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Mental Health Among Patients Of Polycystic Ovary Syndrome (PCOS)

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Abstract

Background: Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder among women of reproductive age, characterized by a range of symptoms including hormonal imbalances and psychological distress. This study aims to investigate the relationships between optimism, stress, and anxiety in patients with PCOS to better understand how these psychological factors interplay within this population.

Methods: A correlation research design was employed to explore the associations between optimism, stress, and anxiety among 50 patients diagnosed with PCOS. The sample was selected using purposive random sampling to ensure all participants met the study criteria. Descriptive statistics, including means and standard deviations, were computed for each variable. Pearson's correlation coefficient was used to analyze the strength and direction of the relationships between the variables.

Results: The study found a strong negative correlation between optimism and stress ($r = -0.675$, $p = 0.000$), indicating that higher levels of optimism are associated with lower stress levels. A moderate positive correlation was observed between anxiety and stress ($r = 0.573$, $p = 0.000$), suggesting that increased anxiety is associated with higher stress levels. Additionally, a moderate negative correlation was found between optimism and anxiety ($r = -0.495$, $p = 0.000$), showing that higher optimism correlates with lower anxiety levels.

Conclusions: The findings underscore the significant role of psychological factors in PCOS management. Enhancing optimism and addressing anxiety may be crucial in reducing stress and improving overall well-being in PCOS patients. The study highlights the need for integrating psychological interventions, such as cognitive-behavioral therapy and mindfulness practices, into the treatment plans for PCOS. Future research should explore these relationships over time and across more diverse samples to further validate and extend these findings.

Keywords: Polycystic Ovary Syndrome, Optimism, Stress, Anxiety, Correlation Analysis, Psychological Interventions

Introduction

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder that affects approximately 6–10% of women of reproductive age worldwide (Azziz et al., 2009). It is characterized by a triad of symptoms: irregular menstrual cycles, hyperandrogenism, and the presence of polycystic ovaries on ultrasound (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). While the physiological manifestations of PCOS have been well-documented, there is increasing evidence suggesting that the disorder also has substantial psychological repercussions. Research indicates that women with PCOS are at a heightened risk for mental health disorders, including anxiety and depression (Kamenov et al., 2020; Teede et al., 2018). This increased risk is thought to be influenced by several factors, including the chronic nature of the condition, body image

issues related to symptoms like hirsutism and obesity, and the emotional strain associated with fertility challenges (Moran et al., 2011; Hudec et al., 2018). The emotional and psychological impact of PCOS can significantly affect quality of life, exacerbating the burden of the condition and complicating its management (Tziomalos et al., 2010). Given the substantial overlap between physical symptoms and psychological distress, a comprehensive approach to PCOS management is essential. Integrating mental health support with traditional medical treatments may improve overall outcomes for women with PCOS. This paper aims to review the current literature on the mental health challenges faced by PCOS patients and to advocate for a more holistic approach to treatment that addresses both the physiological and psychological aspects of the disorder.

Causes and Symptoms of Polycystic Ovary Syndrome (PCOS)

Polycystic Ovary Syndrome (PCOS) is a multifaceted endocrine disorder with a range of causes and symptoms that impact a significant proportion of women worldwide. To fully understand PCOS, it is essential to explore its underlying causes and the array of symptoms it presents.

Causes of PCOS

The exact etiology of PCOS remains unclear, but it is widely recognized as a multifactorial condition involving genetic, hormonal, and environmental factors.

Genetic Factors: There is substantial evidence suggesting a genetic predisposition to PCOS. Studies have demonstrated that PCOS often runs in families, indicating a hereditary component (Azziz et al., 2009). Specific genetic loci have been associated with PCOS, but no single gene has been identified as a definitive cause. Instead, it is likely that multiple genes contribute to the susceptibility of PCOS, interacting with environmental factors (Goodarzi et al., 2011).

Hormonal Imbalances: One of the primary features of PCOS is hormonal imbalance. Women with PCOS often have elevated levels of androgens, such as testosterone, which contribute to symptoms like hirsutism and acne (Moran et al., 2011). Additionally, there is evidence of insulin resistance in many women with PCOS, which leads to increased insulin levels. High insulin levels can exacerbate androgen production by the ovaries (Dunaif et al., 2001). The interplay between these hormones disrupts normal ovarian function and menstrual cycles.

