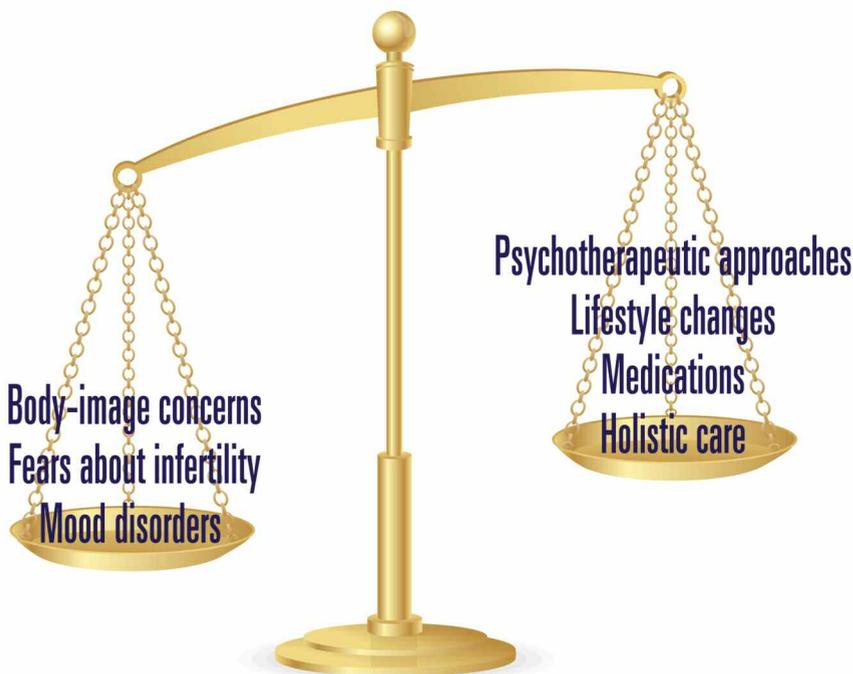


It's not just physical: The adverse psychosocial effects of polycystic ovary syndrome in adolescents

By Joyce S. Lee, RN, CPNP-BC

Management of polycystic ovary syndrome (PCOS) in adolescents entails dealing not only with the physical manifestations but also the troubling psychosocial effects related to these physical manifestations. The author conducted a literature review to ascertain the adverse psychosocial effects of PCOS in adolescents, as well as what nurse practitioners can do to mitigate these effects.

KEY WORDS: polycystic ovary syndrome, PCOS, adolescence, psychosocial effects



Polycystic ovary syndrome (PCOS) is a common endocrine disorder that affects 5%-10% of women and typically begins during adolescence.¹⁻⁵ Common physical manifestations of PCOS—acne, obesity, hirsutism, and anovulation—can have adverse effects on adolescents' self-image and mood.^{6,7} As a result, many of these girls may withdraw from their peers because of emotional distress or embarrassment. In addition to lowering self-esteem, obesity and the features of metabolic syndrome can increase the risk for future health complications,^{8,9} which in turn can provoke anxiety in adolescents who are aware of these risks. With all of these negative forces at play, adolescents with PCOS are also at increased risk for depression.¹⁰ In this article, the author shares the results of a literature search on the psychosocial concerns related to PCOS in adolescents and what nurse practitioners can do to address these concerns.

Literature review

The author searched the PubMed, Google Scholar, CINAHL, and JSTOR databases to find articles published between 2002 and 2013 that pertained to the adverse psychosocial effects of PCOS in adolescents, including management of these ef-

fects. Key words in the search were *polycystic ovarian syndrome, PCOS, adolescence, teens, quality of life, psychosocial, psychosocial issues, depression, anxiety, eating disorders, hirsutism, obesity, and metabolic syndrome*. Other articles were found by hand-searching relevant studies cited in the articles initially found.

Articles met inclusion criteria if they covered psychosocial concerns related to PCOS in adolescents. Articles describing the physical effects of PCOS were included if they served to provide relevant background information. Studies focusing only on adults were excluded unless, again, they provided useful background information or they compared PCOS-related psychosocial concerns in adolescents versus adults.

