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RESEARCH ARTICLE

Polycystic Ovary Syndrome's (PCOS) epidemiological and psychosocial aspects in Bihar: A Multifactorial Analysis

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Abstract

Particularly in areas like Bihar, the prevalent endocrine disorder known as polycystic ovarian syndrome (PCOS) affects women's health-related quality of life (HRQOL). This study examined the PCOS prevalence, clinical characteristics, and HRQOL effects in Bihar and determined a significant reduction in HRQOL due to problems such as irregular periods, obesity, and infertility. Cross-sectional studies in Patna and Gaya included 560 women (300 Gaya, 160 from Patna, 200 controls), and it was PCOS. Diagnosed using the Rotterdam criteria after being evaluated with the PCOSQ questionnaire and the SF-36. Results showed that PCOS patients scored low points in all HRQOL domains, infertility and obesity were important predictors of poor outcomes, and urban women had more prominent hormonal imbalances. These results show how crucial it is to provide medical and mental health care to women with PCOS in Bihar.

Keywords: Polycystic Ovary Syndrome, PCOS, Bihar, Quality of life, infertility, obesity, urban-rural, SF-36, PCOSQ, hormonal imbalance

INTRODUCTION

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PCOS, the most prevalent endocrine disorder affecting women of reproductive age, affects a large portion of the world's population with a prevalence of up to 15-20 percent [1,2]. The prevalence of PCOS makes it a severe public health issue that impacts people's personal health and health systems globally [2]. The complicated interplay of metabolic diseases, hormone imbalances, and reproductive challenges that characterize PCOS results in a very varied clinical picture. Typically, Rotterdam's criteria are used to make the diagnosis [4]. The Rotterdam criteria require the presence of at least two polycystic ovaries for ultrasound, clinical or biochemical signs, when other causes are excluded [4,7]. The prevalence of PCOS is high worldwide, including many clinical symptoms that can seriously damage a female's physical and emotional well-being. The infertility and problems in question can be attributed to frequent symptoms such as irregular menstrual cycles that often occur as amenorrhea (lack of periods) or poor (rare periods) [5,8]. One more characteristic is defined. Destructive cosmetic issues like androgen alopecia or female hair loss can result from PCOS. patterns) severe acne and excessive growth of body and facial hair or hirsutism. PCOS-affected women are. More likely to suffer from cardiovascular disease, insulin resistance, 2-disaccharide, and dyslipidaemia. besides these apparent symptoms [4,6]. Serious long-term health effects necessitate proactive measures. early diagnosis and management strategies. But not every population and region is. Impacted by PCOS. Many people have been strongly reminded of the challenges posed by PCOS. Developing nations such as India's Bihar because of the intricate social interactions, as well as systemic elements [3,8,9]. Many women are not receiving a diagnosis or sub-average treatment, especially as they do not have access to comprehensive health services to specialized reproductive and endocrine care. Furthermore, ubiquitous social stigma associated with women's health issues can prevent women from maintaining timely medical care, particularly in terms of menstruation, fertility, and body image. This stigma often prevents people from talking openly about their symptoms. This delays diagnosis and exacerbates the illness [9,11]. A general lack of general knowledge and education through PCOS reinforces these issues. A lack of accurate information and awareness of disorders can prevent both patients and healthcare professionals from realizing symptoms at the appropriate time, further delaying the need for appropriate intervention [21]. As a result, women in these fields are often exposed to areas of more severe and difficult symptoms and complications. Serious emotional burden, social exclusion, and spouses can cause all women in these environments, from problematic infertility women affected by PCOS. Visible symptoms of hyperandrogenism can cause serious problems with the body's image, which can affect self-esteem and general mental health [4,7,9]. In addition to the birth rate, persistent irregularities in the menstrual cycle also led to persistent symptoms and anxiety. These complex topics eventually lead to a decrease in the

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general life quality [5]. This goes beyond simple illnesses to reduce psychological distress, social exclusion, and decline in function [20]. The medical and research communities frequently use reputable and validated assessment tools to methodically measure and quantify these extensive and wide-ranging impacts [5,9]. The SF-36 is a 36-item survey that provides an in-depth image of health-related quality of life. SF-36 is a common health assessment that assesses the following eight health areas [11]. In contrast, PCOSQ is a disease-specific measure produced to identify special challenges in life's quality that females experience, elucidated to PCOS, including emotions, body hair, weight, infertility, and menstrual problems [7,22]. A thorough grasp of how PCOS affects a woman's physical capabilities emotional health, and social interactions can be attained through the combined utilization of these tools [17,22,29]. These thorough evaluations are essential for determining the actual impact of PCOS and for directing the creation of focused, all-encompassing treatments meant to enhance the lives of impacted women [23].