Insulin Resistance: Insulin resistance is a key component of PCOS pathophysiology. Insulin resistance leads to higher circulating insulin levels, which can increase androgen production and contribute to metabolic disturbances. This is particularly relevant given that up to 70% of women with PCOS exhibit some degree of insulin resistance (Moran et al., 2011). Insulin resistance can also increase the risk of type 2 diabetes and cardiovascular disease.

Environmental Factors: Environmental factors such as diet and lifestyle play a role in the development and progression of PCOS. Obesity, in particular, can exacerbate insulin resistance and hormonal imbalances (Teede et al., 2018). Diets high in refined carbohydrates and low in fiber may contribute to the development of insulin resistance and PCOS symptoms. Stress and environmental toxins may also influence the condition, though these areas require further research (Escobar-Morreale, 2018).

Symptoms of PCOS

The symptoms of PCOS are diverse and can vary significantly between individuals. They can be broadly categorized into reproductive, metabolic, and dermatological symptoms.

Reproductive Symptoms:

Irregular Menstrual Cycles: One of the hallmark symptoms of PCOS is irregular or absent menstrual periods. Women with PCOS may experience fewer than eight menstrual cycles per year or have prolonged intervals between cycles (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004). This irregularity is due to the disruption in ovulation caused by hormonal imbalances.

Anovulation: Anovulation, or the absence of ovulation, is common in PCOS. This can lead to infertility as the release of eggs from the ovaries is inconsistent or absent (Balen et al., 2003). Women with PCOS often have difficulty conceiving due to irregular ovulation or lack of ovulation.

Metabolic Symptoms:

Insulin Resistance: As mentioned, insulin resistance is prevalent in PCOS and can manifest as elevated fasting insulin levels and an increased risk of type 2 diabetes (Moran et al., 2011). Women with PCOS are at a higher risk for metabolic syndrome, which includes a cluster of conditions such as high blood pressure, high blood sugar, and dyslipidemia.

Obesity: Many women with PCOS are overweight or obese. Excess weight can further exacerbate insulin resistance and hormonal imbalances. It is estimated that approximately 50% to 60% of women with PCOS are obese or overweight (Teede et al., 2018).

Dermatological Symptoms:

Hirsutism: Elevated androgen levels often result in hirsutism, or excessive hair growth in areas where men typically grow hair, such as the face, chest, and back (Moran et al., 2011). Hirsutism is one of the most distressing symptoms for many women and can significantly impact self-esteem and quality of life.

Acne: Androgen excess can also lead to acne, particularly on the face, back, and shoulders. Acne is common in adolescents and young women with PCOS and can be severe (Escobar-Morreale, 2018).

Alopecia: Androgenic alopecia, or thinning of the hair on the scalp, is another possible symptom of PCOS. It occurs due to elevated levels of androgens affecting hair follicles (Escobar-Morreale, 2018).

Additional Symptoms:

Skin Changes: Women with PCOS may also experience other skin changes such as acanthosis nigricans, which is characterized by dark, velvety patches of skin in body folds (Azziz et al., 2009). This condition is associated with insulin resistance.

Mood Disorders: There is evidence that PCOS can be associated with mood disorders, including depression and anxiety. The psychological impact of PCOS, including body image issues and the stress of dealing with chronic symptoms, can contribute to these mental health challenges (Kamenov et al., 2020). In conclusion, PCOS is a complex condition with a multifactorial etiology involving genetic, hormonal, and environmental factors. Its symptoms span a range of physiological and psychological domains, including reproductive issues, metabolic disturbances, and dermatological manifestations. Understanding these causes and symptoms is crucial for effective diagnosis and management of the syndrome.

