



## Prevalence of Polycystic Ovary Syndrome among Women in Rural area and the Outskirts of Baghdad

\*Dr. Khansaa Hameed Mnajed

Higher Diploma in Obstetrics and gynaecology /Iraqi Ministry of Health/Mahmoudiyah General Hospital. Baghdad /Iraq.

DOI: 10.5281/zenodo.11528514

Submission Date: 20 April 2024 | Published Date: 08 June 2024

\*Corresponding author: **Dr. Khansaa Hameed Mnajed**

Higher Diploma in Obstetrics and gynaecology /Iraqi Ministry of Health/Mahmoudiyah General Hospital. Baghdad /Iraq.

### Abstract

**Background:** Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age. It is characterized by irregular menstrual cycles, excess androgen levels and polycystic ovaries. PCOS poses significant health burden due to its associated reproductive, metabolic and psychological complications. Most of the existing research on PCOS epidemiology has been conducted in urban areas. However, rural populations could be at different risk due to environmental and lifestyle factors distinct from urban settings.

**Objective:** The aim of this study is to determine the prevalence of PCOS among women in rural area and outskirts of Baghdad.

**Methodology:** This will be a cross sectional study conducted in rural and outskirts across Baghdad. Among the 3370 patients, 131 individuals have been diagnosed with Polycystic Ovary Syndrome and have visited the outpatient clinic between 1 January 2022 and 31 December 2022. Their objective of visiting was to undergo screening, determine the reasons, and receive suitable therapy for their condition. Written informed consent will be obtained and participants will be asked to fill a questionnaire including demographic details, medical history, lifestyle factors etc. Clinical and biochemical assessment including body mass index, waist circumference, hormone (testosterone, progesterone) levels and transvaginal ultrasound will be done to diagnose PCOS status according to the Rotterdam criteria. Collected data will be entered and analyzed using SPSS software.

**Anticipated Results:** The study expects to find 66.3% of PCOS cases were in the age less than 25 years old; 92.8% were married; 42% had a high school education; 65% were obese and 74.2% of them had a history of infertility. Only 1.2% had a repeated abortion and 24.6% had irregular menstrual periods. The findings emphasize the need for targeted healthcare strategies that address the unique needs of this population. By raising awareness, improving access to healthcare services, and promoting healthy lifestyles, the burden of PCOS can be reduced, and the overall well-being of women in rural areas can be improved.

**Keywords:** Polycystic Ovary Syndrome; Rural, Baghdad.

### Introduction

Polycystic Ovary Syndrome (PCOS) is a common gynecological endocrinopathy that affects women worldwide, including those in rural areas in Iraq [1]. PCOS is characterized by hormonal imbalances, ovarian cysts, and metabolic abnormalities [2]. It can lead to various symptoms and health risks, including infertility, irregular menstrual cycles, excessive hair growth, acne, obesity, insulin resistance, type 2 diabetes, dyslipidemia, cardiovascular disease, and endometrial carcinoma [3]. The prevalence of PCOS varies depending on the population being assessed and the diagnostic criteria used [4]. In general, the reported prevalence of PCOS ranges between 2.2% to 26% in various countries [5-12]. However, there is a lack of specific data on the prevalence of PCOS among women in rural areas in Iraq [13]. Several risk factors have been associated with the development of PCOS. These include genetic factors, insulin resistance, obesity, sedentary lifestyle, and certain environmental factors. It is important to note that these risk factors

may vary among different populations and ethnicities [14]. PCOS can significantly impact a woman's quality of life [15]. The symptoms and health risks associated with PCOS can cause physical discomfort, emotional distress, and fertility issues [16]. Women with PCOS may experience body image concerns, depression, anxiety, and reduced self-esteem [17]. Therefore, it is crucial to provide appropriate medical care, support, and education to improve the quality of life for women with PCOS. The main objective of the study is to assess the prevalence of PCOS among women in rural areas in Baghdad.

## Methodology

### Study Design

This study utilized a cross-sectional design to assess the prevalence of PCOS among women in rural areas. Cross-sectional studies are observational in nature and provide a snapshot of the population at a specific point in time. This design allows for the collection of data on various factors related to PCOS, such as risk factors, symptoms, and management strategies.

