
Factors Affecting The Incidence Of Polycystic Ovary Syndrome (PCOS) In Women Of Childbearing Age: A Literature Review

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Abstract

Polycystic ovary syndrome (PCOS) refers to a hormonal disorder that is commonly found in women of childbearing age. PCOS can cause anovulation and difficulty having offspring due to the presence of small cysts with a diameter of 4-9mm along the ovaries. PCOS cases in women of childbearing age not only have a physical impact but also have an impact on the psychological of the sufferer. This literature review study aims to identify the main factors that affect the incidence of PCOS in women of childbearing age. This article utilizes the literature review method, data search is carried out through the Google Scholar and Pubmed databases published in 2020 to 2025, the number of articles reviewed is 10 articles. Based on the analysis of 10 articles, the results were obtained that the main factors that affect PCOS include lifestyle, menstrual cycle disorders, obesity, depression, family history, insulin resistance and hyperandrogens. These findings suggest that a good lifestyle can minimize metabolic disorders in people with PCOS. However, the results of these findings state that depression is not the main factor of PCOS but depression is one of the effects of PCOS.

Keywords: *Causes Of PCOS, PCOS, Women Of Childbearing Age.*

INTRODUCTION

A common hormonal disorder health problem experienced by women of childbearing age (WUS) today is Polycystic ovary syndrome (PCOS) (WHO, 2025). PCOS describes endocrine disorders that often occur in WUS characterized by anovulation and polycystic ovaries (Hadi, 2025). Women who experience PCOS will generally experience a condition where there is no ovulation or anovulation in the WUS so that it can cause difficulty in having offspring (infertility), this can occur due to the presence of small cysts along the ovaries (Ratnaningsih et al., 2022). This small cyst is found through ultrasound to accumulate on the ovaries with a diameter of 4-9mm (Paramita Ratna Gayatri et al., 2023). PCOS has different symptoms in each individual such as menstrual cycle disorders, hirsutism, skin problems such as acne, hair loss or pattern baldness in men (Kurniasih et al., 2025).

According to World Health Organization data (2025) About 6-13% of WUS in the world experience PCOS and 70% of cases go undiagnosed. The incidence of PCOS in Indonesia itself reaches 73.4 million (5-10%), this condition shows that 1 in 10 WUS experience PCOS (Alparisi et al., 2025). According to the data obtained by Hanani (2023), the prevalence of PCOS in Semarang includes 66 cases in Dr. Kariadi Semarang Hospital found in 2020, 94 cases in 2021 and 104 cases in 2022, in Wilasa Citarum Semarang in 2020 with a total of 25 cases, 14 cases in 2021 and 29 cases in 2022. Meanwhile, at RSD K.R.M.T Wosonegoro in 2020-2021, PCOS cases decreased from 17 cases to 13 cases and increased again by 19 cases in 2022.

PCOS in women of childbearing age can trigger both long-term and short-term effects. Short-term effects on PCOS sufferers if not treated immediately are irregular menstrual cycle disorders to infertility. Meanwhile, long-term effects include cardiovascular disease, obesity (Ibrahim et al., 2023). This condition also triggers the potential for metabolic syndromes such as increased type I and II diabetes mellitus, obesity, and heart disease (Hadi, 2025). The effects of PCOS are not only physical but also have an impact on the patient's psychology such as stress, anxiety, frustration and depression (Patten et al., 2023). Compared to the stress level in the average woman, women with PCOS have excessive levels of stress (Alenzi et al., 2024). This shows that emotional support from family and

friends helps women with PCOS lower depression, anxiety and improve their quality of life (Yudhistira & Aviva, 2025).