Polycystic Ovary Syndrome (PCOS) is a complex endocrine disorder characterized by a range of symptoms and underlying causes. Studies highlight that PCOS involves a genetic predisposition, with multiple genes potentially contributing to its development (Goodarzi et al., 2011). Hormonal imbalances, particularly elevated androgen levels and insulin resistance, play a crucial role in the disorder's pathophysiology (Dunaif et al., 2001). Symptoms of PCOS include irregular menstrual cycles, anovulation, hirsutism, and acne, which are often accompanied by metabolic issues such as obesity and insulin resistance (Moran et al., 2011). Additionally, women with PCOS are at a higher risk for mental health disorders, including depression and anxiety, which can significantly impact their quality of life (Kamenov et al., 2020). These findings underscore the need for a multidisciplinary approach to managing PCOS that addresses both its physical and psychological dimensions (Teede et al., 2018; Escobar-Morreale, 2018).

Worldwide Statistics on Polycystic Ovary Syndrome (PCOS)

Prevalence

- **Global Prevalence:** PCOS affects approximately 6–20% of women of reproductive age globally. This range reflects differences in diagnostic criteria and population characteristics. The Rotterdam criteria, which are commonly used, estimate a prevalence closer to 8–13% (Azziz et al., 2016).
- **Regional Variations:**
 - **United States:** PCOS affects about 8–10% of women of reproductive age, according to various studies (Pignatelli et al., 2020). The prevalence can be higher among specific ethnic groups, such as Hispanic and African American women (Sirmans & Pate, 2014).
 - **Europe:** Estimates suggest that around 10–12% of women have PCOS. This figure varies by country and diagnostic criteria. For instance, in the UK, prevalence is estimated at about 10% (Teede et al., 2018).
 - **Asia:** In India, PCOS prevalence ranges from 9–20%, reflecting regional variations within the country. Studies show a prevalence of about 8–12% in other parts of Asia, such as China and Japan (Mohan et al., 2018; Wang et al., 2021).
 - **Middle East and North Africa:** Prevalence rates in this region range from 8–12%, with variations across different countries (Mekseepralard et al., 2019).

Diagnostic Criteria

- **Rotterdam Criteria:** This set of criteria requires at least two of the following for diagnosis: irregular menstrual cycles, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries on ultrasound (Rotterdam ESHRE/ASRM-Sponsored PCOS Consensus Workshop Group, 2004).
- **NIH Criteria:** Requires hyperandrogenism and oligo-ovulation or anovulation (National Institutes of Health, 1990).
- **Androgen Excess Society Criteria:** Focuses on clinical or biochemical evidence of hyperandrogenism and exclusion of other disorders (Azziz et al., 2006).

Impact on Health

- **Reproductive Health:** PCOS is a leading cause of infertility due to anovulation. Many women with PCOS require assisted reproductive technologies to conceive (Fauser et al., 2012).

- **Metabolic Syndrome:** Women with PCOS are at increased risk of metabolic syndrome, which includes obesity, insulin resistance, type 2 diabetes, and cardiovascular disease (Knochenhauer et al., 1998; Ehrmann et al., 2006).
- **Psychological Impact:** PCOS is associated with higher rates of anxiety and depression. Women with PCOS often report a lower quality of life compared to the general population (Moran et al., 2011; Hart et al., 2012).

. Risk Factors

- **Genetics:** Genetic predisposition plays a role in PCOS, with familial patterns observed in several studies (Goodarzi et al., 2011).
- **Environmental Factors:** Lifestyle factors, including diet and physical activity, influence the onset and management of PCOS (Teede et al., 2018).
- **Ethnicity:** PCOS prevalence and presentation can vary by ethnicity. For example, higher prevalence and more severe symptoms have been reported among South Asian and Hispanic women (Sirmans & Pate, 2014; Azziz et al., 2006).

Management and Treatment

- **Medical Management:** Treatment includes lifestyle modifications, medications for symptom management (such as hormonal contraceptives and insulin sensitizers), and fertility treatments (Moran et al., 2011).
- **Public Health Strategies:** Improved diagnostic criteria and increased awareness are essential for better management and support for women with PCOS (Moran et al., 2011).

Research and Future Directions

- **Ongoing Studies:** Research continues to explore the underlying mechanisms of PCOS, refine diagnostic methods, and develop more effective treatments (Teede et al., 2018).
- **Global Health Initiatives:** Efforts to standardize diagnostic criteria and treatment protocols are underway to improve care and reduce disparities (Azziz et al., 2016).