Psychosocial concerns related to PCOS

Table 1 lists selected studies related to psychosocial concerns in adolescents with PCOS. These concerns include anxiety and depression,^{1,4} social interaction,^{11,12} body image,¹¹ body weight,^{1,11,13,14} eating disorders,¹⁵ hirsutism,¹³ fertility,^{2,11,13} and decreased quality of life (QOL) related to sexual behavior.^{2,11} Health-related QOL (HQOL) scores in adolescents have been correlated with the level of PCOS symptomatology.¹⁴ A qualitative study showed that a PCOS diagnosis had an adverse impact on HQOL, with emotional and social functioning being more affected than physical health.¹¹

Psychological problems

According to a report by Dowdy,¹⁰ adolescents with PCOS commonly use words such as *nerd* or *freak* to describe themselves; PCOS changes their bodies, which makes them feel different from

other adolescents. A small study showed that adolescents with PCOS, compared with healthy adolescents, had higher anxiety scale scores.⁴ Dowdy¹⁰ reported that anxiety among adolescents with PCOS was related to their appearance, body-image concerns, and fear of future infertility.

Insulin resistance and increased levels of insulin in the bloodstream, which are common in patients with PCOS, have been thought to cause problems with mood.¹⁶ Insulin levels in the blood can affect serotonin levels in the brain and vice versa, so it is unclear whether insulin abnormalities initiate depressive symptoms or are the result of them.¹⁰

Body weight and body-image disturbances

Overweight/obesity (OW/O) and an elevated body mass index (BMI) are more common in adolescents with PCOS than in those without PCOS.^{8,14} Excess weight, among all the physical manifestations of PCOS in adolescents, has the greatest adverse impact on HQOL.^{17,18} One study showed that HQOL scores were inversely proportional to BMI values in teens with PCOS and high BMIs.¹⁴ PCOS-related OW/O has been linked to decreased academic achievement and lower income, even after controlling for socioeconomic status and intelligence. In addition, many females with OW/O are the recipients of hurtful comments and actions from peers, family members, colleagues, strangers, and even some healthcare providers,¹⁹ which can lower their self-esteem.

Other body-image concerns in adolescents with PCOS involve male-pattern hair on the face and body and acne.¹⁰ Adolescents with hirsutism, versus those without the

condition, have lower HQOL scores and self-esteem and an increased prevalence of anxiety disorders.²⁰ Some adolescents report feeling that hirsutism has robbed them of their female identity.¹⁰ PCOS-related insulin resistance increases the risk for developing acanthosis nigricans (a brown to black, poorly defined, velvety hyperpigmentation of the skin),²¹ another body-image concern because of its physical visibility.

Femininity, fertility, and sexuality concerns

According to the dictionary, *feminine* means "having the qualities traditionally ascribed to women."²² Menstruation is an important symbol of femininity; menarche and a normal menstrual cycle serve as rites of passage that prove that a female has the ability to reproduce.⁴ Adolescents with PCOS, versus their healthy peers, are more likely to have concerns about their future fertility because of their menstrual irregularities.² Fear of potential infertility has an adverse impact on HQOL.

Adolescents with PCOS, compared with adolescents who do not have PCOS, may feel more self-conscious, less desirable, and less inclined to be outgoing with persons to whom they are attracted.¹⁰ A teen with PCOS may feel unsexy or unwomanly because her body has "let her down," and she may have less sexual interest because of the many PCOS-related stressors with which she must cope.¹⁰

Eating disorders

Results of a retrospective study showed that adolescents with menstrual disturbances were at greater risk of having an eating disorder.²³ Adolescents with OW/O may develop unhealthy eating habits such as binge eating,

