The International Journal of Indian Psychology
ISSN 2348-5396 (Online) | ISSN: 2349-3429 (Print)
Volume 13, Issue 2, April- June, 2025
DIP: 18.01.179.20251302, DOI: 10.25215/1302.179
https://www.ijip.in

Research Paper

Comparing Emotional Contagion and Empathy in Women with and without PCOS: Implications for Mental Health and Social Functioning

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ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine disorder with multifaceted implications, extending beyond reproductive health to psychological and emotional domains. This study investigated differences in emotional contagion and empathy between women diagnosed with PCOS and women without the condition. A purposive sample of 100 women (50 with PCOS, 50 without) aged 18–35 years participated in the study. Emotional Contagion and Empathy were measured using the Emotional Contagion Scale (ECS) and the Toronto Empathy Questionnaire (TEQ), respectively. A between-group comparative design was employed, and data were analyzed using the Mann-Whitney U test due to non-normal distribution. Results revealed no statistically significant differences in empathy or emotional contagion between the two groups ($p > .05$). These findings challenge the assumption that PCOS universally disrupts socio-emotional processing and highlight the role of individual coping mechanisms, psychological resilience, and social context. The study underscores the need for personalized psychological interventions and calls for further research to explore mediating variables and hormonal influences on emotional regulation in women with PCOS.

Keywords: *Emotional contagion, empathy, PCOS, women's mental health*

Polycystic Ovary Syndrome (PCOS) is a multifaceted endocrine disorder characterized by hormonal imbalances, menstrual irregularities, and polycystic ovaries (Azziz et al., 2016). Its etiology is complex, involving genetic, environmental, and lifestyle factors (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). Key hormonal disruptions include elevated androgens, insulin resistance, and LH/FSH imbalance (Teede et al., 2018), contributing not only to reproductive complications but also metabolic and psychological challenges.

According to the Rotterdam criteria, diagnosis requires any two of the following: oligo-anovulation, hyperandrogenism, or polycystic ovaries observed via ultrasound (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). Clinical signs may

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Received: May 14, 2025; Revision Received: May 18, 2025; Accepted: May 22, 2025

include hirsutism, acne, and male-pattern baldness (Carmina et al., 2010). Insulin resistance, a frequent feature, is associated with central obesity and increased diabetes risk (DeFronzo & Jacot, 1998), further affecting self-esteem and mental health.

Globally, PCOS prevalence is estimated at 6–10% (Deswal et al., 2020), with Indian rates varying from 4% to 25%, reflecting diagnostic inconsistencies (Sinha et al., 2013). While research often prioritizes physical and reproductive symptoms, increasing attention is being given to psychological impacts such as depression, anxiety, and mood disorders (Barry et al., 2015). These mental health issues are likely compounded by physical symptoms and psychosocial stressors, including stigma and social withdrawal.

Hormonal fluctuations may alter neurotransmitter functions, contributing to mood dysregulation (Kauffman et al., 2015). Social functioning is also disrupted—symptoms such as weight gain, hirsutism, and acne can reduce confidence and intimacy, impacting relationships and increasing social anxiety (Eckelman et al., 2018; Himelein & Thatcher, 2006). Thus, effective management of PCOS must include psychological and emotional well-being alongside medical treatment.

REVIEW OF LITERATURE

PCOS extends beyond endocrine disruption to encompass a broad spectrum of psychological consequences. Hormonal irregularities influence brain regions responsible for emotional regulation, potentially contributing to emotional dysregulation and cognitive impairments. Barry et al. (2015) highlighted that women with PCOS are more likely to experience depression, anxiety, and mood disorders compared to the general female population.

Cognitive and emotional disturbances may arise from both biological and psychosocial mechanisms. Negative body image, embarrassment, and perceived stigma around symptoms like hirsutism and infertility can significantly reduce quality of life. Furthermore, the emotional toll of managing chronic symptoms adds to psychological strain, making holistic treatment approaches essential.

Empathy

Empathy, vital to social functioning, is comprised of cognitive and affective components. Cognitive empathy involves understanding another's emotional state, while affective empathy is the shared emotional experience (Decety & Jackson, 2004; Batson et al., 2002). These components operate together to facilitate social bonding, compassion, and prosocial behavior.