MATERIALS AND METHODS

Study Design

A cross-sectional observational study was carried out in a number of primary healthcare facilities in Bihar. They included Gaya Patna Medical College and Hospital and Jannayak Karpoori Thakur Medical College and Hospital in Madhepura. Using a case-control methodology the study's primary target population was supplemented in some sections with healthy participants for comparison.

Study Population

Sample Dimensions. There are 300 women with PCOS in Gaya, ages 15 to 35.

Patna: 160 teenage girls with PCOS, 80 from each of the urban and rural regions.

Madhepura: 90 women with PCOS categorized by BMI7, ranging in age from 15 to 39.

Biochemical study in Patna: 50 PCOS patients and 50 healthy controls were included

Inclusion Criteria.

Women, varying in age from 13 to 39, contingent upon the study. Rotterdam criteria (at least two of the following): oligo/anovulation, clinical/biochemical hyperandrogenism, 35 were used to diagnose PCOS.

The exclusion criteria

Women with thyroid issues, hyperprolactinemia, congenital adrenal hyperplasia, and other endocrine disorders.

People with long-term conditions that affect reproductive health or those taking drugs that alter hormone levels

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Data Collection Procedures

Recruitment: Eligible participants are gathered from endocrinology and gynaecology outpatient departments. To ensure representative sampling and reduce selection bias, random selection was employed.

Clinical examination and history. The menstrual history, age at onset of symptoms, family history of PCOS, and information regarding infertility were all meticulously recorded for every participant. Alopecia, obesity, acne, and hirsutism were among the clinical characteristics evaluated. Additionally, we measured anthropometric parameters including height, weight, and BMI.

Imaging and Laboratory Research: Hormonal Assays: Using conventional laboratory techniques, we determined the serum levels of prolactin, insulin, FSH, testosterone, LH, and SHBG. Assessing fasting glucose and a comprehensive lipid profile, including total cholesterol, LDL, and lipoproteins, was among the metabolic parameters. Ultrasonography: To verify the existence of polycystic ovarian morphology, we conducted either a transvaginal or pelvic ultrasound.

Quality of Life Assessment:

In pertinent research, validated HRQOL questionnaires like the SF-36 and PCOSQ are used.

Statistical analysis.

Software: SPSS v23.05 is the software that was used to enter and analyse the data.

In descriptive statistics, proportions, means, and standard deviations were computed for clinical and demographic variables.

Comparative analysis.

For continuous variables, Mann-Whitney U tests or independent t-tests are used. (e. g. 3. hormone levels in groups from urban and rural areas) [31].

For categorical variables, chi-square tests (e. g. 3 rates of infertility and symptom prevalence).

The p-value was deemed statistically significant if it was less than 0.05.

RESULTS

Prevalence of PCOS

Applying the criteria, meta-analyses and systematic reviews show us that the PCOS in women of India is around 11% (with a 95% confidence interval of 7% to 15%). It's interesting to note that 40% of Bihari women were diagnosed with PCOS based on ultrasonography in studies that specifically compared various ethnic groups. The fact that this percentage is lower than the 62% recorded for Assamese women shows how regional variation exists even within India. In India as a whole, prevalence rates vary greatly from 2% to 35%. The particular geographic location, the ethnicity of the study population, and the diagnostic standards employed all have a significant impact on these variations. Generally speaking, rates are higher in urban areas than in rural

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ones. The Northeast reports lower rates than Central and North India, which includes Bihar.

Clinical and demographic characteristics

In a cross-section study using 160 young girls with PCOS in Patna (80 in the city and 80 in the country), the mean age of early and family history was not significantly different between urban and rural groups. The following clinical characteristics were most frequently observed: Amenorrhea or oligomenorrhea. Acne and hirsutism are examples of hyperandrogenism. To receive inability. Ferriman's Galway values, which measure the degree of Bronaism, vary significantly between studies, ranging from 1.6% to 37.9%. According to a large multicentre study conducted in India, the characteristics of the phenotype include polycystic ovarian morphology and hyperandrogenism without ovulation dysfunction. The disease was discovered in about 40-8% of cases.