### Sample Selection

The sample for this study consisted of women residing in rural areas. Among the 3370 patients, 131 individuals have been diagnosed with Polycystic Ovary Syndrome and have visited the outpatient clinic between 1 January 2022 and 31 December 2022. Their objective of visiting was to undergo screening, determine the reasons, and receive suitable therapy for their condition. Data Collection.

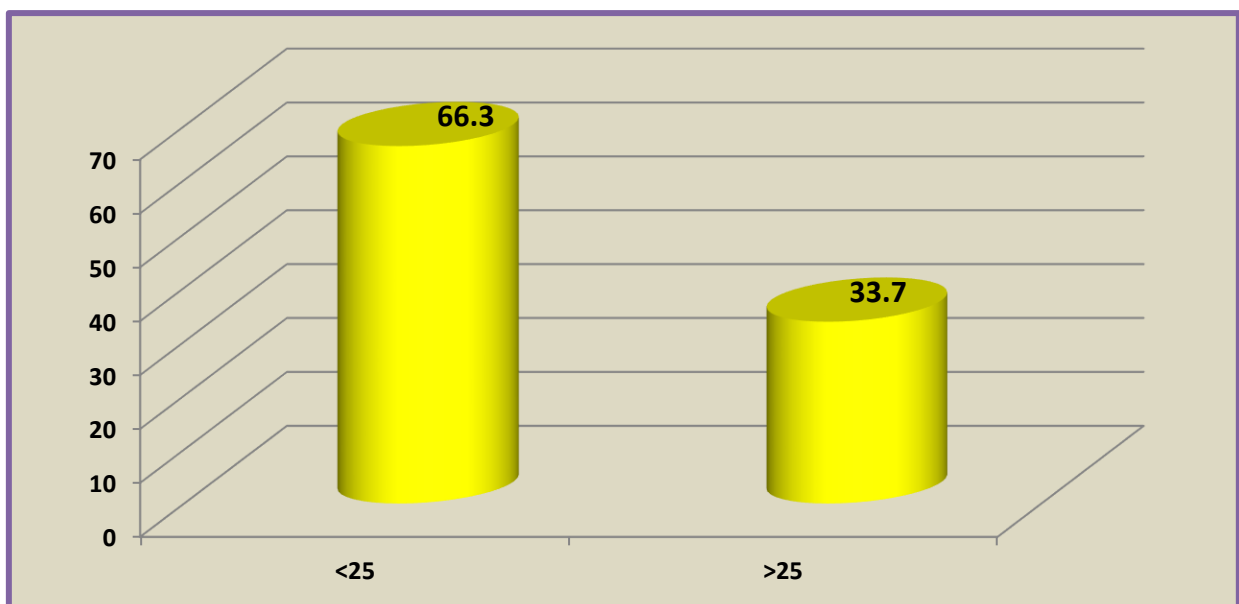
Data collection was carried out through face-to-face interviews conducted by trained research assistants. The interviews were conducted using a structured questionnaire that covered various aspects related to PCOS, including demographic information, medical history, lifestyle factors, and symptoms. The questionnaire was designed based on established diagnostic criteria and validated measurement tools. In addition to the interviews, physical examinations were conducted to assess the presence of clinical signs of PCOS, such as hirsutism and acne. Anthropometric measurements, including height, weight, and waist circumference, were also taken to evaluate the participants' body mass index (BMI) and waist-to-hip ratio.

### Data Analysis

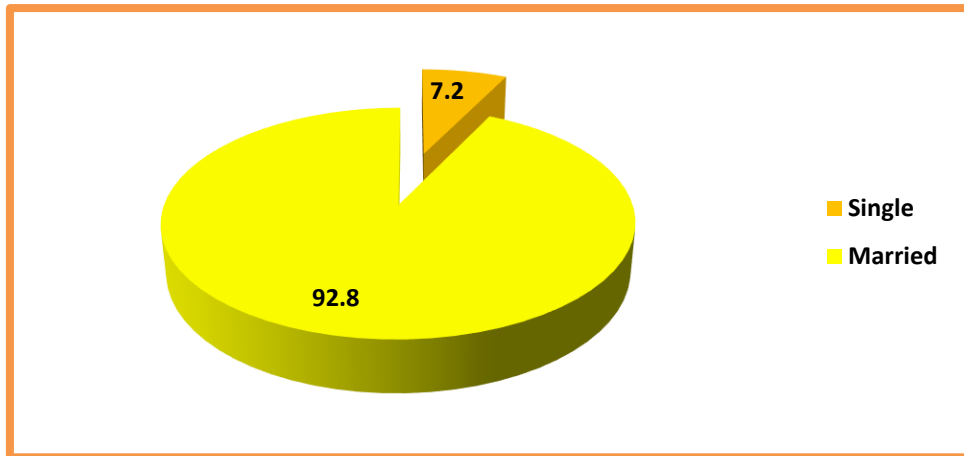
The collected data were entered into a computerized database and analyzed using statistical software. Descriptive statistics, such as frequencies and percentages, were used to summarize the demographic characteristics of the participants and the prevalence of PCOS in the rural areas.