The factors that cause PCOS are not known for sure. However, some mechanisms such as insulin resistance, increased androgens and genetic factors are thought to play an important role in the occurrence of PCOS (Yuliadha & Setyaningrum, 2022). Insulin resistance is often found in women suffering from PCOS where androgen hormones are produced in abundance in the ovaries because they are stimulated by high insulin levels so that they interfere with the ovulation process in women of childbearing age. In addition, high levels of androgen hormones in women can inhibit the development of follicles in the ovaries, causing ovulation disorders. This condition is exacerbated by several factors such as family history, obesity, unhealthy habits and poor physical activity (Kurniasih et al., 2025). In addition, depression and difficulty managing stress are also factors related to insulin resistance in PCOS sufferers (Xia & Du, 2022). The purpose of this Literature Review is to analyze the main factors that cause Polycystic Ovary Syndrome (PCOS) in WUS.

RESEARCH METHODS

The method applied in this article is a literature review of search results in the google scholar and pubmed databases by applying the keywords in Indonesian and English "PCOS" or "Polycystic Ovary Syndrome" or "Polycystic Ovary Syndrome" or "PCOS factor" or "PCOS risk factor". Article search in the last 5 years (2020-2025) with a cross sectional approach and case control. Having a topic that is in accordance with the research is about the risk factors for PCOS. Inclusion criteria include: accessible, full-text, not grey literature, the research population is women of childbearing age and original research.

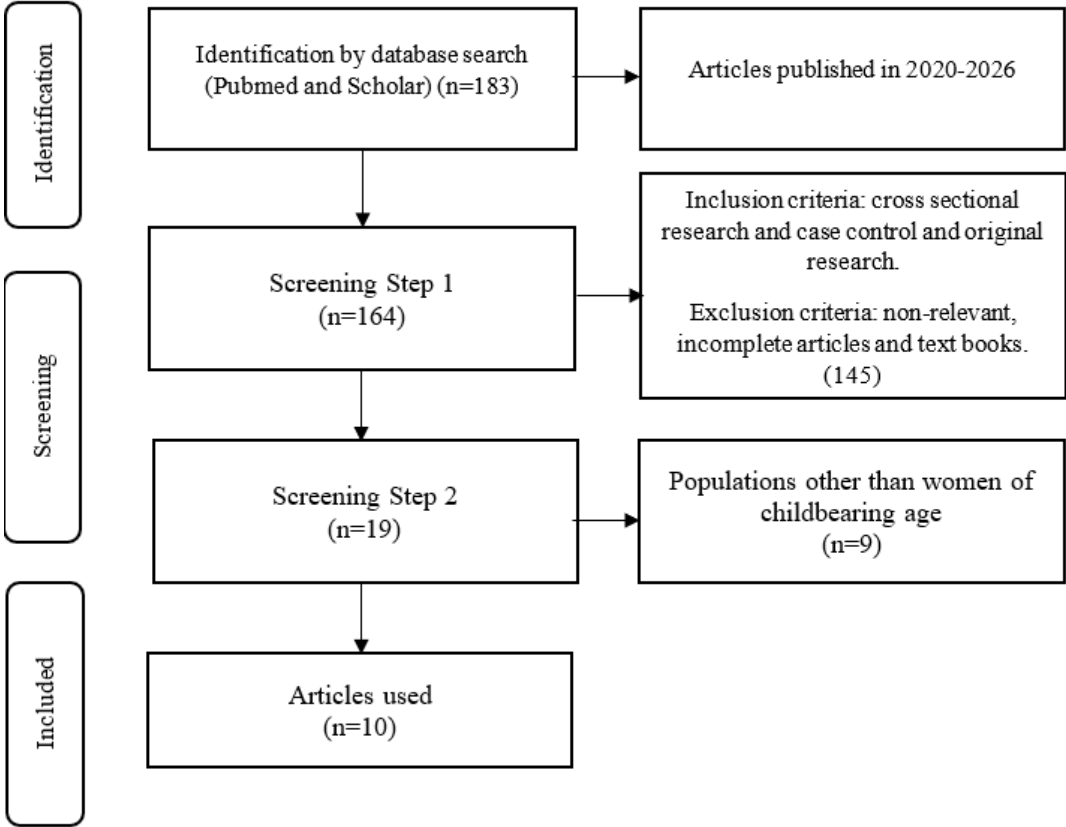


Figure 1. Prisma Flowchart Diagram

RESULTS AND DISCUSSION

Table 1. Results of Article Selection of Factors Influencing the Incidence of Polycystic Ovary Syndrome (PCOS) in Women of Childbearing Age