Biochemical and hormonal findings

Interestingly, compared to rural youth, those with urban PCOS had higher testosterone levels and had LH: FSH conditions. Nevertheless, not all of these variations are statistically significant. The discovered hormone profiles containing high testosterone, FSH, and LH levels were generally consistent with the usual presentation of PCOS.

Well-being and comorbidities

Among the numerous health hazards linked to PCOS are metabolic syndrome, obesity, and insulin resistance, as well as heart disease. infertility as well as the main causes of irregular menstruation. and mental strain, women's quality of life suffers. Possibly because of them. With that, urban girls and women with PCOS seem to have more metabolic space and lifestyle. mental health issues [16].

Table no.1: Bihar and Indian women's clinical and epidemiological characteristics of PCOS

Parameter	Finding
PCOS Prevalence (Rotterdam)	~11.3% (India overall); 40% by USG in Bihari women
Urban vs. Rural Prevalence	Higher in urban areas, Central/North India (Bihar) is higher than Northeast.
Most Common Phenotype	Phenotype C (Hyperandrogenism + PCOM)

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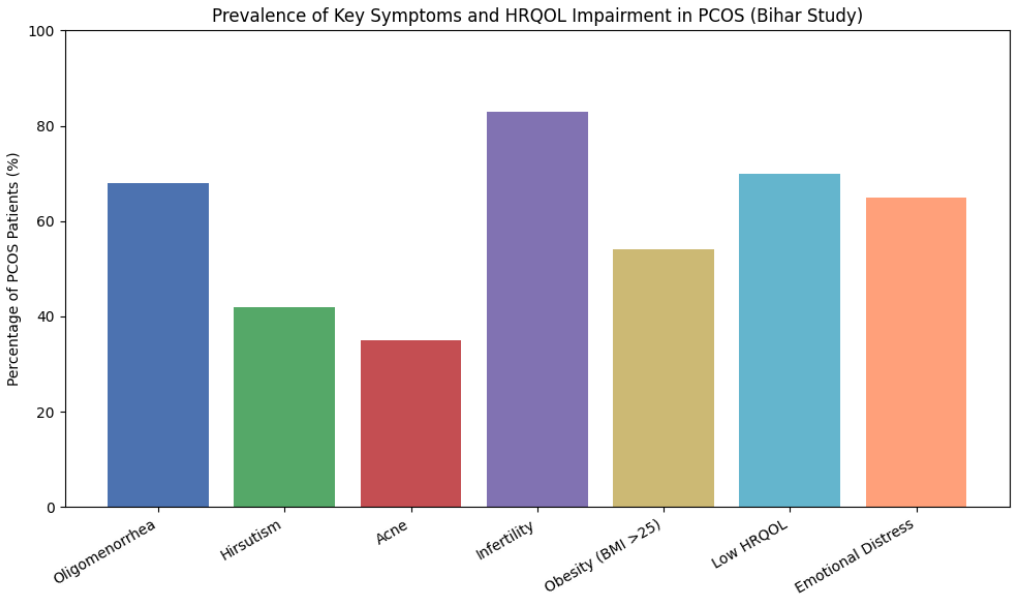
Parameter	Finding
Hirsutism Prevalence (Ferriman-Gallwey)	1.6% to 37.9%
Key Symptoms	Oligomenorrhea/amenorrhea, hyperandrogenism, infertility
Hormonal Findings	Higher LH: FSH and testosterone in urban adolescents
Quality of Life Impact	Significant psychological and metabolic morbidity

According to these findings, for women, PCOS is a serious health problem. Bihar and throughout India with notable regional and urban-rural variations in prevalence, phenotype distribution, and clinical impact.

Figure 1. Prevalence of Key Symptoms and HRQOL Impairment in PCOS (Bihar Study)



Prevalence of significant clinical symptoms and impairment of HRQOL in Bihar's PCOS-affected women. Each symptom or HRQOL problem is represented by the percentage of PCOS patients who experience it in the current study cohort.

