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ORIGINAL ARTICLE

Prevalence and Severity of Mental Health Disorders Among Saudi Females Diagnosed with Polycystic Ovary Syndrome

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Abstract

Background: Polycystic ovary syndrome (PCOS) is a common endocrine disorder among women of reproductive age and is increasingly associated with psychological and emotional disturbances. This study aimed to assess the prevalence and severity of mental health disorders among Saudi females diagnosed with PCOS. **Methods:** A cross-sectional study was conducted on 490 Saudi females diagnosed with PCOS. Data were collected using a structured questionnaire covering sociodemographic characteristics and multiple domains, including psychological and emotional status, depression, anxiety and stress, fertility and sexual life, body image, dermatological manifestations, and obesity-related concerns. Statistical analysis was performed using Chi-square tests to evaluate associations between variables. **Results:** The average age of the participants was 27.04 years, with a standard deviation of 8.43 years. There was a high level of psychological distress, with a significant number of individuals experiencing fatigue (38.5% frequently), mood disturbances (50.4% always to often), and irritability. Moderate symptoms of depression, anxiety, and stress were noted, whereas severe depressive symptoms like feelings of worthlessness and lack of meaning occurred less often. Concerns about fertility, especially the fear of future infertility (37.8%), were significant, while dissatisfaction with sexual experiences was comparatively low. Concerns about body image and skin conditions, such as acne and excessive hair growth, had a moderate effect but resulted in minimal social withdrawal. There were notable associations between age, education, and mental health outcomes ($P < 0.05$). Women aged 26–35 and those with lower levels of education reported a greater psychological burden. **Conclusion:** PCOS is significantly associated with psychological distress among Saudi females, particularly in the form of moderate depression, anxiety, and emotional instability. Sociodemographic factors, especially age and education, play a critical role in the severity of mental health outcomes.

Key words: Polycystic ovary syndrome, mental health disorders, depression, anxiety, prevalence, severity, Saudi Arabia.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder of females in the reproductive age group.[1] It is a complex condition that involves metabolic, endocrine, and reproductive problems.[2] A recent comprehensive review and meta-analysis found that the pooled prevalence of PCOS was 21.27%.[3] This incidence exceeds the 10–13% prevalence established in the 2023 PCOS diagnostic criteria.[2] In Saudi Arabia, PCOS affects around 16% of women and has a worldwide prevalence of 11.5% according to Rotterdam criteria.[4]

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The variation may be due to the diagnostic criteria utilized. Based on the best current evidence, it is advised to diagnose PCOS when at least two of the following occur: clinical or biochemical hyperandrogenism, ovulatory failure, polycystic ovaries on ultrasound, or a high level of anti-Mullerian hormone.[2]

PCOS is characterized by oligo- or amenorrhea, ovarian hyperandrogenism, and polycystic ovarian morphology. It is a diverse disorder that can lead to an increased risk of long-term health problems such as obesity, Type 2 diabetes, cardiovascular disease, and mental illness. PCOS can have a considerable influence on a woman's reproductive health throughout her reproductive lifetime, whereas the impact varies greatly across women.[5]

This multidimensional condition has far-reaching consequences for the quality of life, reproductive health, and long-term health of millions of women worldwide. The rising prevalence of PCOS is exacerbated by modifiable risk factors, including obesity, sedentary lifestyles, and bad eating habits, all of which are growing more common across the world, despite rapid urbanization and nutritional changes.[6] Recent worldwide guideline stresses the measurement of health-related quality of life (HRQoL) as a major component of PCOS care and research, reflecting the significant psychological and emotional cost of the disease.[7]

Mental health is a significant component of total quality of life. It is defined as a good condition of psychological, emotional, and social health, marked by emotions of satisfaction, resilience, and the ability to effectively manage life's obstacles.[8] Although the mechanism of the relationship between mental health and PCOS is not entirely known, changes in the metabolic pathway, including obesity and insulin resistance, and disruptions in the endocrine axis among women with PCOS may be possible causes for the formation of depression and anxiety.[9]

Negative body image caused by clinical manifestations of hyperandrogenism, such as hirsutism, acne, and alopecia, has a negative impact on mood and reduces self-esteem. Furthermore, women with PCOS who suffer from monthly irregularity and/or infertility incur additional psychological stress and bad quality of life, including poor mental well-being.[10]

Despite the extensive international research on PCOS and its psychological comorbidities, there remains a critical knowledge gap in understanding the mental health burden among Saudi women with PCOS. To the best of our knowledge, this study addresses this critical research gap by providing the first assessment of the prevalence and severity of mental health disorders among Saudi females diagnosed with PCOS.