## Results

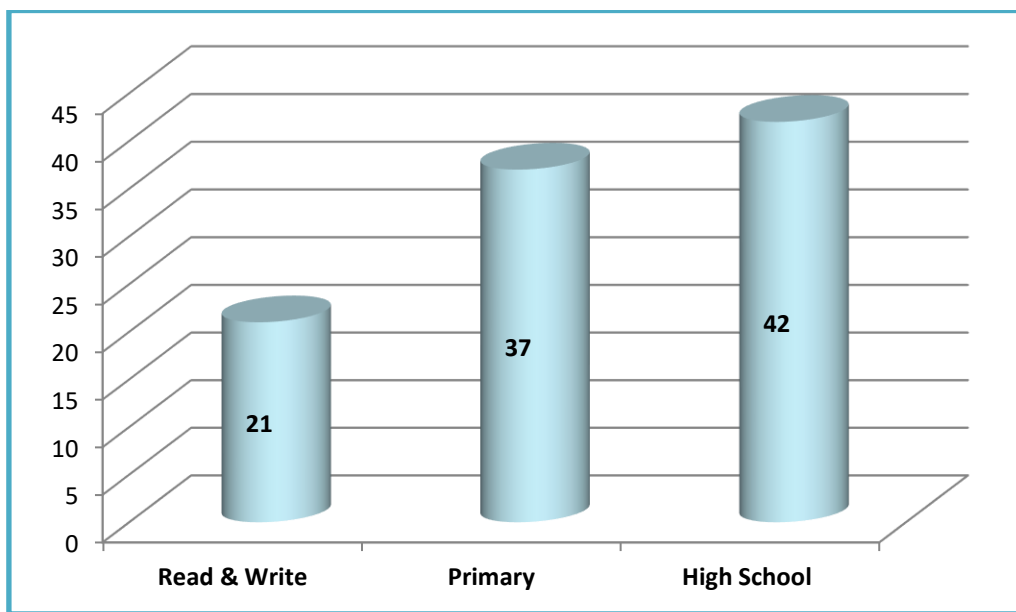
Out of the 3370 patients, 131 of them were suffered from PCOS, 66.3% are in individuals younger than 25 years old, while 33.7% are in those older than 25 years old, as seen in figure 1. 92.8% of the individuals surveyed were married, whereas 7.2% were single, as seen in figure 2. Figure 3 shows that 42% of them had a high school education level and 37% of them had a primary education level.