Polycystic Ovary Syndrome (PCOS) Statistics in India

Prevalence

- **General Prevalence:** PCOS affects approximately 9–20% of women in India. This variation reflects differences in diagnostic criteria and the study population. Recent studies suggest a prevalence of about 10–15% among reproductive-aged women, aligning with the higher end of global estimates (Mohan et al., 2018; Bhasin et al., 2020).
- **Regional Variations:** The prevalence of PCOS varies across different regions of India. Studies indicate that urban populations may report higher prevalence rates compared to rural populations, likely due to lifestyle factors and increased awareness (Kumar et al., 2019).

Diagnostic Criteria and Awareness

- **Diagnostic Criteria:** In India, the diagnosis of PCOS is commonly based on the Rotterdam criteria, which include the presence of two out of three features: irregular menstrual cycles, clinical or biochemical signs of hyperandrogenism, and polycystic ovaries on ultrasound (Ghosh et al., 2021).

- **Awareness and Diagnosis:** Awareness of PCOS and its symptoms is increasing in India, particularly in urban areas. However, many women in rural areas may remain undiagnosed due to limited access to healthcare and lack of awareness (Rani et al., 2017).

Impact on Health

- **Reproductive Health:** PCOS is a leading cause of infertility in Indian women. Many seek fertility treatments, including ovulation induction and assisted reproductive technologies, to manage the condition (Ramesh et al., 2019).
- **Metabolic Syndrome:** Indian women with PCOS are at a heightened risk of metabolic disorders such as insulin resistance, type 2 diabetes, and cardiovascular disease. Studies indicate a high prevalence of insulin resistance among PCOS patients in India (Sharma et al., 2020).
- **Psychological Impact:** PCOS can have significant psychological effects, including higher rates of anxiety and depression. The stress of managing a chronic condition, along with symptoms like hirsutism and acne, contributes to these psychological issues (Rajput et al., 2018).

Risk Factors

- **Genetics:** Genetic predisposition is a known risk factor for PCOS in India. Family history of PCOS or related metabolic disorders increases the likelihood of developing the condition (Ghosh et al., 2021).
- **Lifestyle Factors:** Urbanization and lifestyle changes, such as sedentary behavior and unhealthy diets, have contributed to the rising prevalence of PCOS in India (Kumar et al., 2019).

Management and Treatment

- **Medical Management:** Treatment for PCOS in India typically includes lifestyle modifications, such as diet and exercise, along with medications to manage symptoms and improve fertility. Hormonal contraceptives and insulin sensitizers are commonly prescribed (Ramesh et al., 2019).
- **Public Health Strategies:** Increasing awareness and improving access to healthcare are crucial for better management of PCOS in India. Public health initiatives are focused on educating women and healthcare providers about PCOS and its management (Sharma et al., 2020).

Research and Future Directions

- **Ongoing Studies:** Research in India continues to explore the genetic, environmental, and metabolic aspects of PCOS. Studies are also focused on improving diagnostic methods and treatment options tailored to the Indian population (Mohan et al., 2018).
- **Global Health Initiatives:** Collaborative efforts are being made to standardize PCOS diagnostic criteria and treatment protocols globally, including in India, to improve patient outcomes (Ghosh et al., 2021).

Methodology

1. Research Design: Correlation Research

The research design employed in this study is correlation research. This approach is used to identify and assess the relationships between variables without manipulating them. In the context of PCOS, correlation research can help determine whether there is a statistical relationship between various factors, such as hormonal levels, psychological symptoms, and clinical manifestations of PCOS. The primary goal is to explore and quantify the strength and direction of these relationships, rather than to establish cause-and-effect relationships.

2. Sample: 50 Patients with PCOS

The study involves a sample of 50 patients diagnosed with PCOS. This sample size is chosen to provide a manageable yet statistically significant group for analysis. By focusing on patients with PCOS, the study aims to capture a representative range of symptoms and characteristics associated with the condition. The sample's size is adequate to detect meaningful correlations and ensure the reliability of the study's findings, while also allowing for practical data collection and analysis.

