant predictor for the change in FSFI-Desire (Δ BMI: OR 2.0; CI: 1.1, 3.6; $p=0.02$) and FSFI-Total (Δ BMI: OR 1.9; CI: 1.0, 3.6; $p=0.04$), suggesting that metabolic changes may influence PSH.

Fig.1: Anxiety and depression (mean scores) for patients with and without metformin, at study inclusion (t0) and at follow-up (t1). Significant differences between the time points are marked with an asterisk

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