**Figure 1:** Par graph showing the percentage of age groups among patients with polycystic ovary syndrome

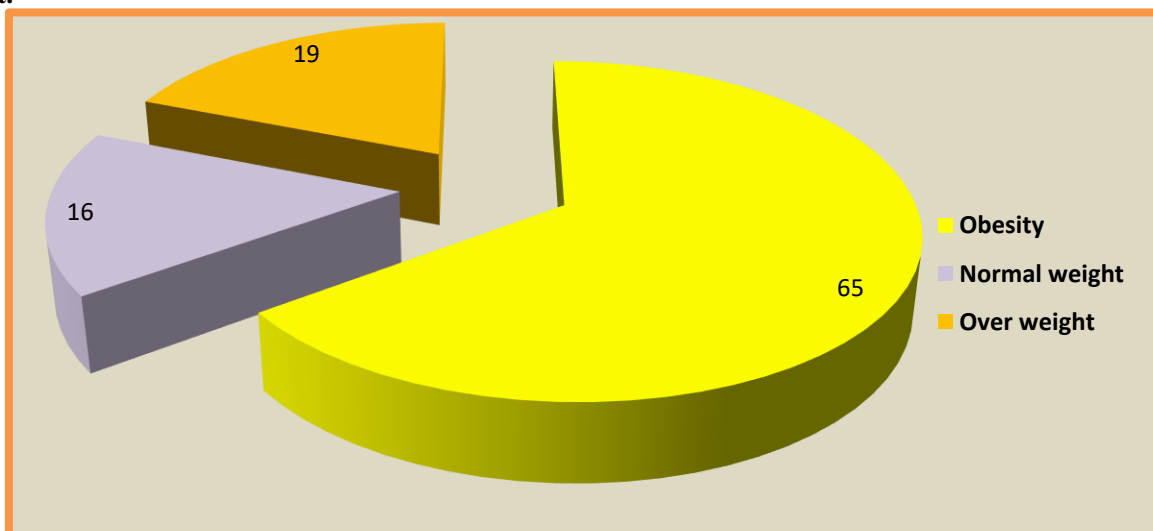


**Figure 2:** Pie graph showing the percentage of marital status among patients with polycystic ovary syndrome



**Figure 3:** Bar graph showing the percentage education levels among patients with polycystic ovary syndrome

Figure 4 illustrates that 65% of the PCOS were classified as obese, 19% were overweight, and 16% had a normal weight.



**Figure 4:** Pie graph showing the percentage of BMI among patients with polycystic ovary syndrome

Figure 5 show that 74.2% of the PCOS had a previous record of infertility, whereas 25.8% did not.

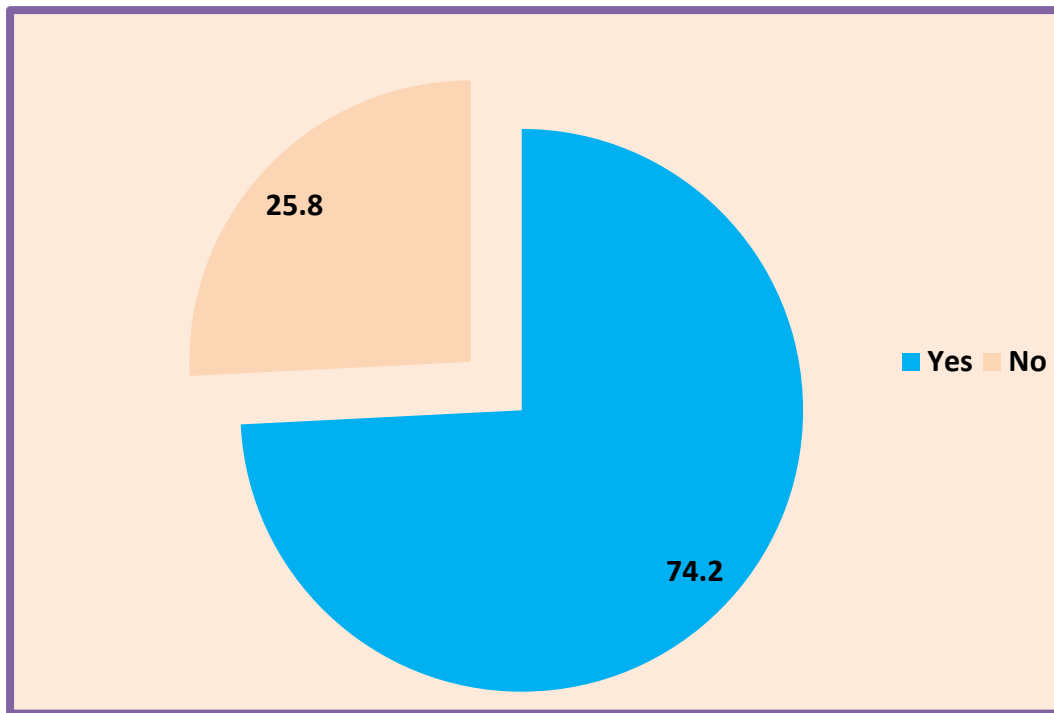


Figure 5: Pie graph showing the percentage of infertility history among patients with polycystic ovary syndrome

Figure 6 show that 24.6% of them had a history of menstrual irregularity, whereas 75.4% did not.

