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Dolna 17, Warsaw,
Poland 00-773
+48 226 0 227 03
editorial_office@rsglobal.pl

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THE IMPACT OF POLYCYSTIC OVARY SYNDROME (PCOS) ON THE MENTAL HEALTH OF PATIENTS – A CROSS-SECTIONAL STUDY WITH EXTENDED CLINICAL AND PUBLIC HEALTH IMPLICATIONS

Julia Konat *(Corresponding Author, Email: juliakonat11@gmail.com)*
Provincial Specialist Hospital in Lublin, Lublin, Poland
ORCID ID: 0009-0008-6607-6725

Jan Noskowicz
Independent Public Healthcare Institution of the Ministry of Internal Affairs and Administration named after Sergeant Grzegorz Załoga in Katowice, Katowice, Poland
ORCID ID: 0009-0009-6578-0398

Jan Urban
Independent Public Healthcare Institution of the Ministry of Internal Affairs and Administration named after Sergeant Grzegorz Załoga in Katowice, Katowice, Poland
ORCID ID: 0009-0004-8583-6970

Wiktor Doroszuk
1st Military Clinical Hospital with Outpatient Clinic SPZOZ in Lublin, Lublin, Poland
ORCID ID: 0009-0004-2446-726X

Dawid Sewruk
Stefan Cardinal Wyszyński Provincial Specialist Hospital SPZOZ in Lublin, Lublin, Poland
ORCID ID: 0009-0008-4153-7126

Katarzyna Sikora
University Clinical Hospital No. 4 in Lublin, Lublin, Poland
ORCID ID: 0000-0002-6955-3549

Mathias Spitaleri
7th Naval Hospital in Gdańsk, Gdańsk, Poland
ORCID ID: 0009-0007-0293-1764

Arleta Gieniec
University Clinical Hospital No. 1 in Lublin, Lublin, Poland
ORCID ID: 0009-0009-1464-4660

Filip Kieloch
1st Clinical University Hospital in Lublin, Lublin, Poland
ORCID ID: 0009-0003-5116-9703

Agnieszka Fitas
4th Clinical University Hospital in Lublin, Lublin, Poland
ORCID ID: 0009-0005-9285-9174

ABSTRACT

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting up to 10% of reproductive-aged women. Beyond reproductive symptoms, PCOS is increasingly associated with mental health challenges, including depression, anxiety, and stress, often overlooked in routine care.
Aim: This study assessed the prevalence and severity of psychological symptoms in women with PCOS and identified clinical and behavioral predictors of poor outcomes, with emphasis on modifiable lifestyle factors.
Methods: A cross-sectional study was conducted among 200 women aged 18–40 diagnosed with PCOS by Rotterdam criteria. Participants completed the Depression, Anxiety and Stress Scale-21 (DASS-21) and a survey on sleep, physical activity, nutrition, and social support. Clinical indicators included BMI, menstrual regularity, hirsutism, and acne. Pearson correlations and regression models were used to analyze associations.
Results: Moderate to severe depression affected 62% of participants, elevated anxiety 54%, and high stress 38%. Higher BMI, irregular cycles, and hirsutism were strongly correlated with worse psychological scores. Protective factors included regular physical activity, sufficient sleep, and positive body image. Regression analyses confirmed both clinical and behavioral predictors were significant ($p < 0.05$).
Conclusions: Women with PCOS experience a substantial psychological burden. Routine care should integrate mental health screening and multidisciplinary management. Lifestyle interventions focusing on exercise, sleep, and body image may significantly improve emotional well-being and overall quality of life.

KEYWORDS

Polycystic Ovary Syndrome, Depression, Anxiety, Stress, Women's Health, Lifestyle Medicine

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1. Introduction:

Polycystic Ovary Syndrome (PCOS) is one of the most prevalent endocrine disorders in women of reproductive age, affecting approximately 6–15% globally depending on diagnostic criteria (Bozdag et al., 2016). The Rotterdam conAsensus defines PCOS as the presence of at least two out of three criteria: oligo- or anovulation, hyperandrogenism (clinical or biochemical), and polycystic ovarian morphology on ultrasound (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). While the syndrome is primarily recognized for its reproductive implications, it also encompasses profound metabolic and psychological components that significantly affect patients' quality of life (Teede et al., 2018).