Empathy development depends on neurobiological factors and early social experiences. Brain regions like the prefrontal cortex, insula, and anterior cingulate cortex play key roles in empathy (Decety & Meyer, 2008). Positive childhood experiences, especially secure attachment and responsive caregiving, promote empathic abilities (Tomasello, 2019), while adverse experiences can impair social-emotional development.

Empathy enhances personal and professional relationships by promoting understanding and cooperation (Goleman, 2006). Empathic individuals are more likely to help others and respond appropriately to social cues (Eisenberg & Fabes, 1998). In contrast, low empathy is associated with interpersonal conflict and disorders such as borderline or narcissistic personality disorder (Melkers & Abidin, 2002).

For women with PCOS, empathy may be disrupted due to emotional distress, lowered self-esteem, and altered social engagement. As these women face unique challenges in their social and psychological lives, exploring the relationship between PCOS and empathy may offer insights into support mechanisms and interventions.

Emotional Contagion

Emotional contagion refers to the automatic or conscious process of adopting others' emotional states (Hatfield, Cacioppo, & Rapson, 1994). It involves both subconscious mimicry (e.g., facial expressions, tone of voice, body posture) and cognitive processes like perspective-taking (Barsade, 2002).

This phenomenon is grounded in social neuroscience and facilitated by mirror neuron systems, which allow individuals to resonate with observed emotions. Emotional contagion enhances group cohesion and interpersonal understanding but may also lead to emotional exhaustion, particularly in emotionally vulnerable individuals.

Mechanisms such as facial and vocal mimicry operate rapidly and often unconsciously, contributing to emotional synchrony (Lundqvist, 1995). Emotional feedback from expressions can intensify emotional experiences, as proposed by Darwin (1872) and later demonstrated through facial feedback experiments (Adelmann & Zajonc, 1989).

Empirical studies show that people mimic emotional cues quickly—sometimes in milliseconds—suggesting deep neurological underpinnings (Condon & Ogston, 1966). Mirror neurons may explain why observing others' emotions triggers similar responses in observers, facilitating empathy and contagion (Iacoboni, 2005).

In social contexts, emotional contagion can influence decision-making, team performance, and well-being. Sensitivity to emotional contagion varies based on personality traits and relationship dynamics. For instance, individuals with heightened emotional sensitivity may be more susceptible to others' emotional states, which can affect their mental stability.

Integrating the Constructs

Both empathy and emotional contagion are essential to social bonding, communication, and emotional resilience. In women with PCOS—who often experience psychological distress—these processes may be altered. Hormonal changes, mood disturbances, and social withdrawal can impact how these women perceive and respond to emotional stimuli in themselves and others.

Boehme et al. (2019) note that individuals under chronic psychological stress, such as women with PCOS, may demonstrate either heightened emotional sensitivity or emotional blunting. This suggests a need to understand how PCOS affects emotional processing.

Investigating emotional contagion and empathy in women with and without PCOS may uncover differences in emotional regulation and social functioning. Such findings can guide psychological interventions that improve coping mechanisms, social integration, and mental well-being.

Objectives of the Study

- To examine levels of emotional contagion and empathy in women with and without PCOS.
- To compare emotional processing between both groups.
- To provide empirical data supporting mental health interventions for PCOS.
- To contribute to the literature on the psychosocial effects of PCOS.

Hypotheses

- H1: Women with PCOS will exhibit higher emotional contagion.
- H2: Women with PCOS will exhibit higher empathy.
- H3: Emotional contagion and empathy will be positively correlated.
- H4: Emotional contagion and empathy will significantly differ between women with and without PCOS.

METHODOLOGY

Sample

Purposive sampling was used to recruit 50 women diagnosed with polycystic ovarian syndrome (PCOS) and 50 women without the condition. This method ensured inclusion of participants meeting criteria aligned with the study's objectives.