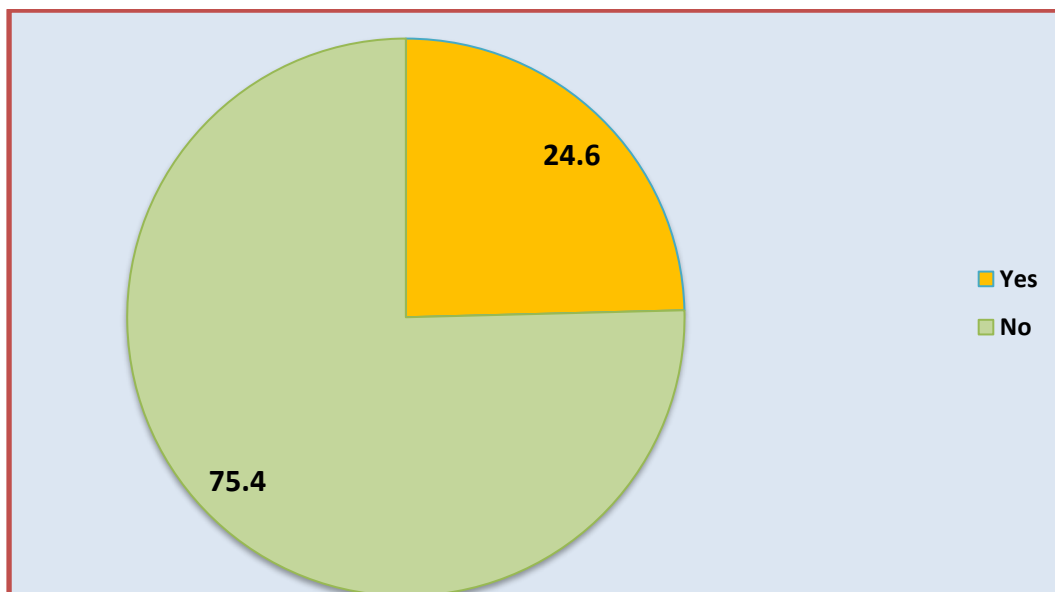
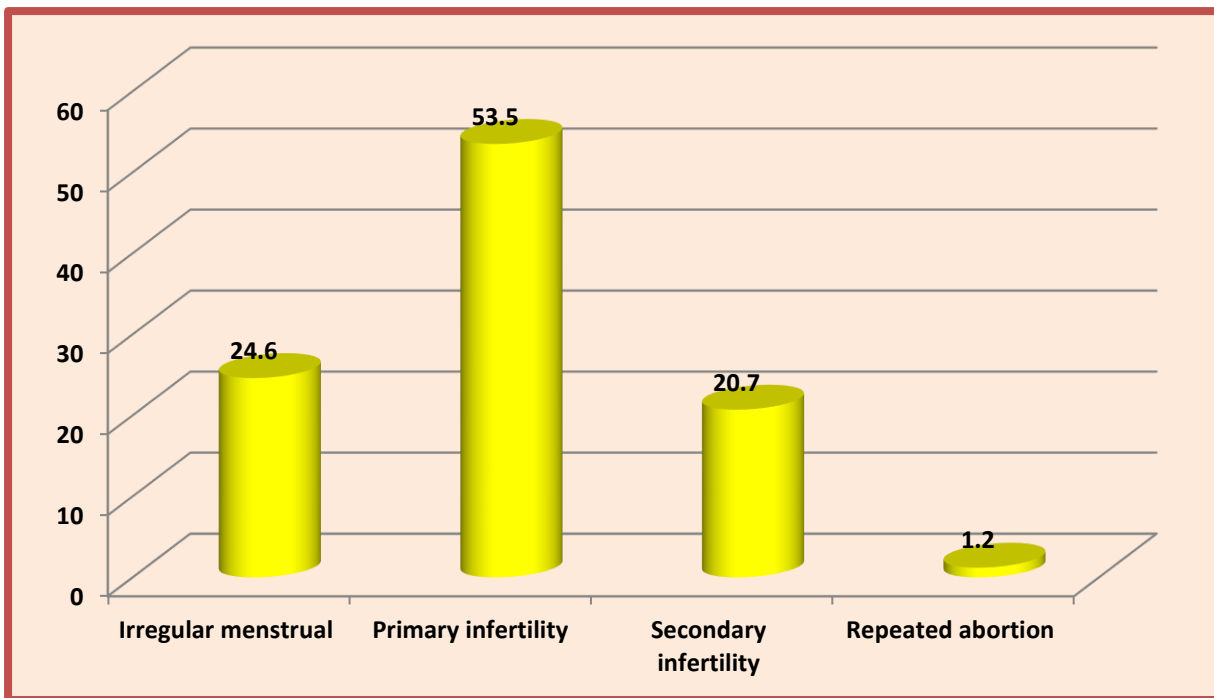