Figure 2. Stacked Bar Chart: Distribution of Major PCOS Symptoms Urban vs. Rural

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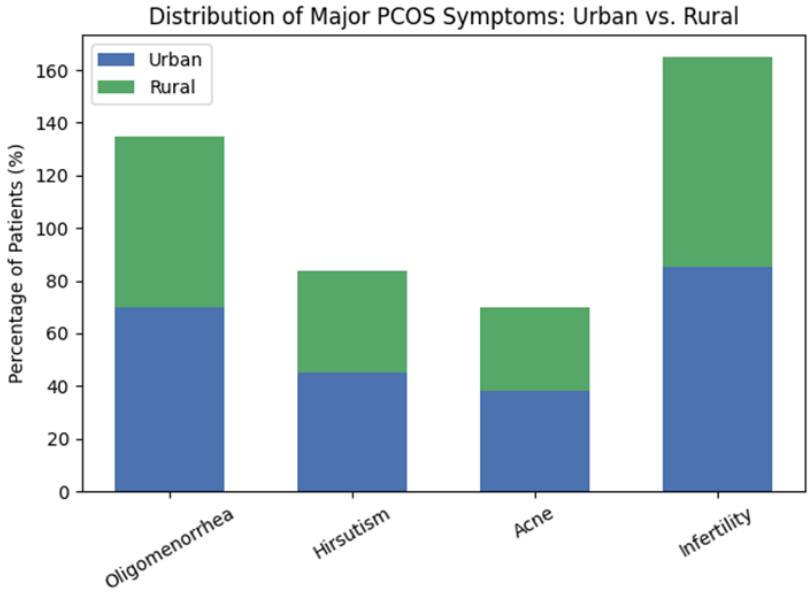

Distribution of key PCOS symptoms among urban and rural women in Bihar. The chart illustrates the comparative prevalence of oligomenorrhea, hirsutism, acne, and infertility in urban versus rural subgroups of the study population.

DISCUSSION

According to this study, PCOS is a widespread health problem that affects a lot of women in Bihar, which is in complete accord with national trends [32]. The typical clinical presentation, which includes infertility, obesity, excess androgens, and irregular periods, closely resembles national data [26]. Fascinatingly, Bihar's urban women frequently exhibit more serious metabolic and hormonal problems. Their quality of life is significantly reduced by the disorder primarily due to infertility and the resulting psychological distress [20,21]. The rising incidence and delayed diagnosis of PCOS are caused by several factors, including changing lifestyles, socioeconomic circumstances, and a lack of awareness [30]. To truly improve outcomes for women in Bihar who have PCOS, these findings ultimately point to the urgent need for early detection, strong community education, and all-encompassing multidisciplinary management.

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CONCLUSION

For women in Bihar during the reproductive age, PCOS is a very serious and complex health problem that reflects both India and the global epidemiological trends. Our study shows that infertility, obesity, hyperandrogenicity, and irregular menstruation in the area are very widespread, making urban women more difficult to find hormonal and metabolic issues. Quality of life is heavily affected by disability. This highlights the need for early diagnosis and the need for all integrated management strategies that consider mental and physical health. It is essential to ameliorate psychosocial stress, particularly through the formation of community and mental health, stigma associated with infertility, and body image. New initiatives should include region-specific guidelines and specialized initiatives on public health to improve the health of women in Bihar.

REFERENCES

1. Sirmans SM, Pate KA. Epidemiology, diagnosis, and management of polycystic ovary syndrome. Clin Epidemiol. 2013 Dec 18;6:1-13. Doi: 10.2147/CLEP.S37559. PMID: 24379699; PMCID: PMC3872139.

2. Balen A, Conway G, Kaltsas G. Polycystic ovary syndrome: the spectrum of the disorder in 1741 patients. Hum Reprod. 1995;10:2107 2111. doi: 10.1093/oxfordjournals.humrep.a136243.

3. Eden J. The polycystic ovary syndrome presenting as resistant acne successfully treated with cyproterone acetate. Med J Aust. 1991;155(10):677–680. doi: 10.5694/j.1326-5377.1991.tb93959.x

4. Zawadski JK, Dunaif A. Diagnostic criteria for polycystic ovary syndrome. In: Givens JHF, Merriman G, editors. The Polycystic Ovary Syndrome. Cambridge, MA: Blackwell Scientific; 1992. pp. 377–384.

5. Azziz R, Woods KS, Reyna R, Key TJ, Knochenhauer ES, Yildiz BO. The prevalence and features of the polycystic ovary syndrome in an unselected population. J Clin Endocrinol Metab. 2004;89:2745–2749.