Inclusion Criteria

Participants were eligible if they:

- Were women aged 18–35 years
- Had a confirmed PCOS diagnosis (PCOS group) or no history of PCOS (control group)
- Could read and comprehend English
- Provided informed consent

Exclusion Criteria

Participants were excluded if they:

- Had other major endocrine disorders (e.g., hypothyroidism, Cushing's syndrome)
- Had a history of neurological or psychiatric disorders affecting emotional processing
- Were on medications influencing mood (e.g., antidepressants)
- Could not provide informed consent

Instruments

Two measures were used in this study,

1. **Toronto Empathy Questionnaire (TEQ):** The TEQ (Lawrence et al., 2006) is a 16-item self-report measure assessing both cognitive and affective empathy using a 5-point Likert scale. It demonstrates strong internal consistency and construct validity, with higher scores indicating greater empathy. The tool is brief yet psychometrically robust, making it suitable for research and clinical use.
2. **Emotional Contagion Scale (ECS):** The 15-item ECS (Doherty, 1997) assesses susceptibility to five basic emotions—sadness, fear, anger, happiness, and love—via a 4-point Likert scale. It offers good internal consistency and is widely used for its brevity. Higher scores reflect greater emotional responsiveness to others' emotions.

Research Design

This study employed a quantitative, between-group comparative design to assess empathy and emotional contagion in women with and without PCOS. Participants were grouped based on their diagnosis status. The independent variable was PCOS diagnosis (yes/no), and the dependent variables were empathy and emotional contagion scores. A non-parametric test (Mann-Whitney U) was used due to the non-normal distribution of data. The design enabled systematic comparison without aiming to establish causality.

Procedure

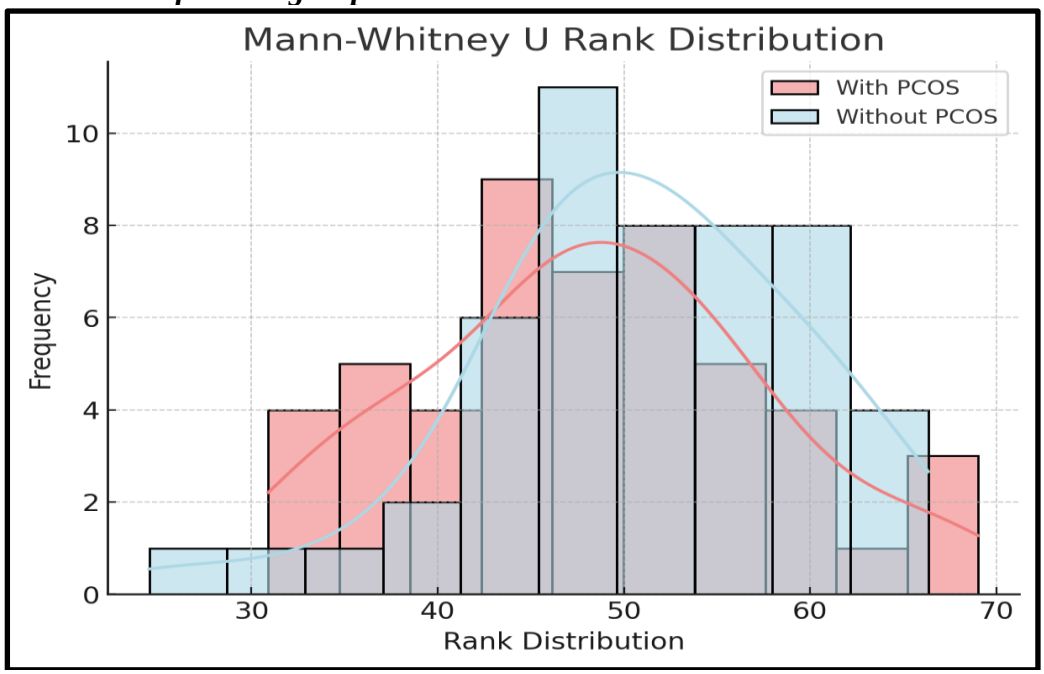
Participants were recruited through purposive sampling from online platforms, healthcare centers, and university networks. After explaining the study and obtaining informed consent, participants completed a Google Form survey including demographic questions and two standardized scales: the Toronto Empathy Questionnaire (TEQ) and the Emotional Contagion Scale (ECS). Ethical guidelines were followed to ensure confidentiality, voluntary participation, and the right to withdraw. Incomplete responses were excluded prior to analysis.

