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Evaluation of common mental disorders in women with polycystic ovary syndrome and its relationship with body mass index

Avaliação dos transtornos mentais comuns em mulheres com síndrome dos ovários policísticos e sua relação com o índice de massa corporal

Original Article

Keywords

Polycystic ovary syndrome
Mental health
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Palavras-chave

Síndrome do ovário policístico
Saúde mental
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Índice de massa corporal
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Abstract

PURPOSE: To evaluate the prevalence of common mental disorders in women diagnosed with polycystic ovary syndrome as compared with paired controls without this syndrome. **METHODS:** Cross-sectional study with a Control Group examining women between the ages of 18 and 30 who did not use antidepressants and who sought the Gynecology Service of the researched sites. For every woman diagnosed with the polycystic ovary syndrome, another with the same age, educational status and presence or absence of sexual partners was sought without this diagnosis. In total, 166 patients agreed to participate, consisting of 95 diagnosed with polycystic ovary syndrome and 71 in the Control Group. The diagnosis of polycystic ovary syndrome was made by the presence of two from three criteria: oligomenorrhea or amenorrhea, clinical or biochemical hyperandrogenism and polycystic ovaries on transvaginal ultrasound, following exclusion of patients with Cushing's syndrome, congenital adrenal hyperplasia, and androgen-secreting tumors. Weight and height were measured to calculate the body mass index. The Self-Reporting Questionnaire, which evaluated 20 items, was used as an indicator of common mental disorders. A χ^2 analysis stratified by the category of body mass index was used to compare the prevalence of common mental disorders, between the groups of women with and without the polycystic ovary syndrome. **RESULTS:** There were no significant differences in age, education, presence of sexual partners, ethnicity, socioeconomic status, use of psychiatric medication, and search for consultation in mental health between the studied groups. The prevalence of obese women with indications of common mental disorders was significantly higher in women with polycystic ovary syndrome than in the Control Group. In the group with healthy body mass index, the incidence of common mental disorders was statistically significant different between women with polycystic ovary syndrome and normal controls ($p=0.008$). **CONCLUSIONS:** Women with diagnosis of this disease have an almost three-fold increased likelihood of common mental disorders as compared with those without polycystic ovary syndrome. Although obesity is often observed in polycystic ovary syndrome, even women with a healthy body mass index have an increased risk of psychiatric comorbidity.

Resumo

OBJETIVOS: Avaliar a prevalência dos transtornos mentais comuns em mulheres diagnosticadas com síndrome dos ovários policísticos e compará-las com controles pareadas sem a doença. **MÉTODOS:** Estudo transversal com Grupo Controle. Participaram mulheres entre 18 e 30 anos que não faziam uso de antidepressivos e procuraram o Serviço de Ginecologia dos locais de pesquisa. Para cada mulher diagnosticada com a síndrome dos ovários policísticos, buscou-se outra sem este diagnóstico com mesma idade, condição de escolaridade e presença ou ausência de parceiro sexual fixo. No total, 166 pacientes aceitaram participar, sendo 95 diagnosticadas com a síndrome e 71 no Grupo Controle. Para o diagnóstico da síndrome dos ovários policísticos, foi necessário existir dois dos três critérios: oligomenorreia ou amenorreia; hiperandrogenismo clínico ou bioquímico; ovários policísticos na ecografia transvaginal e excluir presença da síndrome de Cushing, hiperplasia adrenal congênita e tumores secretores de androgênio. Peso e altura foram aferidos para calcular o índice de massa corporal, enquanto o indicativo de transtorno mental comum foi avaliado pelo *Self-Reporting Questionnaire* com 20 itens. Foi realizado o teste do χ^2 em análise estratificada por categoria de índice de massa corporal para comparar as prevalências dos transtornos mentais comuns no grupo de mulheres com e sem a síndrome. **RESULTADOS:** Não houve diferenças significativas quanto à idade, escolaridade,

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presença de parceiro sexual fixo, cor da pele, nível socioeconômico, uso de medicação psiquiátrica e procura por consulta em saúde mental entre os grupos estudados. A prevalência de mulheres obesas e com indicações de transtornos mentais comuns foi significativamente maior no grupo de mulheres com síndrome dos ovários policísticos do que no Grupo Controle. No grupo com índice de massa corporal saudável, a diferença de proporções referentes ao indicativo de transtorno mental comum entre mulheres com e sem a síndrome foi estatisticamente significativa ($p=0,008$). **CONCLUSÕES:** As mulheres com o diagnóstico desta síndrome apresentam proporção quase três vezes maior de transtornos mentais comuns quando comparadas com aquelas sem a doença. Mesmo as mulheres com a síndrome e o índice de massa corporal saudáveis apresentam maior risco de comorbidade psiquiátrica.