Figure 6: Pie graph showing the percentage of menstrual irregularity among patients with polycystic ovary syndrome

According to figure 7, 53.5% of the individuals experienced primary infertility, 20.7% experienced secondary infertility, and 24.6% suffered from irregular menstrual periods.



**Figure 7:** Pie graph showing the percentage of chief complain among patients with polycystic ovary syndrome

## Discussion

The findings of this study revealed a significant prevalence of PCOS among women in rural areas. Out 3370 of the total participants, 131 were diagnosed with PCOS based on the established diagnostic criteria. This high prevalence highlights the need for increased awareness, early detection, and appropriate management strategies for PCOS in rural communities [3]. The prevalence of PCOS in rural areas was found to be comparable to or even higher than that reported in urban areas. This challenges the notion that PCOS is predominantly an urban health issue and emphasizes the importance of addressing PCOS in rural populations [18-19]. The findings suggest that PCOS is not limited to specific geographical locations but is a widespread health concern affecting women across different settings. The study identified several risk factors associated with PCOS among women in rural areas [20]. These risk factors included obesity, sedentary lifestyle, family history of PCOS, and poor dietary habits [21]. The primary factor contributing to the similarity in proportions between the countryside and the city is the rural population's adoption of urban customs, which has led to a shift in lifestyle and the development of unhealthy eating habits. Additionally, some individuals have chosen to leave the countryside and reside in urban areas. Obesity emerged as a significant risk factor for PCOS in rural areas [21]. The higher prevalence of obesity in rural communities, attributed to factors such as limited access to healthy food options and lower physical activity levels, may contribute to the increased risk of PCOS. Addressing obesity through targeted interventions and promoting healthy lifestyle habits should be a priority in managing PCOS in rural populations. The study also found 66.3% of them were in the age groups less than 25 years old and 33.7% in the older 25 ages. In 2013, Hsu reported the PCOS may have a genetic component, the clinical features of this disorder change with age, from adolescence to menopause and beyond. PCOS has potentially profound implications for women regarding anovulatory infertility and other symptoms related to elevated androgen levels in reproductive-aged women. In addition, older women are prone to significant health problems related to hyperinsulinemia, with a high risk for diabetes and cardiovascular risk factors [22]. The study highlighted the 92.8% of them were married. Navid and others showed that there is no significant difference between infertile women with or without PCOS in terms of marital satisfaction and social support ( $p > 0.05$ ) [23]. Furthermore, the study revealed 74.2% of them had a history of infertility. In 2016, Barbosa et al; found the infertility patterns may be influenced by many factors, such as the woman's age, frequency in sexual activity, woman's weight and smoking, among others [24]. In this study found only 1.2% of PCOS cases had a repeated miscarriage and compared with another study done it by Mayrhofer and colleagues in 2020, they found the mean age of the sample population was  $33.8 \pm 6.1$  years, with a BMI of  $24.9 \pm 5.0$  kg/m<sup>2</sup>. Primary recurrent miscarriage (RM) was observed in 318 (70.4%) cases, secondary RM appeared in 134 (29.6%) cases. The majority of patients had three previous miscarriages (322, 71.2%); while 78 (17.3%) had four and 52 (70.4%) had five or more previous miscarriages [25]. Cultural barriers also play a significant role in the diagnosis and management of PCOS in rural communities. Stigma, misconceptions, and traditional beliefs surrounding reproductive health can prevent women from seeking appropriate care. Community-based interventions that involve cultural sensitization and education can help overcome these barriers and improve the overall management of PCOS in rural areas.