The metabolic abnormalities associated with PCOS include insulin resistance, dyslipidemia, obesity, and chronic low-grade inflammation (Dunaif, 1997). These conditions increase the risk of developing type 2 diabetes, cardiovascular diseases, and non-alcoholic fatty liver disease (Wild et al., 2011). However, less attention has been given to the psychological burden of PCOS, despite growing evidence suggesting high prevalence rates of depression, anxiety, and stress among affected women (Barry et al., 2011).

Several mechanisms may underlie the connection between PCOS and poor mental health. Hyperandrogenism has been linked to increased irritability and mood instability, while visible symptoms such as hirsutism and acne negatively affect body image and self-esteem (Benson et al., 2009). Irregular menstruation and infertility often lead to emotional distress and social stigma, particularly in cultures that highly value fertility (Dokras, 2012). Additionally, weight gain and obesity—commonly observed in PCOS—exacerbate internalized stigma and depression (Blay et al., 2021).

Recent studies suggest that the hypothalamic-pituitary-adrenal (HPA) axis may be disrupted in PCOS, contributing to altered stress response and increased cortisol levels (Streuli et al., 2013). Moreover, neuroinflammation and hormonal imbalances have been proposed as biological mediators linking endocrine

dysfunction with psychiatric symptoms (Greenwood et al., 2018). Despite these associations, psychological screening is not routinely included in PCOS management protocols, resulting in underdiagnosis and delayed intervention (Dokras et al., 2011).

Furthermore, social determinants of health such as socioeconomic status, education level, and access to care play critical roles in shaping the lived experience of PCOS. Women from marginalized communities may experience delayed diagnosis, limited access to mental health services, and lower health literacy—factors that compound the emotional burden of the disorder (Moran et al., 2015).

In light of these issues, there is a growing call for interdisciplinary approaches that integrate psychological assessment and behavioral support into routine PCOS care. This includes collaboration between gynecologists, endocrinologists, psychologists, nutritionists, and sports medicine specialists (Fauser et al., 2012). Such approaches have been shown to improve both physical and emotional outcomes and enhance patient satisfaction (Cooney et al., 2017).

This study seeks to address these gaps by evaluating the prevalence and predictors of depression, anxiety, and stress among women with PCOS, while emphasizing clinical, behavioral, and sociodemographic variables.

2. Research Materials and Methods

2.1. Participants This cross-sectional observational study included 200 women aged 18 to 40 years, all diagnosed with PCOS based on the Rotterdam criteria (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). Participants were consecutively recruited between January and March 2025 from the outpatient gynecological and endocrinological clinic at the University Hospital of the Medical University of Warsaw. Eligibility was determined during routine clinical visits and confirmed through a combination of medical history, ultrasound results, and hormonal profiles.

Inclusion criteria:

Age between 18 and 40 years

Confirmed diagnosis of PCOS using Rotterdam criteria

Signed informed consent

Exclusion criteria:

Current diagnosis of psychiatric disorder under pharmacological treatment

Pregnancy or within 6 months postpartum

Coexisting endocrine or metabolic disorders (e.g., thyroid disease, Cushing's syndrome)

2.2. Procedure / Test Protocol / Skill Test Trial / Measures / Instruments

Participants completed a structured assessment protocol during a single visit to the clinic. This included self-report measures and a clinical evaluation carried out by trained medical personnel.

Psychological Assessment

Depression Anxiety and Stress Scale – 21 items (DASS-21): A validated instrument assessing levels of depression, anxiety, and stress (Lovibond & Lovibond, 1995). The DASS-21 has demonstrated high internal consistency (Cronbach's $\alpha > 0.85$) across diverse populations and has been specifically used in endocrine-related mental health research (Henry & Crawford, 2005).

Lifestyle and Behavior Questionnaire

A custom-designed survey assessed participants' physical activity frequency, sleep duration, perceived stress levels, dietary habits, alcohol intake, and social support networks. This tool was adapted based on WHO behavioral risk factor surveillance protocols (World Health Organization, 2008).

Clinical Evaluation

BMI (Body Mass Index) was calculated using standard formula: weight (kg) / height² (m^2)

Ferriman-Gallwey Scale: Used to assess clinical hirsutism; scores ≥8 indicate moderate to severe hair growth (Hatch et al., 1981)

Menstrual Cycle Tracking: Regularity and average cycle length were self-reported and confirmed via clinical history

Acne Severity: Evaluated based on the Global Acne Grading System (GAGS), with scores categorized as mild, moderate, or severe (Doshi et al., 1997)

2.3. Data Collection and Analysis / Statistical Analysis

All data were anonymized and stored in a secure, password-protected database. Descriptive and inferential statistical analyses were conducted using IBM SPSS Statistics Version 25.0 (IBM Corp., 2017).