Introduction

The polycystic ovary syndrome (PCOS) is an endocrine-gynecological disorder that affects between 5 and 10% of reproductive-age women¹⁻⁷, and it is characterized by hyperandrogenism, insulin resistance, and chronic anovulation. Clinical manifestations include hirsutism, acne, alopecia, obesity, menstrual irregularity and infertility, but all of these symptoms do not necessarily occur in aggregation^{1,8}. They exhibit heterogeneous expression, with marked differences in prevalence and intensity between different groups of women with PCOS². PCOS encompasses not only an endocrine condition, but also a reproductive and psychological syndrome for women with PCOS have their self-image and physical appearance changed by obesity, hirsutism and acne in addition to experiencing infertility. These symptoms occur with lifestyle changes that might generate sexual dissatisfaction and depression^{9,10}.

Some studies report an association between polycystic ovaries and high level of depression and anxiety, affecting quality of life and leading to a reduction of sleep and an increased incidence of phobias and panic⁵. The relationship between affective disorders and the endocrine system has been extensively studied, and interest in this field has been growing in recent years. PCOS is a disorder closely related to women's physical appearances, causing a change in their body image that may lead to depression⁸.

National literature about this subject is still scarce. A study conducted in Rio de Janeiro with 72 patients showed that 57% had at least one psychiatric diagnosis¹¹. Among the most frequent diagnoses were major depressive and bipolar disorders. Comorbidity of PCOS with a psychiatric disorder may increase functional damage. Similarly, some drug treatments for mood disorders have been reported to be associated with such syndrome's development¹¹.

The objective of this study was to evaluate the prevalence of common mental disorders in women diagnosed with PCOS as compared with paired controls without it.

Methods

This is a cross-sectional study including a Control Group, which was carried out from February 2011 to

December 2012. Women between 18 and 30 years of age who sought the services of gynecology and did not use antidepressants were invited to participate. For every woman diagnosed with PCOS, another one with the same age, educational status, and presence or absence of sexual partners was sought without this diagnosis. In total, 166 patients agreed to participate, consisting of 95 diagnosed with PCOS and 71 in the Control Group. The study was conducted at four clinics that had specialized gynecology departments, which were: *Fundação de Apoio Universitário, Posto de Saúde Virgílio Costa, Hospital Clinicamp, and Clínica de Ultrassonografia Centrus*. This study was approved by the Research Ethics Committee of *Universidade Católica de Pelotas* and *Fundação de Apoio Universitário* (protocol number 2011/03). All interviewees were informed by the researchers about the study aims and confirmed the protection of their identities by reading and signing the statement of consent.

Instrument for data collection

The present scientific investigation used the criteria for PCOS diagnosis based on a consensus carried out in 2003¹², which dictates the need for the presence of two of the three following criteria for such diagnosis: oligomenorrhea or amenorrhea, hyperandrogenism and polycystic ovarian morphology by ultrasound^{3,4,13}. Based on this consensus, several authors have studied ovarian morphology and defined how to evaluate ovaries by ultrasound^{4,14}.

The participants were invited to answer a questionnaire that evaluated sociodemographic data and indications of common mental disorders. Additionally, the participants were assessed for height and weight.

The socioeconomic assessment of the participants was accomplished with the rating scale from the Brazilian Association of Research Companies, based on the accumulation of material goods and on the education level of the household head. This tool ranks the socioeconomic situation as 'A, B, C, D and E', with A being the highest socioeconomic status and E, the lowest¹⁵.

Calculation of the body mass index (BMI) was performed by dividing weight in kilograms by the square of height in meters. Scores between 18.6 and 24.9 were categorized as healthy, those between 25 and 29.9 as overweight and above 30 as obese¹⁶.

The indication of common mental disorders was assessed by the Self-Reporting Questionnaire 20 items (SRQ scale-20), which measures symptoms of anxiety, mood and somatoform disorders. This evaluation is recommended by the World Health Organization (WHO) and it was validated for the Brazilian population by Mari and Williams¹⁷. In this study, a score above seven points was considered an indication of common mental disorders.

Sample calculation and data analysis

The present research is part of a larger project, therefore the samples were calculated on the basis of that aim and data collection is still under progress. However, considering the number of participants in each study group and the outcome proportions of common mental disorders, enrolling 166 women ensures reliability of 95% and statistical power of 92% to differentiate the prevalence of indications of common mental disorders between women with and without a diagnosis of PCOS. The calculation of reliability and statistical powers was performed using Epi-Info, version 6.04.

Data were coded with standardized characters and double-entered in Epi-Info 6.4 for further verification and correction of inconsistencies in data entry. For data analysis, the χ^2 test was used to verify differences in proportions, and the *t*-test was used to observe differences in means. Finally, we performed a χ^2 analysis following categorization by BMI to check differences in indication proportions of common mental disorders, among groups of women with and without PCOS.