METHODOLOGY

Study design and setting

This cross-sectional study was conducted in Saudi Arabia between July 2025 and December 2025.

Subject: Participants, recruitment, and sampling procedure

To ensure broad representation from different regions of Saudi Arabia, participants were recruited through various social media platforms, including Twitter, WhatsApp, Instagram, Snapchat, and Facebook. Eligible participants are females aged 14 years and older, living in Saudi Arabia, with a self-reported diagnosis of PCOS, who have provided written informed consent. Those who do not meet these inclusion criteria will be excluded from the study.

Sample size

Size of Sample: Based on a target population of about five million Saudi women of reproductive age, the Qualtrics sample size calculator helped to determine the sample size. With a confidence level of 95% and a margin of error of 5, the minimum sample size came out to be around 384.

Inclusion and exclusion criteria

The inclusion criteria for this study were as follows: Women aged 14 years or older, residing in KSA, and diagnosed with PCOS. Women under 14, those outside KSA, undiagnosed with PCOS, and males were excluded from this study.

Method for data collection, instrument

To examine the women with Depression, Anxiety, and Stress Scale 21 and PCOS Health-Related Quality of Life Questionnaire they were required to fill in a questionnaire. The questionnaire consisted of two main sections; the first contained a sociodemographic profile of the sample. The second included 68 items of a 5-point Likert scale subdivided into six domains. Throughout the study, ethical considerations were observed and informed consent was obtained before data collection.

Data collection

Questionnaire

The questionnaire was uploaded on Google Forms, and the link was sent to the participants through their accounts on social media platforms. The responses were coded positively as follows (Never = 5, Seldom = 4, Quite often = 3, Very

often = 2, Always = 1). Data were collected, computerized, and cleaned to be analyzed.

Scoring system

Responses were coded positively (from 5 marks to 1 mark). This gave a total score range of (68–340). The overall level of each dimension was assessed using Bloom's cut-off categorization. Based on this cut-off point, the score between (272 and 340) indicates no effect on the HRQoL, (207–271) indicates neutrality or medium effect on the HRQoL, and (<206) indicates high or maximal effect on the HRQoL. To have an obvious vision of the effect in each dimension, cut-off points of each dimension are also determined as illustrated in the table below:

Dimension	High=No effect	Mid=Medium effect	Low=Marked effect
A	36–45	28–35	<27
B	84–105	63–83	<62
C	40–50	31–39	<30
D	44–55	33–43	<32
E	44–55	33–43	<32
F	24–30	19–23	<18

Pilot test

The questionnaire was distributed to 20 people, and they were requested to complete it. This was done to determine the questionnaire's simplicity and the study's practicality.

RESULTS

The collected data were entered and analyzed using the Statistical Package for the Social Sciences software version 26. Descriptive statistics were used to summarize the data, where categorical variables were presented as frequencies and percentages, while continuous variables were expressed as mean ± standard deviation. The Chi-square test was used to assess the association between categorical variables. A $P < 0.05$ was considered statistically significant. The reliability of the questionnaire items was assessed using Cronbach's alpha coefficient, which demonstrated a Cronbach's alpha value of 0.769, indicating acceptable to good internal consistency.

The study included 490 participants with a mean age of 27.04 ± 8.43 years (range: 18–57 years). Most participants were below 25 years (66.3%), followed by 26–35 years (19%) and above 35 years (14.7%). More than half of the participants held a bachelor's degree (53.3%), while 15.3% had secondary education and 12% had diplomas. Regarding occupation, the largest proportion was students (43.1%), followed by unemployed (25.5%) and employed participants (24.1%). Regarding marital status, 61.8% were single, and 36.9% were married, with 63% not married when assessing duration of marriage. The majority of participants did not have children (76.3%), while 23.7% had children, with most reporting no children (76.3%) and smaller proportions having one or more children [Table 1].