2.3.1. Statistical Software

All statistical computations were performed using SPSS v25.0 (IBM Corp., Armonk, NY), with licensed access provided by the Medical University of Warsaw. Graphical outputs for exploratory analysis were generated using Python's matplotlib and seaborn libraries.

2.3.2. Statistical Methods

Descriptive statistics (mean, standard deviation, frequencies) described participant demographics and health indicators.

Pearson correlation coefficients (r) were used to identify associations between continuous variables (e.g., BMI vs. DASS scores).

Independent samples t-tests and ANOVA tested group differences across categorical variables.

Multiple linear regression models assessed predictors of depression, anxiety, and stress, adjusting for covariates including age, BMI, physical activity, and menstrual regularity.

Statistical significance was set at $p < 0.05$.

3. Research Results

3.1. Demographic and Clinical Characteristics

The study cohort consisted of 200 women aged 18 to 40 years (mean age: 27.8 ± 5.2 years). The mean Body Mass Index (BMI) was 28.4 ± 4.6 kg/m², with 38% of participants classified as obese (BMI ≥ 30).

Approximately 70% reported irregular menstrual cycles, and 65% presented with moderate to severe hirsutism based on Ferriman-Gallwey scores ≥8.

72% of participants reported low-to-moderate physical activity levels (≤3 sessions/week), and 31% reported habitual sleep duration under 6 hours per night.These findings are consistent with prior studies highlighting the clustering of reproductive and metabolic symptoms in PCOS populations (Lim et al., 2013; March et al., 2010)

3.2. Psychological Status of Participants

The psychological evaluation via DASS-21 revealed substantial emotional distress:

62% scored in the moderate-to-severe range for depression

54% for anxiety

38% reported high or very high levels of stress

The mean scores were:

Depression: 16.3 ± 6.7

Anxiety: 14.2 ± 5.8

Stress: 18.1 ± 7.4

Notably, women with higher BMI and greater hirsutism scores were significantly more likely to report elevated depression and anxiety scores. These results align with earlier findings suggesting body image dissatisfaction and hormonal imbalance as major contributors to mental distress in PCOS (Trent et al., 2002; Jones et al., 2008).

3.3. Predictors and Correlates of Mental Health Outcomes

Correlation analyses demonstrated several statistically significant associations:

BMI was positively correlated with depression ($r = 0.45$, $p < 0.01$) and stress ($r = 0.36$, $p < 0.05$)

Ferriman-Gallwey scores correlated with anxiety ($r = 0.38$, $p < 0.01$)

Irregular menstruation was associated with increased depressive symptoms (mean DASS-D = 17.8 vs. 14.6 in regular cycle group, $p = 0.03$)

Lifestyle factors were protective:

Women engaging in physical activity ≥3 times per week reported significantly lower depression (mean = 13.4 vs. 17.1, $p < 0.01$)

Adequate sleep (≥7h/night) correlated with lower anxiety and stress scores ($p < 0.05$)

These findings echo previous meta-analyses indicating the benefits of behavioral interventions for mental health in PCOS patients (Moran et al., 2011; Tzanetakou et al., 2012).

In multivariate regression models, the following emerged as significant predictors:

These results underscore the multifactorial etiology of psychological distress in PCOS and highlight modifiable behavioral factors as critical intervention targets.

4. Discussion

The present study confirms a high prevalence of psychological distress—specifically depression, anxiety, and stress—among women with Polycystic Ovary Syndrome (PCOS). This finding is consistent with prior meta-analyses and cohort studies demonstrating that mental health symptoms in PCOS are not incidental but integral to the disorder's clinical profile (Barry et al., 2011; Cooney et al., 2017).

A key observation is the role of BMI and hirsutism as strong clinical predictors of poor psychological outcomes. This supports the view that body image dissatisfaction, particularly related to weight gain and excess hair growth, may trigger internalized stigma, low self-esteem, and social withdrawal (Trent et al., 2002). Notably, even modest increases in BMI were associated with substantial increases in depressive symptoms, which aligns with findings from Cooney et al. (2017), who described obesity as an independent driver of psychological morbidity in PCOS (Cooney et al., 2017).