Author	Title	Method	Results
(Kurniawati et al., 2023)	Nutritional Status and Lifestyle of Women with Polycystic Ovary Syndrome (PCOS) in Yogyakarta	This study applied an analytical descriptive method with a cross sectional approach.	Unhealthy lifestyle. Lack of physical activity, excess nutritional status (obesity) is one of the factors causing PCOS in women of childbearing age which affects the normal energy balance which has an impact on insulin resistance.
(Y. Wahyuni et al., 2023)	The relationship between nutritional status, menstrual cycle history, and depression level on the incidence of polycystic ovary syndrome in women of childbearing age in our expectation	This study uses an analytical survey method with a case-control study approach.	The incidence of PCOS in women of childbearing age has a significant correlation with menstrual cycle history, nutritional status, and depression levels.
(Andarini et al., 2024)	The Relationship of Body Mass Index (BMI), Menstrual Cycle and Infertility with the Incidence of Polycystic Ovary Syndrome (PCOS) at Dharma Yadnya General Hospital Denpasar	This study utilizes observational analysis with a case-control study approach.	There is a significant association between the incidence of PCOS and the body mass index (BMI) of risk or obesity and menstrual cycle disorders in women of childbearing age aged 16-49 years.
(Syamsiah et al., 2024)	The relationship between obesity, menstrual cycle, and polycystic ovary syndrome cases	This study applied observational analysis with a case-control study approach.	The incidence of PCOS in women of childbearing age has a close correlation with obesity and menstrual cycle disorders.
(Begum et al., 2024)	Prevalence of Polycystic Ovary Syndrome (PCOS) and Its Associated Risk Factors among Medical Students in TwoCountries	Purposive, descriptive research with a cross sectional study design.	Unhealthy lifestyle, family history, lack of physical activity are factors that cause PCOS in women of childbearing age, especially obesity which triggers insulin resistance and high androgen levels.
(Alkhezi et al., 2024)	Prevalence of and Risk Factors Associated with Polycystic Ovary Syndrome Among Female University Students of Health Sciences in a Middle Eastern Country	A cross-sectional study.	The prevalence of PCOS is quite high (16.3%) in the Middle East. This study also mentions factors that include, irregular menstrual cycles, family history, increased androgen hormones as significant factors causing PCOS.
(Hasan et al., 2022)	Prevalence and associated risk factors for mental health problems amongpatients with polycystic ovary syndrome in Bangladesh:	A cross-sectional study.	Depression and anxiety disorders are supported by the incidence of obesity, poor lifestyle and high androgen levels in women of childbearing age are factors

	A nationwide cross-sectional study		that can cause PCOS in Bangladesh.
(Mansour et al., 2023)	Risk factors for insulin resistance related to polycystic ovarian syndrome in Iranian population	Cross-sectional research with a randomized controlled trials (RCTs) approach	Insulin resistance is a factor affecting PCOS related to obesity and high androgen levels in women of childbearing age.
(Yasmin et al., 2025)	Prevalence of polycystic ovary syndrome (PCOS) and its associated hormonal and comorbid risk factors in Northeast India: a cross-sectional comparative study	A cross-sectional study.	Menstrual cycle disorders, physical activity, obesity, high androgen levels, genetic and lifestyle factors are closely related to the occurrence of PCOS in women.
(Ayub et al., 2023)	Prevalence, Risk Factors, and Maternal Outcomes of Polycystic Ovary	A cross-sectional study.	Obesity, insulin resistance, hyperandrogenism, family history, and obesity are the most significant risk factors for causing PCOS in women.

Based on the results of the analysis from the table, it is shown that factors that have an influence on the incidence of PCOS in women of childbearing age include insulin resistance, high androgen levels, lifestyle, nutritional status, health history and menstrual cycle.