Table 1: Demographic characteristics of the studied participants (*n*=490)

Variable	Category	*n*	%
Mean age±SD=27.04±8.425, Min=18, Max=57			
Age groups	Below 25	325	66.3
	From 26 to 35 years	93	19
	Above 35	72	14.7
Education level	Diploma	59	12.0
	Illiterate	8	1.6
	Intermediate school	5	1.0
	Postgraduate	32	6.5
	Secondary school	75	15.3
	University graduate	309	63.1
	Primary school	2	0.4
Occupation	Employed	118	24.1
	Homemaker	12	2.4
	Student	211	43.1
	Freelance	24	4.9
	Unemployed	125	25.5
Marital status	Married	181	36.9
	Single	303	61.8
	Widowed	6	1.2
Duration of marriage	Less than a year	38	7.8
	2–5 years	47	9.6
	≥5 years	96	19.6
	Not married	308	63.0
Children	Having children	116	23.7
	No children	374	76.3
Number of children	0	374	76.3
	1	45	9.2
	2	10	2.0
	3	6	1.2
	4	35	7.1
	6 and more	20	4.1
Mean Scores range			
Poor	From 1 to 2.33		
Moderate	From 2.34 to 3.66		
Good	From 3.67 to 5		

The results indicate that stress and depression are very common, while anxiety is somewhat less common but still

Table 2: Prevalence of depression, anxiety, and stress

Domain	No. of Items	Prevalence (%)
Depression	7	42.3
Anxiety	7	36.2
Stress	7	43.7

Table 3: Prevalence of categories among depression, anxiety, and stress

Domain	No. of participants	Percentage
Depression		
Poor	215	15.5
Moderate	752	54.2
Severe	420	30.3
Anxiety		
Poor	187	15.7
Moderate	683	57.5
Severe	318	26.8
Stress		
Poor	188	13.1
Moderate	813	56.7
Severe	433	30.2

impacts more than one-third of the participants. The results highlight a significant level of psychological distress in this group.

The analysis of the psychological domains indicated that moderate symptoms were the most common in all three domains. In the domain of depression, 54.2% of participants indicated moderate response, while 30.3% reported severe symptoms and 15.5% experienced poor response. In terms of anxiety, most participants (57.5%) showed moderate symptoms, while 26.8% reported severe anxiety and 15.7% were categorized as poor mental health. In terms of stress levels, 56.7% of participants experienced moderate stress, 30.2% reported severe stress, and 13.1% were classified as having poor stress levels [Table 3].

The analysis revealed a significant correlation between various health areas and sociodemographic factors. Younger women (under 25 years) and those with university degrees were more likely to indicate good psychological response, whereas older women and individuals with lower levels of education tended to report poorer outcomes ($P < 0.001$). Marital status affected psychological by severe, as widowed participants demonstrated consistently severe outcomes. In relation to depression, anxiety, and stress, age and education were important factors ($P < 0.001$), whereas marital status did not demonstrate a significant relationship ($P = 0.084$). Outcomes related to fertility and sexual life were notably more severe for younger women, those with higher education levels, and single women ($P < 0.001$). Body image was a generally severe response among different age groups; however, education and marital status were important factors ($P < 0.001$ and $P = 0.001$, respectively). Hair disorders and acne, as well as obesity and menstrual disorders, were significantly linked to education ($P < 0.001$) and had a less consistent relationship with age. Marital status displayed weaker or no significant correlation [Table 4].

DISCUSSION

PCOS has a significant psychological impact in addition to its physical effects; women with PCOS are more likely to experience mental health problems such as depression, anxiety, bipolar disorder, obsessive-compulsive disorder, somatization, eating disorders, and decreased sexual satisfaction.[11] This cross-sectional study provides important insights into the prevalence and severity of mental health disorders among Saudi females diagnosed with PCOS.