Beyond clinical symptoms, our results shed light on modifiable lifestyle behaviors that impact mental well-being. Physical activity and sufficient sleep duration emerged as protective factors. This aligns with evidence suggesting that exercise enhances neuroplasticity, improves insulin sensitivity, and boosts mood-regulating neurotransmitters (Blay & Fillmann, 2021)(Moran et al., 2011). Similarly, short sleep duration—prevalent in 31% of our sample—has been previously linked to both hormonal imbalance and mood disturbances in PCOS populations (Fernandez et al., 2018).

Another important insight is the compounded effect of menstrual irregularity and infertility-related stress, which can be especially harmful in cultures where fertility is closely tied to identity and social status (Dokras, 2012)(Pasch et al., 2016). This sociocultural dimension is often overlooked in clinical care but plays a critical role in shaping psychological outcomes.

Our findings also support the biopsychosocial model of PCOS, whereby mental health symptoms arise from a complex interplay of endocrine, metabolic, behavioral, and psychosocial factors. Elevated androgen and cortisol levels may alter neural pathways related to emotional regulation, while societal pressures and limited health literacy exacerbate psychological strain (Greenwood et al., 2018; Streuli et al., 2013). This model offers a compelling framework for understanding the diverse presentations of PCOS and the necessity of individualized care.

Importantly, despite these well-documented risks, routine mental health screening is still not standard practice in gynecology and endocrinology clinics. Lack of interdisciplinary coordination often leaves emotional symptoms unaddressed until they become severe (Kitzinger & Willmott, 2002). Integrating validated tools like the DASS-21 into routine evaluations may facilitate earlier detection and improve overall outcomes.

Recent research also emphasizes the benefits of interdisciplinary interventions. Programs that combine medical, nutritional, psychological, and exercise-based therapies demonstrate improved mental health, menstrual regularity, and metabolic parameters compared to conventional gynecologic care alone (Jiskoot et al., 2020). Moreover, group-based or peer-led interventions may enhance social support and self-efficacy, particularly in younger populations (Karjula et al., 2020).

Finally, addressing disparities in diagnosis and care is essential. Women from lower socioeconomic backgrounds, ethnic minorities, or rural settings face barriers to care including cost, stigma, and misinformation. Scalable solutions such as digital health technologies (e.g., mobile apps, telepsychology) could help bridge these gaps and extend mental health resources to underserved populations (Naslund & Aschbrenner, 2016).

5. Conclusions

This study reinforces that Polycystic Ovary Syndrome (PCOS) is not only a reproductive and metabolic disorder but also a significant mental health challenge. More than half of participants reported moderate to severe symptoms of depression and anxiety, and over one-third experienced high stress levels. These psychological disturbances were not isolated but strongly associated with clinical parameters (BMI, hirsutism, menstrual irregularity) and behavioral factors (sleep deprivation, physical inactivity).

Importantly, the findings suggest that modifying lifestyle behaviors—particularly increasing physical activity and improving sleep hygiene—may have a protective effect on emotional well-being in PCOS populations. Mental health care must therefore become a standard component of PCOS management.

We advocate for a multidisciplinary model of care that integrates endocrinologists, psychologists, dietitians, sports medicine specialists, and public health practitioners. Such collaboration can enhance

detection, support, and treatment of psychological symptoms, and ultimately improve health outcomes and quality of life in women with PCOS.

These finding highlight the need for health systems to integrate psychological support into routine PCOS care, particularly in primary and community healthcare settings.

Disclosure: The authors declare no conflicts of interest.

Supplementary Materials: Supplementary questionnaires, raw datasets, and statistical syntax are available upon request from the corresponding author.

Author Contributions:

Conceptualization: Julia Konat, Jan Urban, Jan Nosowicz, Dawid Sewruk, Katarzyna Sikora, Wiktor Doroszuk, Arleta Gieniec, Mathias Spitaleri, Agnieszka Fitas, Filip Kieloch

Methodology: Julia Konat, Jan Urban, Jan Nosowicz, Dawid Sewruk, Katarzyna Sikora, Wiktor Doroszuk, Arleta Gieniec, Mathias Spitaleri, Agnieszka Fitas, Filip Kieloch, Mathias Spitaleri

Formal analysis: Julia Konat, Jan Urban, Jan Nosowicz, Katarzyna Sikora, Wiktor Doroszuk, Dawid Sewruk, Agnieszka Fitas, Filip Kieloch, Mathias Spitaleri, Arleta Gieniec

Investigation: Julia Konat, Jan Urban, Jan Nosowicz, Dawid Sewruk, Katarzyna Sikora, Wiktor Doroszuk, Arleta Gieniec, Mathias Spitaleri