Results

The current study included 166 women, of which 95 were diagnosed with PCOS while 71 were in the matched Control Group.

The pairing proposed for the formation of study groups was effective because there were no statistically significant differences between them in age, educational level, and presence of a steady partner. The average age of women with PCOS was 24.36 (3.56) years-old, while the Control Group participants had a mean age of 24.38 (3.75) years-old. In the group of participants with PCOS, the percentage of women with sexual partners was 89.1%, while 91.5% of the Control Group also reported having sexual partners. Regarding education, in the group of women diagnosed with PCOS, 48.4% completed high school and 37.9% held a college degree, while in the Control Group, these proportions were 50.7 and 39.4%, respectively.

Table 1 summarizes the characterization and differentiation of both groups. The proportion of obese women with indicators of common mental disorders was

significantly higher in women with PCOS than in the Control Group.

After the analysis had been stratified by the BMI (Table 2), the difference in the percentage of women with a healthy BMI and indications of common mental disorders was statistically significant among those with and without PCOS ($p=0.008$).

Table 1. Difference in proportions between women with and without the polycystic ovary syndrome

	Cases (n=95)		Controls (n=71)		p-value
	n	%	n	%	
Socioeconomic level					0.4
A	16	16.8	10	14.1	
B	59	62.1	53	74.6	
C or D	20	21.1	8	11.3	
Skin color					0.6
White	85	89.5	61	85.9	
Not white	10	10.5	10	14.1	
Body mass index					0.003*
Healthy	48	51.6	50	71.4	
Overweight	21	22.6	14	20.0	
Obese	24	25.8	6	8.9	
Consultation in mental health					1.000
Yes	39	41.1	29	40.8	
No	56	58.9	42	59.2	
Psychiatric medication in the last 30 days					0.2
Yes	79	83.2	64	90.1	
No	16	16.8	7	9.9	
Common mental disorders					0.001*
No	57	60.0	60	84.5	
Yes	38	40.0	11	15.5	

*Significant difference.

Table 2. Difference in proportions of women with indicators of common mental disorders with and without polycystic ovary syndrome, stratified by body mass index

Body mass index		Cases (n=95)		Controls (n=71)		p-value
		n	%	n	%	
Healthy (n=98)	Common mental disorder					0.008*
	No	29	60.4	43	86.0	
	Yes	19	39.6	7	14.0	
Overweight (n=35)	Common mental disorder					0.1
	No	14	66.7	13	92.9	
	Yes	7	33.3	1	7.1	
Obese (n=30)	Common mental disorder					1.0
	No	13	54.2	3	50.0	
	Yes	11	45.8	3	50.0	

*Significant difference.

Discussion

In the gynecological consultation room, routine questioning of patients about emotional symptoms is uncommon. However, the presence of mental health complaints can also emerge at this moment¹⁸, highlighting the need for guidance and monitoring. The present study emphasizes that women with PCOS have an almost three times higher likelihood of common mental disorders as compared with those without it. This finding is corroborated by other studies that point to the high demand for mental healthcare in this population^{5,11}.

However, part of the scientific literature suggests the negative impact of obesity on female self-esteem as a possible explanation for such high prevalence of psychiatric disorders⁶. In contrast, the prospect exists that all women with PCOS have concerns about their weight, and therefore, mental disorders occur independently of BMI, thus it is not in fact a differential characteristic^{19,20}. The data presented here indicate that even healthy-weight women with PCOS have an increased risk of psychiatric comorbidity. These data are in agreement with a recent meta-analysis, which shows a four-fold increased risk for depression in women with PCOS independent of the BMI²¹.

Limitations in this study included small number of obese women, especially those without a diagnosis

of PCOS. It is likely that the same result found among healthy women is present in the other groups. The study design required the reverse causality bias, therefore it is not possible to distinguish which condition was first manifested, PCOS or common mental disorders. However, we propose that PCOS can leave women more emotionally vulnerable, due not only to the consequences of being overweight or obese, but also to other features of the syndrome that potentially have similar implications, such as hirsutism¹⁰, acne²², and infertility²³. Still, hormonal changes as indicated by the clinical features of PCOS may also contribute significantly to the appearance of mental disorders in affected women^{24,25}. Thus, it is important that future studies seek to assess the relationship between mental disorders, especially mood ones, and PCOS through hormonal and genetic evaluations.

In clinical practice, there is the need for awareness of health professionals, especially the gynecologist, in order to inquire about the mental health of his/her patient and refer him/her to a mental health professional, who is able to follow-up and continue the treatment whenever is necessary. A multidisciplinary team composed of a gynecologist, psychologist and endocrinologist would be ideal so that together the group can care for the patient to assess his/her interactions, medication, and continued treatment.

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