Discussion

Lack of Activity

Physical activity is one of the risk factors for PCOS in women of childbearing age. According to the research of Szkodziak et al., (2025), the physical activity of women who do not experience PCOS tends to be higher compared to women who have PCOS. In the study, it was explained that increasing physical activity in women with PCOS can affect hormonal and metabolic health where moderate or heavy physical activity increases insulin sensitivity and mitochondrial function thereby reducing the risk of insulin resistance in PCOS patients.

These results are in line with Ghamsari's research (2024), which states that physical activity in women with PCOS tends to be lower than in women who do not have PCOS. Regular physical activity has a significant effect on reducing PCOS symptoms such as reducing body fat, improving PCOS complications and effectively regulating sex hormones. The results of Butt et al.'s research, (2024), also stated that physical activity in women with PCOS was less active compared to healthy women. Less physical activity can lead to metabolic disorders and hormonal disorders, a gradual increase in physical activity has been shown to reduce the incidence of PCOS by 6.8 times greater and a further increase in the effects by 12 times. This study states that reproductive function and metabolic disorders improve with increased physical activity. This is in line with the theory described by Kurniasih (2025), that lack of physical activity can cause hormonal imbalances and worsen insulin resistance in people with PCOS, in addition to lack of physical activity can trigger PCOS symptoms in women of childbearing age who have a family history of PCOS.

Obesity

Obesity is one of the triggering factors for PCOS where obesity in women can trigger insulin resistance which is one of the main factors causing PCOS (Pauris Manubulu & Arimas, 2023). From the results of Yu et al.'s research, (2025), showing that a BMI of more than 25 kh/m2 is a significant risk factor for PCOS in women of childbearing age. Studies say that 60% of respondents are overweight. In addition, this study also supports that obesity is a major contributor to insulin resistance which refers to the main pathogen PCOS. Based on the study of Qamariyah et al., (2025), it is stated that 68% of women with PCOS are obese, women with obesity have greater risk factors for developing PCOS than women of normal weight so it is important to carry out weight management.

In addition, depression and anxiety disorders supported by the incidence of obesity can trigger PCOS. Referring to the study of Lagowska et al., (2024), mentioning depression in women with PCOS

is significantly triggered by being overweight. These results are in line with the research of Keeratibhara et al., (2024), that the incidence of PCOS in women of childbearing age has a psychological impact and decreased mental well-being. In addition, this study describes the incidence of depression in the incidence of PCOS related to several risk factors for PCOS such as hirsutism, acne and obesity. According to the results of the research of Almekhlaf et al., (2026), it was explained that one of the factors that increases the symptoms of depression in women of childbearing age who experience PCOS is triggered by dissatisfaction with body image. In this study, depression was associated with psychological and social problems due to high BMI in women with PCOS, causing concerns about their body shape and lower body image satisfaction compared to women without PCOS.

This finding is consistent with the theory of Kurniasih (2025), which explains if obesity is identified as a factor that can worsen conditions of insulin resistance and hormonal imbalances. In addition, women with obesity tend to experience more severe PCOS symptoms and metabolic complications faster compared to women who are not obese.

Menstrual Cycle Disruption

The menstrual cycle is a sign of fertility in women of childbearing age where the menstrual cycle ranges from 21-35 days (Jeser et al., 2023). In the study of Noviyanti et al., (2024), menstrual cycle disorders are one of the factors that cause PCOS in women of childbearing age because menstrual cycle disorders arise due to the presence of excess androgen or hyperandrogen conditions that occur due to hormonal disorders in women of childbearing age who are at risk of PCOS. These results are supported by Nurpratiwi's research (2025), which reported a 12,400-fold increased risk of PCOS in women with menstrual disorders compared to women without the disorder. This is due to the fact that menstrual disorders are caused by hyperandrogens that affect the maturation process of ovarian follicles.

