

Quality of Life and Body Mass Index in Overweight Adult Women with Polycystic Ovary Syndrome During a Lifestyle Modification Program

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ABSTRACT

Objective: To evaluate changes in body mass index (BMI) and health-related quality of life (HRQoL), including an acne parameter, of overweight adult women with polycystic ovary syndrome (PCOS) during a lifestyle modification program.

Design: Prospective longitudinal within-patient study.

Setting: Department of Reproductive Medicine of the Ghent University Hospital (Belgium).

Participants: Thirty-three overweight (BMI ≥ 25 kg/m²) women with PCOS between age 18 and 43 years.

Methods: Participants followed a 24-week lifestyle modification program consisting of a diet, exercise, and psychological subprogram. BMI was assessed at Weeks 0, 8, 16, and 24 of the program. The HRQoL was measured at Week 0, 12, and 24 of the program using the PolyCystic Ovary Syndrome Questionnaire (PCOSQ) and a Visual Analogue Scale (VAS) to evaluate the influence of acne on HRQoL.

Results: During a 24-week period no significant decrease in BMI occurred (mean difference = 1.71, 95% confidence interval [CI] [-1.38, 4.81]). During that period, there was a significant positive evolution of the total PCOSQ score, $F(2, 37.5) = 23.7$, the emotions, $F(2, 37.9) = 4.2$, weight, $F(2, 42.1) = 24.8$, body hair, $F(2, 35.6) = 3.3$, and infertility problems domain scores, $F(2, 43.1) = 15.64$, of the PCOSQ, as well as of the acne VAS score, $F(2, 29.3) = 4.2$. These effects primarily occurred during the first 12 weeks.

Conclusion: In spite of no significant changes in BMI, the HRQoL of overweight adult women with PCOS significantly improved during a 24-week lifestyle modification program.

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Polycystic ovary syndrome (PCOS) is a common endocrine disorder in women of reproductive age worldwide (Broekmans et al., 2006). Overweight and obesity are present in 30% to 70% of women with PCOS and worsen the PCOS symptom profile. More specifically, the prevalences of hirsutism, menstrual cycle irregularities, anovulation, and infertility are greater in overweight and obese women with PCOS than in women of normal weight with PCOS (Gambineri, Pelusi, Vicennati, Pagotto, & Pasquali, 2002; Vrbikova & Hainer, 2009). Overweight in women with PCOS also has a negative influence on women's health-related quality of life (HRQoL) (Jones, Hall, Balen, & Ledger, 2008). Therefore, weight loss is a crucial first step in the treatment of PCOS in overweight women. A weight loss of 5% to 10%

through lifestyle modification improves menstrual regularity, restores ovulation, and consequently increases the chance of becoming pregnant (Hoeger, 2006; Hoeger et al., 2004; Huber-Buchholz, Carey, & Norman, 1999; Norman, Davies, Lord, & Moran, 2002; Tang et al., 2006; Thessaloniki ESHRE/ASRM-Sponsored Consensus Workshop Group, 2008). Increasing evidence also demonstrates that lifestyle modification has a positive effect on women's HRQoL. In a 24-week randomized controlled trial in obese adolescent women with PCOS, researchers found that a treatment of lifestyle modification and oral contraceptives with or without metformin had a positive effect on HRQoL (Harris-Glocker, Davidson, Kochman, Guzick, & Hoeger, 2010). Similarly, a 20-week lifestyle modification treatment

Overweight is a major problem in women with polycystic ovary syndrome and has a negative influence on health-related quality of life.

consisting of diet with or without exercise had a positive impact on HRQoL in adult overweight women with PCOS (Thomson et al., 2010).

Evidence about the isolated effect of exercise and diet interventions on psychological well-being in women with PCOS is limited. Liao, Nestic, Chadwick, Brooke-Wavell, and Prelevic (2008) found that a self-directed walking program significantly reduced the level of body image distress in overweight women with PCOS. Galletly et al. (2007) reported a lower depression rate and higher level of self-esteem after a high-protein diet when compared with a low-protein diet. To date, there is no evidence about the isolated effect of psychological interventions on the psychological well-being of women with PCOS.

Notwithstanding the promising results of the Harris-Glocker et al. (2010) and Thomson et al. (2010) studies, these findings are limited in several respects. First, only one of these studies focused on the effect of lifestyle modification in adult women with PCOS. Second, that study did not include an individual psychological subprogram in the treatment of overweight and obesity, which seems to be important in weight loss programs to obtain a maximum effect (Shaw, O'Rourke, Del Mar, & Kenardy, 2005). Finally, neither included an evaluation of the influence of acne on women's HRQoL though this was reported as a limitation when studying HRQoL in women with PCOS (Jones et al., 2004). Because HRQoL is an important marker from the patient's perspective for the efficacy of a treatment (Cronin et al., 1998), additional research on this topic is needed. Accordingly, we studied changes in body mass index (BMI) and HRQoL, including an acne parameter, of overweight women with PCOS during a 24-week lifestyle modification program (LMP) that consisted of diet, exercise, and a psychological subprogram. We hypothesized that (a) the BMI decreases and (b) the level of HRQoL increases during the 24-week LMP in overweight women with PCOS.

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Methods

Ethics Approval

This study was reviewed and approved by the Ethics Committee of the Ghent University Hospital. Participants gave their written informed consent for participation in the study.

Design, Setting and Participants

We set up a prospective longitudinal within-patient study at the Department of Reproductive Medicine of the Ghent University Hospital (Belgium). Participants were recruited by the treating gynecologist during consultation from April 2007 till April 2009 using convenience sampling. Data collection ended in October 2009. Inclusion criteria stipulated that women had to be (a) diagnosed with PCOS, (b) overweight (BMI ≥ 25 kg/m²), and (c) between age 18 and 43 years. PCOS was diagnosed by a gynecologist using the Rotterdam criteria (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004).

Demographic and Clinical Characteristics

Data on demographic and clinical characteristics were gathered by the program coordinator at the start of the LMP. Age and highest level of education (i.e., secondary or higher education) of each participant were collected during interview. Hirsutism was diagnosed by using the modified Ferriman-Gallwey (mFG) scale. The program coordinator classified the participants as hirsute when they had a mFG score ≥ 8 (Ferriman & Gallwey, 1996; Yildiz, Bolour, Woods, Moore, & Azziz, 2010). The presence of facial acne was evaluated by questioning the participants if they were bothered by facial acne or not. Hyperandrogenemia was diagnosed in the presence of a free testosterone level > 0.50 ng/dl, which was determined at Day 2 or 3 of a spontaneous or induced menstrual cycle. Menstrual cycle irregularity was diagnosed when participants reported no menstrual bleeding for > 35 days (i.e., oligomenorrhea) or for > 6 months (i.e., amenorrhea). Gravidity and parity were observed as nominal variables answering the questions "Have you already been pregnant at least once?" and "Have you already given birth at least once?," respectively. Participants were also asked whether they had a current unfulfilled wish to conceive.

Intervention

All participants followed a 24-week LMP consisting of a diet, exercise, and psychological

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