Table 1. Selected studies on the psychosocial effects of PCOS in adolescents

Source	Sample	Purpose	Study design
Rofey et al, 2009 ¹	12 adolescents aged 12-18 with PCOS, depression, obesity. Ethnicity: unknown.	To evaluate impact of CBT on psychosocial effects in adolescents with PCOS.	Open trial, 8 weekly CBT sessions, 3 family-based sessions.
Laggari et al, 2009 ⁴	49 adolescents aged ≤20 with menstrual disorder (n = 27), PCOS (n = 22), or MRKHS (n = 5) or controls (n = 22). Ethnicity: unknown.	To study levels of depression and anxiety from self-report in adolescents with PCOS and MRKHS vs. healthy controls.	BDI and STAI given to measure depression and anxiety levels.
Jones et al, 2011 ¹¹	15 females aged 17-21 with PCOS. Ethnicity: white, 93.33%; mixed, 6.67%.	To study HQOL in adolescents with PCOS.	Qualitative study, semi-structured interviews.
Trent et al, 2002 ¹²	97 adolescents with PCOS, 186 adolescents without PCOS. Aged 13-22 years. Ethnicity, PCOS: Hispanic, 21%; black, 20%; white, 49%, other, 10%. Healthy: Hispanic, 18%; black, 20%; white, 43%; other, 8.5%.	HQOL of adolescents with PCOS vs. controls. Also, to ascertain whether HQOL is affected by observed signs or self-perception of illness severity.	Cross-sectional study. Participants completed the CHQ-CF87.
Harris-Glocker et al, 2010 ¹³	36 adolescents aged 12-18 with PCOS. Ethnicity: white, 75%; AA, 16%; Hispanic, 6%; Asian, 3%.	To study HQOL difference in adolescents with PCOS who used metformin or placebo, which was added to lifestyle treatment and OCs.	RCT. OC + metformin 2 g/d or placebo. All enrolled in lifestyle changes. 24 weeks. PCOSQ given before and after study

purging, dieting, and using diuretics or laxatives to lose weight.²⁴ Some adolescents with PCOS feel that their efforts to lose weight are not as successful as those of their peers who do not have PCOS.¹⁰

Screening for adverse psychosocial effects of PCOS

Screening for psychosocial concerns related to PCOS should start early in adolescence. *Table 2* lists screening tests available for identification of psychosocial prob-

lems.²⁵ An evaluation of the Polycystic Ovary Syndrome Questionnaire (PCOSQ) by Jones et al²⁶ found this tool reliable for determining HQOL in women with PCOS. Validity of the tool could be improved with the addition of acne to the questionnaire because of acne's identification as an important factor involved in HQOL. Although the PCOSQ was first developed based on research conducted on women,²⁷ it has been used in adolescents to assess psychosocial concerns related to PCOS.¹³

NP role in managing psychosocial effects of PCOS

Goals of therapy for adolescents with PCOS—amelioration of psychological problems, weight loss, reduction of the manifestations of hyperandrogenism, and improvement in body image and self-esteem—are best achieved by a multidisciplinary team that includes NPs.^{3,4,28} The physical and psychosocial aspects of treatment go hand in hand. Meeting physical management goals (e.g., weight loss, reduction in hyperandro-