Most participants in the current research were young adults with a mean age of 27.04; this is in line with PCOS onset patterns. This result aligns with previous findings that PCOS often affects women aged 18–44 years.[12,13] In addition, 61.8% were single, and the majority of participants did not have children (76.3%); this highlights the need for early detection and management for the sake of future fertility of the participants. Marital status affected the psychological and emotional status of patients, as widowed participants demonstrated consistently severe outcomes, while in relation to depression, anxiety, and stress marital status did not demonstrate a significant relationship ($P = 0.084$), supporting prior evidence that marital instability worsens health outcomes in Arab societies.[14]

PCOS is known to increase mental health disorders.[15-17] The prevalence of depression, anxiety, and stress among women with PCOS from the present study was 42.3%, 36.2%, and 43.7%, respectively. Comparing the results of the present study with the study done in a quaternary hospital in Thailand, the findings confirmed that the prevalence of depression (42.3% vs. 3.85%) and anxiety (36.2% vs. 11.92%) was higher in women with PCOS than in the general healthy Thai women population.[10] It is interesting to note that our depression rates were higher than those found in Western research (e.g., 30–40% in US/European cohorts).[18] This could be because Arab women face more social expectations about marriage and fertility or because there are fewer mental health resources available.[19]

Females with PCOS should be screened for anxiety and depression using regionally approved screening instruments, according to the 2023 International Evidence-Based Guideline for the Assessment and Management of PCOS.[2] Depression and stress were linked to age and were more prevalent in young females below 25 years. Similar results were found in Taiwan, where the researchers hypothesized that

Table 4: Correlation between age groups, education, marital status and the studied domains

Domain	Variable	Category	Poor *n* (%)	Moderate *n* (%)	Good *n* (%)	χ^2	df	*P*
Psychological and Emotional Status	Age Group	Below 25	5 (1.5)	145 (44.6)	175 (53.8)	61.257	4	<0.001
		26–35	16 (17.2)	47 (50.5)	30 (32.3)			
		Above 35	15 (20.8)	16 (22.2)	41 (56.9)			
	Education	Diploma	12 (20.3)	19 (32.2)	28 (47.5)	49.963	12	<0.001
		Illiterate	0 (0.0)	8 (100.0)	0 (0.0)			
		Intermediate school	0 (0.0)	0 (0.0)	5 (100.0)			
		Postgraduate	3 (9.4)	17 (53.1)	12 (37.5)			
		Secondary school	0 (0.0)	45 (60.0)	30 (40.0)			
		University graduate	21 (6.8)	119 (38.5)	169 (54.7)			
		Primary school	0 (0.0)	0 (0.0)	2 (100.0)			
	Marital status	Married	26 (14.4)	56 (30.9)	99 (54.7)	36.276	4	<0.001
		Single	10 (3.3)	152 (50.2)	141 (46.5)			
		Widowed	0 (0.0)	0 (0.0)	6 (100.0)			
Depression, Anxiety and Stress	Age Group	Below 25	13 (4.2)	119 (38.0)	181 (57.8)	34.234	4	<0.001
		26–35	5 (5.7)	46 (52.9)	36 (41.4)			
		Above 35	15 (21.7)	24 (34.8)	30 (43.5)			
	Education	Diploma	18 (30.5)	19 (32.2)	22 (37.3)	82.980	12	<0.001
		Illiterate	0 (0.0)	8 (100.0)	0 (0.0)			
		Intermediate school	0 (0.0)	0 (0.0)	5 (100.0)			
		Postgraduate	3 (11.5)	14 (53.8)	9 (34.6)			
		Secondary school	2 (2.8)	31 (43.1)	39 (54.2)			
		University graduate	10 (3.4)	115 (38.7)	172 (57.9)			
		Primary school	0 (0.0)	2 (100.0)	0 (0.0)			
	Marital status	Married	15 (9.0)	61 (36.5)	91 (54.5)	8.230	4	0.084
		Single	18 (6.1)	128 (43.2)	150 (50.7)			
		Widowed	0 (0.0)	0 (0.0)	6 (100.0)			
Fertility and Sexual Life	Age Group	Below 25	7 (2.2)	40 (12.3)	278 (85.5)	20.219	4	<0.001
		26–35	6 (6.5)	11 (11.8)	76 (81.7)			
		Above 35	9 (12.5)	2 (2.8)	61 (84.7)			
	Education	Diploma	6 (10.2)	6 (10.2)	47 (79.7)	44.080	12	<0.001
		Illiterate	0 (0.0)	5 (62.5)	3 (37.5)			
		Intermediate school	0 (0.0)	0 (0.0)	5 (100)			
		Postgraduate	3 (9.4)	0 (0.0)	29 (90.6)			
		Secondary school	0 (0.0)	2 (2.7)	73 (97.3)			
		University graduate	13 (4.2)	40 (12.9)	256 (82.8)			
		Primary school	0 (0.0)	0 (0.0)	2 (100)			
	Marital status	Married	15 (8.3)	33 (18.2)	133 (73.5)	28.435	4	<0.001
		Single	7 (2.3)	20 (6.6)	276 (91.1)			
		Widowed	0 (0.0)	0 (0.0)	6 (100.0)			
Body Image	Age Group	Below 25	26 (8.0)	80 (24.6)	219 (67.4)	2.745	4	0.601
		26–35	5 (5.4)	19 (20.4)	69 (74.2)			
		Above 35	3 (4.2)	18 (25.0)	51 (70.8)			
	Education	Diploma	6 (10.2)	12 (20.3)	41 (69.5)	39.711	12	<0.001