6. Asuncion M, Calvo RM, San Millan JL, Sancho J, Avila S, Escobar-Morreale HF. A prospective study of the prevalence of the polycystic ovary syndrome in unselected Caucasian women from Spain. J Clin Endocrinol Metab. 2000;85:2434–2438. doi: 10.1210/jcem.85.7.6682.

e-ISSN: 3048-9814 (Online)
Vol. 2 No. 4 (2025)
April 2025 Issue

7. Tehrani FR, Simbar M, Tohidi M, Hoseinpanah F, Azizi F. The prevalence of polycystic ovary syndrome in a community sample of Iranian population: Iranian PCOS prevalence study. Reprod Biol Endocrinol. 2011;9:39. doi: 10.1186/1477-7827-9-39.

8. Crosignani PG, Nicolosi AE. Polycystic ovarian disease: heritability and heterogeneity. Hum Reprod Update. 2001;7(1):3–7. doi: 10.1093/humupd/7.1.3.

9. Bilo L, Meo R, Valentino R, Di Carlo C, Striano S, Nappi C. Characterization of reproductive endocrine disorders in women with epilepsy. J Clin Endocrinol Metab. 2001;86:2950–2956.

10. Nicandri KF, Hoeger K. Diagnosis and treatment of polycystic ovarian syndrome in adolescents. Curr Opin Endocrinol Diabetes Obes. 2012;19(6):497–504.

11. Ehrmann D, Sturis J, Byrne M, Karrison T, Rosenfield R, Polonsky K. Insulin secretory defects in polycystic ovary syndrome: relationship to insulin sensitivity and family history of non-insulin dependent diabetes mellitus. J Clin Invest. 1995;96:520–527.

12. Legro RS, Blanche P, Krauss RM, Lobo RA. Alterations in low-density lipoprotein and high-density lipoprotein subclasses among Hispanic women with polycytic ovary syndrome: influence of insulin and genetic factors. Fertil Steril. 1999;72(6):990–995. doi: 10.1016/s0015-0282(99)00401-x.

13. Vrbikova J, Cifkova R, Jirkovska A, et al. Cardiovascular risk factors in young Czech females with polycystic ovary syndrome. Hum Reprod. 2003;18(5):980–894. doi: 10.1093/humrep/deg218.

14. Tabassum F, Jyoti C, Sinha HH, Dhar K, Akhtar MS. Impact of polycystic ovary syndrome on quality of life of women in correlation to age, basal metabolic index, education and marriage. PLoS One. 2021 Mar 10;16(3):e0247486. doi: 10.1371/journal.pone.0247486. PMID: 33690645; PMCID: PMC7946178.

15. Escobar-Morreale HF. Polycystic ovary syndrome: definition, aetiology, diagnosis and treatment. Nature Reviews Endocrinology. 2018;14(5):270. 10.1038/nrendo.2018.24

e-ISSN: 3048-9814 (Online)
Vol. 2 No. 4 (2025)
April 2025 Issue

16. Kalra P, Bansal B, Nag P, Singh JK, Gupta RK, Kumar S, et al. Abdominal fat distribution and insulin resistance in Indian women with polycystic ovarian syndrome. Fertility and sterility. 2009;91(4):1437–40. 10.1016/j.fertnstert.2008.06.037

17. Kumarapeli VL, Seneviratne RD, Wijeyaratne CN. Health-related quality of life and psychological distress in polycystic ovary syndrome: a hidden facet in South Asian women. BJOG: An International Journal of Obstetrics & Gynaecology. 2011;118(3):319–28.

18. Micucci C, Valli D, Matacchione G, Catalano A. Current perspectives between metabolic syndrome and cancer. Oncotarget. 2016;7(25):38959. 10.18632/oncotarget.8341

19. Kaczmarek C, Haller DM, Yaron M. Health-related quality of life in adolescents and young adults with polycystic ovary syndrome: a systematic review. Journal of pediatric and adolescent gynecology. 2016;29(6):551–7. 10.1016/j.jpag.2016.05.006

20. Brazier JE, Harper R, Jones NM, O'cathain A, Thomas KJ, Usherwood T, et al. Validating the SF-36 health survey questionnaire: new outcome measure for primary care. British medical journal. 1992;305(6846):160–4. 10.1136/bmj.305.6846.160

21. Okamura Y, Saito F, Takaishi K, Motohara T, Honda R, Ohba T, et al. Polycystic ovary syndrome: early diagnosis and intervention are necessary for fertility preservation in young women with endometrial cancer under 35 years of age. Reproductive medicine and biology. 2017;16(1):67–71. 10.1002/rmb2.12012