Data Analysis

Data were analyzed using IBM SPSS. A Mann-Whitney U test was conducted to compare empathy and emotional contagion scores between groups due to the data's non-parametric nature. Descriptive statistics and significance levels ($p < 0.05$) were reported, along with effect size measures. The results were interpreted in light of existing literature to explore the psychological impact of PCOS.

RESULTS

Figure 1 - The Mann-Whitney U rank distribution plot, showing the overlap in rank distributions for both groups.



The results indicate minimal differences between the two groups. Specifically, women with PCOS had a slightly higher sum of ranks (2528.5) and mean rank (50.57) compared to women without PCOS, who had a sum of ranks of 2521.5 and a mean rank of 50.43. The U-

values for the two groups were 1246.5 (With PCOS) and 1253.5 (Without PCOS), both very close to the expected U-value of 1250. The standard deviation of 145.0575 suggests low variability between the groups.

Table No. 1 Combined Mann-Whitney U Test Results for Emotional Contagion and Empathy

Measure	Group	Sum of Ranks	Mean Rank	Expected Sum	Expected Mean	U-Value	Expected U	Z-Score	p-Value	Significance
Emotional Contagion	With PCOS	2460	49.20	2525	50.5	1315	1250	-0.44465	0.32997	Not Significant (p > .05)
	Without PCOS	2590	51.80	2525	50.5	1185	1250			Not Significant (p > .05)
Empathy	With PCOS	2528.5	50.57	2525	50.5	1246.5	1250	0.02068	0.49202	Not Significant (p > .05)
	Without PCOS	2521.5	50.43	2525	50.5	1253.5	1250			Not Significant (p > .05)

DISCUSSION

This study aimed to compare emotional contagion and empathy between women with and without Polycystic Ovary Syndrome (PCOS), examining their implications for mental health and social functioning. The findings, based on a Mann-Whitney U test, revealed no significant differences in emotional contagion or empathy between the two groups. This challenges the assumption that PCOS universally impacts socio-emotional processing and highlights the need for further exploration of emotional experiences in women with PCOS.

Several factors could explain this lack of difference, including similarities in demographic variables, hormonal variability, coping mechanisms, and social support, which may help women with PCOS regulate emotions. Psychological resilience and mental health interventions like therapy could also mitigate the emotional impact of PCOS. Additionally, cultural and social factors may influence emotional processing.

These results contradict the hypotheses that women with PCOS would exhibit higher emotional contagion and empathy. Previous research suggesting heightened emotional sensitivity in PCOS (Bernhardt & Singer, 2012) is not supported by our findings. Emotional contagion, often linked to emotional sensitivity, may be regulated by adaptive coping mechanisms in women with PCOS. Similarly, empathy, influenced by both emotional and cognitive factors, did not differ significantly between the two groups. Anxiety and depression, common in PCOS, did not appear to affect emotional contagion or empathy.

While the study suggests PCOS does not universally affect emotional processing, it emphasizes the importance of considering individual differences and psychosocial factors in

addressing mental health. Clinicians should focus on personalized interventions rather than assuming increased emotional sensitivity in all women with PCOS.

Limitations:

This study had several limitations: a small sample size, cross-sectional design, reliance on self-reports, and the exclusion of confounding variables like anxiety, depression, and social support. Future research should include larger, diverse samples, longitudinal designs, and more objective measures, such as physiological data, to better understand the psychological impact of PCOS.

Future Directions:

Future research should explore hormonal influences on emotional regulation, examine mediating variables like anxiety and social support, and investigate cultural differences in emotional experiences. Intervention studies, such as those focusing on emotion regulation, could also improve well-being in women with PCOS. Expanding the sample to include women with varying PCOS severity may reveal subgroup differences in emotional contagion and empathy.

CONCLUSION

This study found no significant differences in emotional contagion and empathy between women with and without PCOS. These results challenge the idea that PCOS inherently alters socio-emotional processes, underscoring the importance of personalized psychological interventions. Future research should address the limitations of this study and expand the understanding of emotional experiences in women with PCOS.

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Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Sharma, U. & Singh, T. (2025). Comparing Emotional Contagion and Empathy in Women with and without PCOS: Implications for Mental Health and Social Functioning. *International Journal of Indian Psychology*, *13*(2), 1943-1951. DIP:18.01.179. 20251302, DOI:10.25215/1302.179