**In conclusion**, this study sheds light on the prevalence, risk factors, and challenges associated with PCOS among women in rural areas. The findings emphasize the need for targeted healthcare strategies that address the unique needs of this population. By raising awareness, improving access to healthcare services, and promoting healthy lifestyles, the burden of PCOS can be reduced, and the overall well-being of women in rural areas can be improved. It is crucial to prioritize the development and implementation of comprehensive healthcare strategies that consider the specific context of rural communities. By doing so, we can work towards reducing the impact of PCOS and improving the quality of life for women in these areas.

## Limitations

It is important to acknowledge the limitations of this study. Firstly, the cross-sectional design limits the ability to establish causal relationships between PCOS and the identified risk factors. Secondly, the sample was limited to women residing in rural areas, which may not be representative of the entire population. Generalizability of the findings to urban areas or other geographical regions may be limited. Lastly, self-reporting bias and recall bias may have influenced the accuracy of the data collected. Despite these limitations, this study provides valuable insights into the prevalence and risk factors associated with PCOS among women in rural areas. The findings can contribute to the development of targeted interventions and healthcare strategies to improve the diagnosis, management, and overall well-being of women affected by PCOS in rural areas.

**Conflict of interest: None**

## References

- Hussein, B., & Alalaf, S. (2013). Prevalence and characteristics of polycystic ovarian syndrome in a sample of infertile Kurdish women attending IVF infertility center in maternity teaching hospital of Erbil City. *Open Journal of Obstetrics and Gynecology*, 2013.
- Sidra, S., Tariq, M. H., Farrukh, M. J., & Mohsin, M. (2019). Evaluation of clinical manifestations, health risks, and quality of life among women with polycystic ovary syndrome. *PloS one*, 14(10), e0223329.
- Azziz, R., Carmina, E., Chen, Z., Dunaif, A., Laven, J. S., Legro, R. S., ... & Yildiz, B. O. (2016). Polycystic ovary syndrome. *Nature reviews Disease primers*, 2(1), 1-18.
- Joham, A. E., Norman, R. J., Stener-Victorin, E., Legro, R. S., Franks, S., Moran, L. J., ... & Teede, H. J. (2022). Polycystic ovary syndrome. *The lancet Diabetes & endocrinology*, 10(9), 668-680.
- Meier, R. K. (2018). Polycystic ovary syndrome. *Nursing Clinics*, 53(3), 407-420.
- Wu, Q., Gao, J., Bai, D., Yang, Z., & Liao, Q. (2021). The prevalence of polycystic ovarian syndrome in Chinese women: a meta-analysis. *Annals of Palliative Medicine*, 10(1), 747-787.
- Kaewnin, J., Vallibhakara, O., Arj-Ong Vallibhakara, S., Wattanakrai, P., Butsrupoom, B., Somsook, E., ... & Sophonsritsuk, A. (2018). Prevalence of polycystic ovary syndrome in Thai University adolescents. *Gynecological Endocrinology*, 34(6), 476-480.
- Dashti, S., Latiff, L. A., Hamid, H. A., Saini, S. M., Bakar, A. S. A., Sabri, N. A. I. B., ... & Esfehiani, A. J. (2019). Prevalence of Polycystic Ovary Syndrome among Malaysian Female University Staff. *Journal of Midwifery & Reproductive Health*, 7(1).
- Ganie, M. A., Rashid, A., Sahu, D., Nisar, S., Wani, I. A., & Khan, J. (2020). Prevalence of polycystic ovary syndrome (PCOS) among reproductive age women from Kashmir valley: A cross-sectional study. *International Journal of Gynecology & Obstetrics*, 149(2), 231-236.
- Chiaffarino, F., Cipriani, S., Dalmartello, M., Ricci, E., Esposito, G., Fedele, F., ... & Parazzini, F. (2022). Prevalence of polycystic ovary syndrome in European countries and USA: A systematic review and meta-analysis. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 279, 159-170.
- Motlagh Asghari, K., Nejadghaderi, S. A., Alizadeh, M., Sanaie, S., Sullman, M. J., Kolahi, A. A., ... & Safiri, S. (2022). Burden of polycystic ovary syndrome in the Middle East and North Africa region, 1990–2019. *Scientific Reports*, 12(1), 7039.
- Elasam, A. N., Ahmed, M. A., Ahmed, A. B., Sharif, M. E., Abusham, A., Hassan, B., & Adam, I. (2022). The prevalence and phenotypic manifestations of polycystic ovary syndrome (PCOS) among infertile Sudanese women: a cross-sectional study. *BMC Women's Health*, 22(1), 165.
- Al-Shattawi, S. S., Al-Jumili, E. F., & Al-Azzam, M. A. (2018). The relationship between obesity and polycystic ovary syndrome in a sample of Iraqi infertile women. *Iraqi journal of biotechnology*, 17(3).
- Shenta, A., Saud, K., & Al-Shawi, A. (2020). Assessment the correlations of hormones, lipid profiles, oxidative stress, and Zinc Concentration in Iraqi Women with Polycystic Ovary Syndrome. *Reports of Biochemistry & Molecular Biology*, 9(3), 270.
- Witwit, S. J. (2019). The Prevalence of Polycystic Ovarian Syndrome and It's Associated Symptoms in Selected Samples of Women in Al-Hilla City, Iraq. *Indian Journal of Public Health Research & Development*, 10(8).
- Naeem, R. S., Jewad, A. M., & Mahmoud, R. A. (2023). A Biochemical Study of Infertile Women with and Without Polycystic Ovarian Syndrome in Basra City, Iraq. *University of Thi-Qar Journal of Science*, 10(1 (SI)).