22. Panico A, Messina G, Lupoli GA, Lupoli R, Cacciapuoti M, Moscatelli F, et al. Quality of life in overweight (obese) and normal-weight women with polycystic ovary syndrome. Patient preference and adherence. 2017;11:423. 10.2147/PPA.S119180

23. Moghadam ZB, Fereidooni B, Saffari M, Montazeri A. Polycystic ovary syndrome and its impact on Iranian women's quality of life: a population-based study. BMC Womens Health. 2018;11;18(1):164. 10.1186/s12905-018-0658-1

24. Teede, H.J.; Hutchison, S.; Zoungas, S.; Meyer, C. Insulin Resistance, the Metabolic Syndrome, Diabetes, and Cardiovascular Disease Risk in Women with PCOS. *Endocrine* 2006, *30*, 45–53.

e-ISSN: 3048-9814 (Online)
Vol. 2 No. 4 (2025)
April 2025 Issue

25. Copp, T.; Hersch, J.; Muscat, D.M.; McCaffery, K.J.; Doust, J.; Dokras, A.; Mol, B.W.; Jansen, J. The Benefits and Harms of Receiving a Polycystic Ovary Syndrome Diagnosis: A Qualitative Study of Women's Experiences. *Hum. Reprod. Open* 2019, *2019*, hoz026.

26. Deeks, A.A.; Gibson-Helm, M.E.; Paul, E.; Teede, H.J. Is Having Polycystic Ovary Syndrome a Predictor of Poor Psychological Function Including Anxiety and Depression? *Hum. Reprod.* 2011, *26*, 1399–1407.

27. Copp, T.; McCaffery, K.; Azizi, L.; Doust, J.; Mol, B.W.J.; Jansen, J. Influence of the disease label «polycystic ovary syndrome» on intention to have an ultrasound and psychosocial outcomes: A randomised online study in young women. *Hum. Reprod.* 2017, *32*, 876–884

28. Karjula, S.; Morin-Papunen, L.; Franks, S.; Auvinen, J.; Järvelin, M.-R.; Tapanainen, J.S.; Jokelainen, J.; Miettunen, J.; Piltonen, T.T. Population-Based Data at Ages 31 and 46 Show Decreased HRQoL and Life Satisfaction in Women with PCOS Symptoms. *J. Clin. Endocrinol. Metab.* 2020, *10*, 1814–1826.

29. Tan, S.; Hahn, S.; Benson, S.; Janssen, O.E.; Dietz, T.; Kimmig, R.; Hesse-Hussain, J.; Mann, K.; Schedlowski, M.; Arck, P.C.; et al. Psychological Implications of Infertility in Women with Polycystic Ovary Syndrome. *Hum. Reprod.* 2008, *23*, 2064–2071.

30. Chen, X.; Kong, L.; Piltonen, T.T.; Gissler, M.; Lavebratt, C. Association of Polycystic Ovary Syndrome or Anovulatory Infertility with Offspring Psychiatric and Mild Neurodevelopmental Disorders: A Finnish Population-Based Cohort Study. *Hum. Reprod.* 2020, *35*, 2336–2347

31. Siemer L, Brusse-Keizer MGJ, Postel MG, Ben Allouch S, Sanderman R, Pieterse ME Adherence to Blended or Face-to-Face Smoking Cessation Treatment and Predictors of Adherence: Randomized Controlled Trial, J Med Internet Res 2020;22(7):e17207

32. Hassan, A.A., Alotaibi, A.F., Almatar, F.A. *et al.* Assessment of Health-Related Quality of Life and the Role of Social Support in Reducing the Severity of Symptoms in Women with Polycystic Ovary Syndrome. *J Obstet Gynecol India* **75** (Suppl 1), 206–214 (2025).

33. Shu Qin Wei, Marianne Bilodeau-Bertrand, Nathalie Auger, Association of PCOS with offspring morbidity: a longitudinal cohort study, *Human Reproduction*, Volume 37, Issue 9, September 2022, Pages 2135–2142.

e-ISSN: 3048-9814 (Online)
Vol. 2 No. 4 (2025)
April 2025 Issue

34. Kharbanda, Sidharth,†; Anand, R.. Health-related quality of life in patients with chronic obstructive pulmonary disease: A hospital-based study. Indian Journal of Medical Research 153(4):p 459-464, April 2021.

35. Nahar, K. (2019). Polycystic Ovary Syndrome in Teenage and Young Women. *Journal of Bangladesh College of Physicians and Surgeons*, *37*(2), 78–82.