The results of this study confirm Kurniasih's theory (2025) that in women of childbearing age, menstrual cycle disorders are caused by hormonal imbalances that inhibit the ovulation process, this is related to PCOS itself where the main factor causing PCOS is high androgen hormones in women so that it can cause menstrual cycle disruptions.

Medical history

Family History

Family history is one of the risk factors that can trigger PCOS in women of childbearing age. According to the research of Wahyuni et al., (2022), found a significant correlation between PCOS and family history. Genetic factors play a role in the pathophysiology of PCOS by influencing the PCOS phenotype in 10% of cases where chromosomes and potential PCOS genes are found. These findings are in line with the study of Pramukawati et al., (2024), which states that genetic factors cannot be ignored in the occurrence of PCOS in women of childbearing age. Women who have a family history of PCOS have a significantly higher risk of developing PCOS than women who do not have a family history of PCOS. Based on the theory described by Kurniasih (2025), that women with a family history, especially of mothers and sisters who suffer from PCOS, have a higher risk of developing this hormonal disorder.

Insulin Resistance

Insulin resistance refers to one of the factors that play a role in the incidence of PCOS in women of childbearing age (Armanini et al., 2022). This condition affects the metabolism and secretion of androgen hormones that affect the ovaries so that it can cause anovulation (Hestiantoro, 2022). The results of the research of Niu et al., (2023), insulin resistance is associated with the incidence of PCOS in women of childbearing age who usually experience significant oligomenorrhea menstrual cycle disorders and amenorrhea occurs in women with a high BMI ($>27\text{kg/m}^2$).

Based on the research of Luo et al., (2024), insulin resistance can decrease the biological response to insulin which has a negative impact on metabolism, especially on glucose utilization, thereby increasing the risk of metabolic disorders, especially in women with obesity. In addition,

insulin resistance causes hyperinsulinemia which triggers excessive secretion of androgen hormones so that it can lead to the growth and development process of follicles in the ovaries. The results of this finding are in line with Kurniasih's theory (2025), which mentions that insulin resistance can stimulate the ovaries to produce more androgen hormones so that it can cause disruptions in the ovulation process. This condition is often found in PCOS women who are overweight or obese.

Hyperandrogenism

Hyperandrogenism is one of the factors that can trigger PCOS in women of childbearing age, an increase in androgen hormones can cause clinical problems such as menstrual cycle disorders, hirsutism and the onset of excess acne on the face (Isabella et al., 2025). According to Handayani's research (2020), hyperandrogens cause reduced estrogen levels thereby inhibiting the growth of follicles in the ovaries which has an impact on the quality of the decreased ovum thus triggering anovulation.

Based on the results of Tanjung et al.'s research, (2023), the unsuccessful ovulation accompanied by the presence of follicles resembling small cysts appears and the enlargement of the ovaries is caused by hyperandrogens. In addition, in hyperandrogen conditions, 5-10% experience disorders such as acne due to a surge in androgen hormones, menstrual disorders with a cycle of < 21 days in women of childbearing age. These findings are consistent with the study of Prophet et al., (2025), where hyperandrogens are the main factor in PCOS in women of childbearing age. In this study, it was found that clinical problems that often occur in hyperandrogenic conditions include hirsutism (88.57%), acne (61.95%) and alopecia (49.50%). In addition, women with hyperandrogens experienced menstrual disorders or anovulation as much as 81.9%.

These findings reinforce the theory Grace (2025), which explains that hyperandrogenism or high androgen content in women can inhibit the growth and development of follicles in the ovaries so that it can cause anovulation. In addition, this condition causes several symptoms that can worsen PCOS such as acne, hirsutism and oily skin.

CONCLUSION

All studies identified lack of physical activity, obesity, menstrual cycle disorders, family history, insulin resistance and hyperandrogenism influencing the incidence of Polycystic ovary syndrome (PCOS) in women of childbearing age. Insulin resistance and hyperandrogenism are the main causes of PCOS where insulin resistance affects metabolism in women of childbearing age and hyperandrogenism causes problems such as menstrual cycle disruptions, hirsutism and acne.

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