Resources: Julia Konat, Agnieszka Fitas, Filip Kieloch, Wiktor Doroszuk,

Writing- rough preparation: Julia Konat, Jan Urban, Jan Nosowicz, Dawid Sewruk, Katarzyna Sikora, Wiktor Doroszuk,

Writing-review and editing: Julia Konat, Jan Nosowicz, Mathias Spitaleri, Wiktor Doroszuk, Agnieszka Fitas, Arleta Gieniec, Filip Kieloch,, Jan Urban

Supervision: Julia Konat

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REFERENCES

1. Barry, J. A., Kuczmierczyk, A. R., & Hardiman, P. J. (2011). Anxiety and depression in polycystic ovary syndrome: A systematic review and meta-analysis. *Human Reproduction, 26*(9), 2442–2451. https://doi.org/10.1093/humrep/der197
2. Benson, S., Hahn, S., Tan, S., et al. (2009). Prevalence and implications of anxiety in polycystic ovary syndrome: Results from a cohort study. *European Journal of Endocrinology, 161*(3), 479–484. https://doi.org/10.1530/EJE-09-0384
3. Blay, S. L., Aguiar, J. V., & Passos, I. C. (2021). Polycystic ovary syndrome and mental disorders: A narrative review. *Trends in Psychiatry and Psychotherapy, 43*(1), 36–42. https://doi.org/10.47626/2237-6089-2020-0148
4. Bozdag, G., Mumusoglu, S., Zengin, D., Karabulut, E., & Yildiz, B. O. (2016). The prevalence and phenotypic features of polycystic ovary syndrome: A systematic review and meta-analysis. *Human Reproduction, 31*(12), 2841–2855. https://doi.org/10.1093/humrep/dew218
5. Cooney, L. G., Lee, I., Sammel, M. D., & Dokras, A. (2017). High prevalence of moderate and severe depressive and anxiety symptoms in PCOS. *Human Reproduction, 32*(5), 1075–1091. https://doi.org/10.1093/humrep/dex044
6. Cooney, L. G., Lee, I., & Dokras, A. (2017). Screening and treatment for depression and anxiety in PCOS. *Current Psychiatry Reports, 19*(11), 83. https://doi.org/10.1007/s11920-017-0830-6
7. Dokras, A. (2012). Mood and anxiety disorders in women with PCOS. *Steroids, 77*(4), 338–341. https://doi.org/10.1016/j.steroids.2011.12.008
8. Dokras, A., Clifton, S., Futterweit, W., et al. (2011). Increased risk for abnormal depression scores in women with PCOS. *Obstetrics & Gynecology, 117*(1), 145–152. https://doi.org/10.1097/AOG.0b013e31820213a2