17. Al-Taie, F. K., & Al-Jawadi, Z. A. M. (2019). The impact of obesity on infertile women with polycystic ovaries in Iraq. *Raf J Sci*, 28, 1-9.
18. Katulski, K., Czyżyk, A., Podkowa, N., Podfigurna, A., Ignaszak, N., Paczkowska, K., ... & Meczekalski, B. (2017). Clinical and hormonal features of women with polycystic ovary syndrome living in rural and urban areas. *Annals of Agricultural and Environmental Medicine*, 24(3).
19. Das, C. (2023). Rural-Urban Comparison of Polycystic Ovary Syndrome in Assam, India: A Hospital Based Cross-sectional Study. *Online Journal of Health and Allied Sciences*, 22(1).
20. Deswal, R., Nanda, S., Ghalaut, V. S., Roy, P. S., & Dang, A. S. (2019). Cross-sectional study of the prevalence of polycystic ovary syndrome in rural and urban populations. *International Journal of Gynecology & Obstetrics*, 146(3), 370-379.
21. Badri-Fariman, M., Naeini, A. A., Mirzaei, K., Moeini, A., Hosseini, M., Bagheri, S. E., & Daneshi-Maskooni, M. (2021). Association between the food security status and dietary patterns with polycystic ovary syndrome (PCOS) in overweight and obese Iranian women: a case-control study. *Journal of Ovarian Research*, 14, 1-14.
22. Hsu, M. I. (2013). Changes in the PCOS phenotype with age. *Steroids*, 78(8), 761-766.
23. Navid, B., Mohammadi, M., Sasannejad, R., Dehkordi, M. A., Maroufizadeh, S., Hafezi, M., & Omani-Samani, R. (2018). Marital satisfaction and social support in infertile women with and without polycystic ovary syndrome. *Middle East Fertility Society Journal*, 23(4), 450-455.
24. Barbosa, G., de Sá, L. B. P. C., Rocha, D. R. T. W., & Arbex, A. K. (2016). Polycystic ovary syndrome (PCOS) and fertility. *Open Journal of Endocrine and Metabolic Diseases*, 6(1), 58-65.
25. Mayrhofer, D., Hager, M., Walch, K., Ghobrial, S., Rogenhofer, N., Marculescu, R., ... & Ott, J. (2020). The prevalence and impact of polycystic ovary syndrome in recurrent miscarriage: a retrospective cohort study and meta-analysis. *Journal of clinical medicine*, 9(9), 2700.

#### CITATION

Khansaa H.M. (2024). Prevalence of Polycystic Ovary Syndrome among Women in Rural area and the Outskirts of Baghdad. In *Global Journal of Research in Medical Sciences* (Vol. 4, Number 3, pp. 16–22). <https://doi.org/10.5281/zenodo.11528514>