3. Sampling Technique: Purposive Random Sampling

The sampling technique used is purposive random sampling. This method involves selecting participants based on specific criteria related to the research objectives. In this study, purposive sampling ensures that all participants have a confirmed diagnosis of PCOS, which is essential for the study's focus. Within this group, random sampling may be employed to select a subset of patients, minimizing selection bias and enhancing the generalizability of the results. This approach ensures that the sample accurately represents the population of interest.

4. Inclusion and Exclusion Criteria

Inclusion Criteria:

- Diagnosed with PCOS based on established diagnostic criteria (e.g., Rotterdam criteria).
- Aged between 18 and 40 years to include women in the reproductive age group.
- Able to provide informed consent and participate in the study.

Exclusion Criteria:

- Presence of other significant endocrine disorders (e.g., thyroid disorders) that could confound the results.
- Use of medications that might interfere with hormone levels or psychological assessments.
- Pregnant or breastfeeding women, as these conditions could affect the study's outcomes.

These criteria are designed to ensure that the sample is homogenous with respect to PCOS diagnosis while excluding factors that could skew the results or introduce additional variables.

5. Ethics

Ethical considerations in this study were carefully addressed. Informed consent was obtained from all participants, ensuring they understood the study's purpose, procedures, and potential risks. Confidentiality and anonymity were maintained throughout the research process. The study was conducted in accordance with ethical guidelines and approved by a relevant ethics review board, ensuring that participants' rights and well-being were protected.

6. Statistical Tests: Correlation

Correlation statistical tests were used to analyze the data. Specifically, Pearson's correlation coefficient (r) was employed to measure the strength and direction of the linear relationship between variables, such as hormonal levels and psychological symptoms. Spearman's rank correlation may also be used if the data is not normally distributed. These tests help determine how closely related the different variables are and whether any significant patterns exist within the data

Result Discussion of Tables

Descriptive Statistics

	Mean	Std. Deviation	N
Anxiet	8.5200	1.43200	50
stress	7.4400	2.20537	50
Optimism	44.2200	9.02443	50

Correlations

		Anxiet	stress	Optimism
Anxiety	Pearson Correlation	1	.573*	-.495**
	Sig. (2-tailed)		.000	.000
	N	50	50	50
stress	Pearson Correlation	.573*	1	-.675
	Sig. (2-tailed)	.000		.000
	N	50	50	50
Optimism	Pearson Correlation	-.495**	-.675	1
	Sig. (2-tailed)	.000	.000	
	N	50	50	50

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

The descriptive statistics table provides the mean, standard deviation, and sample size for the variables under study:

- **Anxiety:** Mean = 8.52, Std. Deviation = 1.432, N = 50
- **Stress:** Mean = 7.44, Std. Deviation = 2.205, N = 50
- **Optimism:** Mean = 44.22, Std. Deviation = 9.024, N = 50

These values suggest that the sample's anxiety and stress levels have moderate mean values, with stress showing a higher variance compared to anxiety. Optimism has a higher mean and standard deviation, indicating a wider range of optimism levels among participants.

Correlation Analysis

The correlation table presents Pearson correlation coefficients, significance levels, and sample sizes for the relationships between anxiety, stress, and optimism.

1. **Hypothesis 1: There is a significant negative correlation between optimism and stress among patients with PCOS.**

- **Correlation Coefficient:** $r = -0.675$
- **Significance:** $p = 0.000$

The correlation coefficient between optimism and stress is -0.675 , which is a strong negative correlation. This suggests that higher levels of optimism are associated with lower levels of stress among patients with PCOS. The significance level ($p = 0.000$) indicates that this correlation is statistically significant, supporting Hypothesis 1.

2. **Hypothesis 2: There is a significant positive correlation between anxiety and stress among patients with PCOS.**

- **Correlation Coefficient:** $r = 0.573$
- **Significance:** $p = 0.000$

The correlation coefficient between anxiety and stress is 0.5730.5730.573, which is a moderate positive correlation. This means that higher anxiety levels are associated with higher stress levels among PCOS patients. The significance level ($p=0.000$) confirms that this correlation is statistically significant, supporting Hypothesis 2.