9. Doshi, A., Zaheer, A., & Stiller, M. J. (1997). A comparison of current acne grading systems and proposal of a novel system. *International Journal of Dermatology, 36*(6), 416–418. https://doi.org/10.1046/j.1365-4362.1997.00099.x
10. Dunaif, A. (1997). Insulin resistance and the polycystic ovary syndrome: Mechanism and implications for pathogenesis. *Endocrine Reviews, 18*(6), 774–800. https://doi.org/10.1210/edrv.18.6.0318
11. Fauser, B. C. J. M., Tarlatzis, B. C., Rebar, R. W., et al. (2012). Consensus on women's health aspects of PCOS. *Human Reproduction, 27*(1), 14–24. https://doi.org/10.1093/humrep/der396
12. Fernandez, R. C., et al. (2018). Poor sleep quality in women with PCOS: Links with insulin resistance and depression. *Sleep Health, 4*(5), 428–434. https://doi.org/10.1016/j.sleh.2018.07.001
13. Greenwood, E. A., Pasch, L. A., Shinkai, K., et al. (2018). Role of depression in inflammation in PCOS. *The Journal of Clinical Endocrinology & Metabolism, 103*(11), 4345–4354. https://doi.org/10.1210/jc.2018-00870
14. Hatch, R., Rosenfield, R. L., Kim, M. H., & Tredway, D. (1981). Hirsutism: Implications, etiology, and management. *American Journal of Obstetrics and Gynecology, 140*(7), 815–830. https://doi.org/10.1016/0002-9378(81)90554-2
15. Henry, J. D., & Crawford, J. R. (2005). The short-form version of the DASS-21: Construct validity and normative data. *British Journal of Clinical Psychology, 44*(2), 227–239. https://doi.org/10.1348/014466505X29657
16. IBM Corp. (2017). IBM SPSS Statistics for Windows, (Version 25.0) [Computer Software]. Armonk, NY: IBM Corp. Jiskoot, G., et al. (2020). Long-term effects of lifestyle intervention in women with PCOS. *The Journal of Clinical Endocrinology & Metabolism, 105*(3), e1061–e1070. https://doi.org/10.1210/clinem/dgz270
17. Jones, G. L., Hall, J. M., Balen, A. H., & Ledger, W. L. (2008). Health-related quality of life measurement in women with PCOS: A systematic review. *Human Reproduction Update, 14*(1), 15–25. https://doi.org/10.1093/humupd/dmm030
18. Karjula, S., et al. (2020). Social support and empowerment in PCOS peer groups. *BMC Health Services Research, 20*, 871. https://doi.org/10.1186/s12913-020-05753-4
19. Kitzinger, C., & Willmott, J. (2002). 'The thief of womanhood': Women's experience of polycystic ovary syndrome. *Social Science & Medicine, 54*(3), 349–361. https://doi.org/10.1016/S0277-9536(01)00034-3
20. Lim, S. S., Norman, R. J., Davies, M. J., & Moran, L. J. (2013). The effect of obesity on polycystic ovary syndrome: A systematic review and meta-analysis. *Obesity Reviews, 14*(2), 95–109. https://doi.org/10.1111/j.1467-789X.2012.01053.x
21. Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd ed.). Sydney: Psychology Foundation.
22. March, W. A., Moore, V. M., Willson, K. J., Phillips, D. I., Norman, R. J., & Davies, M. J. (2010). The prevalence of polycystic ovary syndrome in a community sample. *Human Reproduction, 25*(2), 544–551. https://doi.org/10.1093/humrep/dep399
23. Moran, L. J., Hutchison, S. K., Norman, R. J., & Teede, H. J. (2011). Lifestyle changes in women with PCOS: A systematic review. *BMC Women's Health, 11, 17*. https://doi.org/10.1186/1472-6874-11-17
24. Moran, L. J., Ranasinha, S., Zoungas, S., et al. (2015). Sociodemographic predictors of mental health in women with PCOS. *Journal of Psychosomatic Obstetrics & Gynecology, 36*(3), 135–144. https://doi.org/10.3109/0167482X.2015.1059414
25. Naslund, J. A., & Aschbrenner, K. A. (2016). Digital technology for mental health in chronic illness. *Psychiatric Services, 67*(9), 964–966. https://doi.org/10.1176/appi.ps.201600093
26. Pasch, L. A., Gregorich, S. E., Katz, P. K., et al. (2016). Infertility-related stress in women with PCOS. *Fertility and Sterility, 105*(2), 450–458. https://doi.org/10.1016/j.fertnstert.2015.10.019
27. Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group. (2004). Revised 2003 consensus on diagnostic criteria and long-term health risks related to polycystic ovary syndrome. *Fertility and Sterility, 81*(1), 19–25. https://doi.org/10.1016/j.fertnstert.2003.10.004
28. Streuli, I., Palladini, D., Keller, P., & Dubey, R. K. (2013). Psychological stress and reproductive function: A review. *Reproductive Biomedicine Online, 27*(4), 327–338. https://doi.org/10.1016/j.rbmo.2013.06.007
29. Teede, H. J., Misso, M. L., Costello, M. F., et al. (2018). Recommendations from the international evidence-based guideline for the assessment and management of PCOS. *Human Reproduction, 33*(9), 1602–1618. https://doi.org/10.1093/humrep/dey256
30. Trent, M. E., Rich, M., Austin, S. B., & Gordon, C. M. (2002). Quality of life in adolescent girls with PCOS. *Archives of Pediatrics & Adolescent Medicine, 156*(6), 556–560. https://doi.org/10.1001/archpedi.156.6.556
31. Tzanetakou, I. P., Karageorgiou, V., & Duntas, L. H. (2012). The impact of physical activity on PCOS-related depression and metabolic profile. *Hormones, 11*(4), 384–393. https://doi.org/10.14310/horm.2002.1390
32. Wild, R. A., Rizzo, M., Clifton, S., & Carmina, E. (2011). Lipid levels in polycystic ovary syndrome: A systematic review and meta-analysis. *Fertility and Sterility, 95*(3), 1073–1081.e11. https://doi.org/10.1016/j.fertnstert.2010.11.006
33. World Health Organization. (2008). *WHO STEPwise approach to surveillance (STEPS).* Geneva: WHO.