Psychosocial findings	Physical findings	P values	Conclusions
Weight fell from mean of 104 kg (SD, 26) to 94 kg (SD, 18 kg). Depression symptoms, tested via CDI, fell from mean of 17 (SD, 3) to 9.6 (SD, 2).	CBT may be an effective way to treat depressive symptoms in adolescents with obesity and PCOS.	Significant decreases in weight ($P < .05$), depression symptoms ($P < .01$), irregular menstruation ($P < .05$). Non-significant decreases in fat mass, hypertension.	Holistic approach in treating psychosocial affects of PCOS may be an effective option for improving QOL.
Relationship between decreased HQOL and PCOS and MRKHS.	N/A	PCOS group 1.08 times more likely than controls to have anxiety symptoms ($P = .043$). Depression scores higher in PCOS group than controls, but difference was not significant ($P = .091$).	Management of menstrual disorders takes a multidisciplinary approach—needs biopsychosocial interventions to prevent psychological problems.
Generally reduced HQOL.	Reduced HQOL related to concerns involving weight, body image, fertility, menstruation, hyperandrogenism, social life, and sexuality.	N/A	More studies regarding the best approach to communication between adolescents with PCOS and HCPs are needed.
PCOS group had lower scores in HQOL screen, with those who had more self-perception of illness scoring lower on general health perceptions, although severity of clinical manifestations did not show significant differences in HQOL.	N/A	Change in health in past year (higher in PCOS group; $P = .4$), general health perceptions (lower in PCOS group; $P < .001$), physical functioning (lower in PCOS group; $P = .01$), family activities (lower in PCOS group; $P = .03$), behavior (lower in PCOS group; $P = .04$). Differences between groups not significant for mental health, role/social emotional, role/social behavioral, body pain, self-esteem, role/social physical, and family cohesion.	PCOS affects adolescents' HQOL, which was found to be lower than that in their healthy peers. Suggests that interventions should be in place to decrease distress faced by adolescents with PCOS.
Mean BMI, 34.8 kg/m ² . BMI fell 4% ($P = .008$) in placebo group and 5.2% ($P = .001$) in metformin group. QOL scores on PCOSQ rose from baseline for participants (higher score = higher QOL score).	Addition of metformin to changes in lifestyle and OC use did not improve HQOL.	PCOSQ score rose in these areas: <ul style="list-style-type: none"> • infertility ($P < .001$) • emotions ($P < .005$) • body hair ($P < .005$) • menses ($P < .005$) • weight ($P < .005$) 	Lifestyle changes should be encouraged in treatment of PCOS. <i>(continued on next page)</i>

genism manifestations) can lessen some of the troubling psychosocial effects, and enhancing self-esteem can motivate weight-loss efforts and perhaps even improve adherence to the pharmacotherapeutic regimen. One of the best ways that NPs can help is to supply adolescent patients with information about PCOS and its treatment that they can understand.

Mental health approaches

An open trial of weekly cognitive behavioral therapy sessions and

family sessions has shown that these modalities may help treat both depressive symptoms and obesity in adolescents with PCOS.¹ Participating in individual and family sessions can help patients develop positive methods of coping with PCOS and find constructive ways to manage their feelings. Support groups that meet in person or online can help motivate adolescents to make and maintain healthy lifestyle choices.^{29,30} NPs can recommend any or all of these psychotherapeutic approaches.

Lifestyle changes

Weight loss of 5%-10% may not only decrease cardiovascular risks and insulin resistance but also help improve HQOL.^{8,14,31} NPs should ascertain which weight-loss strategies have worked or not worked in the past, and identify any unsafe weight-loss strategies and eating patterns in which patients may be engaged.^{24,29} In these cases, NPs should offer patients safe alternatives for losing weight.²⁴

A case-control study showed that, compared with controls, girls

Table 1. Selected studies on the psychosocial effects of PCOS in adolescents (continued)

Source	Sample	Purpose	Study design
Trent et al, 2005 ¹⁴	97 adolescents with PCOS, 186 adolescents without PCOS. Aged 13-22 years. Ethnicity: PCOS: Hispanic, 21%; black, 20%; white, 49%; other, 10%. Healthy: Hispanic, 18%; black, 20%; white, 43%; other, 8.5%.	To study how BMI affects HQOL in adolescents with PCOS.	Cross-sectional study. Participants completed the CHQ-CF87.
Wiksten-Almstromer et al, 2007 ²³	203 adolescents with secondary amenorrhea (n = 117; mean age, 17.1 ± 1.6) or oligomenorrhea (n = 86; mean age, 17.6 ± 1.5). Ethnicity: N/A.	To study the effect of endocrine causes of menstrual disorders and their consequences in a Swedish youth clinic.	Retrospective study.
Trent et al, 2003 ²	97 females with PCOS and 186 females without PCOS. Aged 13-22. Ethnicity: Hispanic, 27%; white, 45%; other, 9%, undisclosed, 1%.	To study fertility concerns in adolescents with PCOS (compared with controls) and the effects of these concerns on HQOL.	Cross-sectional study. Participants completed the CHQ-CF87.