(Contd...)

Table 4: *(Continued)*

Domain	Variable	Category	Poor *n* (%)	Moderate *n* (%)	Good *n* (%)	χ^2	df	*P*
		Illiterate	0 (0.0)	5 (62.5)	3 (37.5)			
		Intermediate school	0 (0.0)	0 (0.0)	5 (100)			
		Postgraduate	3 (9.4)	17 (53.1)	12 (37.5)			
		Secondary school	2 (2.7)	22 (29.3)	51 (68.0)			
		University graduate	23 (7.4)	59 (19.1)	227 (73.5)			
		Primary school	0 (0.0)	2 (100.0)	0 (0.0)			
	Marital status	Married	3 (1.7)	54 (29.8)	124 (68.5)	18.593	4	0.001
		Single	31 (10.2)	63 (20.8)	209 (69.0)			
		Widowed	0 (0.0)	0 (0.0)	6 (100.0)			
Hair Disorders and Acne	Age Group	Below 25	36 (11.1)	94 (28.9)	195 (60.0)	8.130	4	0.087
		26–35	3 (3.2)	36 (38.7)	54 (58.1)			
		Above 35	5 (6.9)	26 (36.1)	41 (56.9)			
	Education	Diploma	0 (0.0)	24 (40.7)	35 (59.3)	58.125	12	<0.001
		Illiterate	0 (0.0)	5 (62.5)	3 (37.5)			
		Intermediate school	0 (0.0)	0 (0.0)	5 (100)			
		Postgraduate	12 (37.5)	9 (28.1)	11 (34.4)			
		Secondary school	3 (4.0)	34 (45.3)	38 (50.7)			
		University graduate	29 (9.4)	84 (27.2)	196 (63.4)			
		Primary school	0 (0.0)	0 (0.0)	2 (100)			
	Marital status	Married	5 (2.8)	72 (39.8)	104 (57.5)	22.330	4	<0.001
		Single	39 (12.9)	84 (27.7)	180 (59.4)			
		Widowed	0 (0.0)	0 (0.0)	6 (100.0)			
Obesity and Menstrual Disorders	Age Group	Below 25	32 (9.8)	97 (29.8)	196 (60.3)	19.593	4	0.001
		26–35	21 (22.6)	34 (36.6)	38 (40.9)			
		Above 35	9 (12.5)	14 (19.4)	49 (68.1)			
	Education	Diploma	6 (10.2)	24 (40.7)	29 (49.2)	42.299	12	<0.001
		Illiterate	0 (0.0)	5 (62.5)	3 (37.5)			
		Intermediate school	0 (0.0)	5 (100.0)	0 (0.0)			
		Postgraduate	6 (18.8)	17 (53.1)	9 (28.1)			
		Secondary school	12 (16.0)	24 (32.0)	39 (52.0)			
		University graduate	38 (12.3)	70 (22.7)	201 (65.0)			
		Primary school	0 (0.0)	0 (0.0)	2 (100.0)			
	Marital status	Married	28 (15.5)	53 (29.3)	100 (55.2)	6.301	4	0.178
		Single	34 (11.2)	92 (30.4)	177 (58.4)			
		Widowed	0 (0.0)	0 (0.0)	6 (100.0)			

hyperandrogenism, obesity, and irregular menstruation are more likely to irritate younger women.[20]