3. Hypothesis 3: There is a significant negative correlation between optimism and anxiety among patients with PCOS.

- **Correlation Coefficient:** $r=-0.495$
- **Significance:** $p=0.000$

The correlation coefficient between optimism and anxiety is -0.495 , indicating a moderate negative correlation. This implies that higher levels of optimism are associated with lower levels of anxiety in PCOS patients. The significance level ($p=0.000$) shows that this correlation is statistically significant, thus supporting Hypothesis 3.

Summary

The results from the correlation analysis provide strong support for all three hypotheses:

- **Hypothesis 1** is supported by a significant negative correlation between optimism and stress ($r=-0.675$).
- **Hypothesis 2** is supported by a significant positive correlation between anxiety and stress ($r=0.573$).
- **Hypothesis 3** is supported by a significant negative correlation between optimism and anxiety ($r=-0.495$).

These findings highlight important relationships between psychological variables in PCOS patients and suggest that interventions aimed at increasing optimism might help reduce stress and anxiety, while managing anxiety could be essential in reducing stress.

This study investigates the relationships between optimism, stress, and anxiety among patients with Polycystic Ovary Syndrome (PCOS), aiming to uncover significant correlations between these psychological and emotional variables. The results provide valuable insights into how these factors interplay in the context of PCOS, a condition known for its multifaceted impact on women's health.

1. Optimism and Stress:

The analysis reveals a strong negative correlation between optimism and stress, with a Pearson correlation coefficient of $r=-0.675$ ($p = 0.000$). This significant finding indicates that higher levels of optimism are associated with lower levels of stress among PCOS patients. This result supports Hypothesis 1, suggesting that individuals who maintain a more positive outlook are likely to experience less stress. This relationship underscores the potential benefit of fostering optimism in managing stress levels in PCOS patients. Interventions that focus on enhancing positive thinking and optimism might be effective in reducing stress, thereby improving overall well-being and quality of life for these patients.

2. Anxiety and Stress:

A moderate positive correlation is found between anxiety and stress, with a Pearson correlation coefficient of $r=0.573$ ($p = 0.000$). This result confirms Hypothesis 2 and indicates that higher anxiety levels are associated with increased stress. The significance of this correlation highlights the interplay between anxiety and stress, suggesting that as anxiety levels rise, so do stress levels. This finding aligns with existing literature that demonstrates how

psychological distress often exacerbates stress, which can be particularly pronounced in chronic conditions like PCOS. Addressing anxiety through targeted interventions could potentially mitigate stress levels, improving patient outcomes.

3. Optimism and Anxiety:

The study also finds a moderate negative correlation between optimism and anxiety, with a Pearson correlation coefficient of $r = -0.495$ ($p = 0.000$). This supports Hypothesis 3, indicating that higher levels of optimism are associated with lower levels of anxiety. This result suggests that fostering a more optimistic outlook can help alleviate anxiety symptoms in PCOS patients. By promoting optimism, healthcare providers may help patients manage their anxiety more effectively, which could contribute to better overall mental health and well-being.

Implications for Practice:

These findings have several practical implications for the management of PCOS. Given the significant correlations identified, healthcare professionals should consider incorporating psychological interventions into the treatment plans for PCOS patients. Programs that focus on enhancing optimism and managing anxiety could play a crucial role in alleviating stress and improving quality of life. Cognitive-behavioral therapy, mindfulness practices, and stress management techniques are potential strategies that could be integrated into routine care.

Limitations and Future Research:

While the study provides valuable insights, it is essential to acknowledge its limitations. The cross-sectional design of the study does not allow for causal inferences, and the sample size, though adequate, may not fully represent the diversity of the PCOS population. Future research could benefit from longitudinal studies to explore the causal relationships between optimism, stress, and anxiety over time. Additionally, investigating these variables in a more diverse sample could provide a more comprehensive understanding of their impact across different demographic groups.

Conclusion:

In summary, this study highlights the significant relationships between optimism, stress, and anxiety among PCOS patients. The strong negative correlation between optimism and stress, the positive correlation between anxiety and stress, and the negative correlation between optimism and anxiety underscore the importance of addressing psychological factors in the management of PCOS. By focusing on enhancing optimism and managing anxiety, healthcare providers can improve stress outcomes and overall quality of life for individuals with PCOS.

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