AA, African American; BDI, Beck Depression Inventory; BMI, body mass index; CBT, cognitive behavioral therapy; CDI, Children's Depression Inventory; Hauser syndrome; OC, oral contraceptive; PCOS, polycystic ovary syndrome; PCOSQ, Polycystic Ovary Syndrome Questionnaire; QOL, quality of life;

with PCOS engaged in physical activities less often (if they did exercise, they did so with less frequency and intensity), and they were less likely to be aware of the beneficial effects of exercise on their health.³² NPs should encourage patients to exercise regularly, which may help increase their self-esteem and overall health.^{13,19} Yoga may be even more beneficial; results of a recent randomized, controlled trial indicated that yoga effectuated a significantly greater increase in HQOL than did traditional exercise.³³

With regard to approaches to counter the effects of hyperandrogenism, unwanted hair can be removed temporarily via shaving, waxing, and/or plucking (which unfortunately may cause other unwanted effects such as irritation, scarring, or folliculitis). Laser treatments can provide more perma-

nent results, but many treatments may be needed and the treatments may be costly.³⁴

Medications

Oral contraceptives (OCs) regulate menstrual cycles and treat hirsutism and acne.^{28,34} Insulin sensitizers such as metformin can be used to treat underlying insulin resistance.^{34,35} However, a randomized, placebo-controlled trial showed that adding metformin to a regimen of lifestyle changes and OC use did not lead to a significant improvement in HQOL.¹³ Anti-androgens such as spironolactone can help manage the hyperandrogenism effects.^{34,36} Statins are first-line treatments for lowering low-density lipoprotein cholesterol levels.³⁷ Antidepressants and anxiolytics can be used to treat psychiatric disorders related to PCOS; in these cases, NPs

may want to consult with a mental health specialist.

Further research

An important topic for future study is the efficacy of implementing a HQOL survey at every primary care visit for adolescents with PCOS. The purpose of this survey would be to assess for psychosocial co-morbidities common in individuals with PCOS. The studies should ascertain whether implementing such a screening would make providers more aware of the adverse psychosocial effects of PCOS, help identify psychosocial symptoms, and facilitate more comprehensive treatment when needed. Additional research should determine the outcomes of losing weight, how other PCOS-specific interventions affect overall HQOL, how to address infertility concerns, and how primary care

Psychosocial findings	Physical findings	P values	Conclusions
HQOL differences correlated with BMI measures. Higher BMI affected HQOL in adolescents with PCOS.	Mean BMI, 31.7 kg/m ² (SD, 8.4) in PCOS group and 23.5 kg/m ² (SD, 4.2) in healthy group.	Change in health in the past year (higher in PCOS group; <i>P</i> = .4), general health perceptions (lower in PCOS group; <i>P</i> < .001), physical functioning (lower in PCOS group; <i>P</i> = .01), family activities (lower in PCOS group; <i>P</i> = .03), behavior (lower in PCOS group; <i>P</i> = .04)	Lifestyle/weight-loss strategies should be in place to help improve HQOL and complications related to obesity.
Eating disorders: 68% of adolescents with secondary amenorrhea and 32% of those with oligomenorrhea.	Study not specifically about PCOS, but highlights concerns regarding eating disorders among adolescents with menstrual disorders.	The difference between the secondary amenorrhea group's and oligomenorrhea group's occurrence of eating disorders (<i>P</i> < .001).	Important to evaluate eating patterns and endocrine problems in adolescents with menstrual problems in order to provide proper health maintenance.
Controls 2.8 times more likely to have had sex. Mean age of sexual activity did not differ significantly. Females with PCOS 3.8 times more likely to worry about future fertility and more likely to have lower HQOL.	N/A	PCOS adolescents 2.8 times less likely to be sexually active (<i>P</i> = .003) and 3.8 times more likely to have infertility concerns (<i>P</i> < .001) than controls.	Provide counseling about fertility, birth control, and preventions of STIs.

CHQ-CF87, Child Health Questionnaire–Version CF-87; HCP, healthcare provider; HQOL, health-related quality of life; MRKHS, Mayer-Rokitansky-Küster-RCT, randomized controlled trial; SD, standard deviation; STAI, State-Trait Anxiety Inventory; STI, sexually transmitted infection.

practitioners can best manage adolescents holistically to help improve HQOL. More research is needed regarding how providers should teach and communicate with adolescents with PCOS.

Conclusion

Polycystic ovary syndrome in adolescents involves a myriad of physical manifestations that can compromise psychosocial health. These adverse psychosocial effects may have a major impact on HQOL. Early diagnosis of PCOS, screening for adverse psychosocial effects, and treatment that reduces physical manifestations of PCOS are important. Lack of attention to these problems can force adolescents to endure adverse psychosocial effects that can lead to further unhealthy behaviors. NPs have an opportunity to educate adolescents about the disease process of PCOS

and to implement strategies to treat these patients' physical and psychosocial problems to improve their HQOL for a lifetime. ●

Joyce S. Lee is a certified pediatric nurse practitioner who graduated from Columbia University School of Nursing in New York, New York. The author states that she does not have a financial interest in or other relationship with any commercial product named in this article.

Acknowledgment

The author thanks Rita Marie John, DNP, EdD, CPNP-PC, DCC, for her help, editing, and counsel during the preparation and writing of this article.

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Table 2. Questionnaires to assess HQOL in adolescents with PCOS²⁵

Characteristic(s) studied	Questionnaire
PCOS-related HQOL	Polycystic Ovary Syndrome Questionnaire (PCOSQ)
HQOL	Child Health Questionnaire version CF-87 (CHQ-CF87) www.healthact.com/chq.php Health Utilities Index (HUI) Mark 3 www.healthutilities.com/hui3.htm World Health Organization Quality of Life – Bref (WHOQOL-BREF) www.who.int/mental_health/publications/whoqol/en/index.html
Self-esteem	Rosenberg’s Self-Esteem Scale www.wnorton.com/college/psych/psychsci/media/rosenberg.htm
General illness-related HQOL	Sickness Impact Profile (SIP) Available for purchase at www.mapi-trust.org/services/questionnairelicensing/catalog-questions/296-sip
Overall mental health	36-Item Short Form Survey from the RAND Medical Outcomes Study (SF-36) www.rand.org/health/surveys_tools/mos/mos_core_36item.html Symptom Checklist-90-Revised (SCL-90-R) Available for purchase at http://psychcorp.pearsonassessments.com/HAIWEB/Cultures/en-us/Productdetail.htm?Pid=PAg514
Anxiety and depression	Hospital Anxiety and Depression Scale (HADS) http://www.hawkesbay.health.nz/file/fileid/47359
Depression	The Centre for Epidemiological Studies Depression Scale Revised (CESD-R) http://cesd-r.com/ Zung Self-Rating Depression Scale http://healthnet.umassmed.edu/mhealth/ZungSelfRatedDepressionScale.pdf
HQOL, health-related quality of life; PCOS, polycystic ovary syndrome.	

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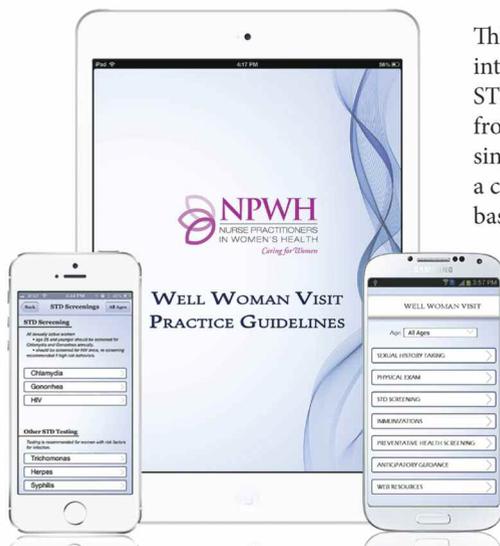
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