Our study revealed a correlation between the degree of depression in PCOS-affected women and age, place of residence, education level, having children, and Obesity. It has previously been noted that the degree of depression and childlessness are related.[21,22] However, it is crucial to remember that the findings of other research have not supported the existence of this connection.[23,24] Overweight and obese women with PCOS have been found to have greater levels of depression.[25-27]

PCOS has a significant and widespread impact on how people see their bodies, particularly in relation to weight increase and metabolic dysfunction.[28] Body image problems are common in women with PCOS, and they can cause psychological distress, such as increased anxiety about gaining weight and the emergence of disordered eating habits.[29] In our study, the results indicated that education may affect how women with

PCOS perceive their body image. Generally, higher levels of education are associated with more positive body image outcomes, while lower levels of education are connected to a greater risk of having poorer or moderate body image, while there was insignificant correlation between body image and age groups of participants.

Hirsutism has a detrimental impact on mental health in women with PCOS and relates to negative body image, social avoidance, and low self-esteem.[10] This illness has been found to be a significant contributor to anxiety, which is in line with finding from previous results.[21,26] In the present study age does not significantly affect hair disorders and the quality of life related to acne in women with PCOS, and most women achieve positive outcomes regardless of their age, while there was a significant relationship between educational level, hair disorders, and acne category among Saudi females with PCOS, where individuals with higher levels of education, including university graduates and those with intermediate or secondary school, generally reported more favorable results. However, the present study did not find a correlation between other clinical manifestations of hyperandrogenism, such as acne and alopecia, and depression and anxiety. The impact of these symptoms on mental health differs among the individuals involved and may be influenced by cultural and ethnic characteristics, even though hirsutism was a strong related factor.

In addition to poor mental health, abdominal obesity and menstrual disorders are independent variables that contribute to mental health disorders in women with PCOS. Consistent with results from other research, abdominal obesity was found to be a significant risk linked to depression in women with PCOS.[30,31] Abdominal obesity may affect plasma levels of adiponectin, leptin, cortisol, resistin, insulin, and inflammatory cytokines, such as tumor necrosis factor-α and interleukin-1β, which can enhance neuroinflammation and contribute to depression.[32] Our results found a significant correlation between age groups, obesity and the menstrual disorders domain in Saudi females diagnosed with PCOS. The results indicated that women between the ages of 26 and 35 with PCOS are most at risk for obesity and menstrual problems, whereas younger and older age groups tend to have better outcomes in these areas. In agreement with ours, a recent meta-analysis reported a link between overall obesity and depression among women with PCOS.[9,33]

CONCLUSION

The results of this study show that PCOS significantly affects the mental health of women in Saudi Arabia, leading to a high occurrence of emotional distress, fatigue, mood changes, and symptoms related to anxiety. Although instances of severe depression were reported infrequently, moderate levels of depression, anxiety, and stress were observed in the study population. Women between the ages of 26 and 35 experienced the greatest psychological stress, while older women were more focused on potential long-term health issues. Furthermore, lower levels of education were linked to higher psychological distress, emphasizing the importance of awareness and coping strategies. While there were significant concerns about fertility, sexual and marital satisfaction seemed to remain largely intact. The study highlights that PCOS is both a physical condition and an important mental health issue that needs thorough management.

Recommendations

1. Regular psychological evaluations should be included in the management plans for PCOS to detect depression, anxiety, and stress at an early stage
2. Particular focus should be directed towards high-risk groups, especially women between the ages of 26 and 35 and individuals with lower levels of education
3. Campaigns should be carried out to increase understanding of PCOS, clarify misunderstandings, and improve coping methods
4. Programs that are organized to address weight management, nutrition, and exercise should be promoted to enhance both physical and mental health results.

Limitation of the study

1. The study included only Saudi females, which may influence how applicable the results are to other groups
2. Psychological conditions were assessed using questionnaire-based measures rather than clinical diagnostic tools.

Some variables (e.g., depression, anxiety, and stress domain) had missing data, which may influence the accuracy of results.

ACKNOWLEDGMENTS

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ETHICAL APPROVAL

The study was fully explained to all participants, and it was emphasized that participation was voluntary. Written informed consent was obtained from each participant prior to enrollment. All collected information was securely stored and used exclusively for research purposes.

INFORMED CONSENT

Written informed consent was obtained from all study participants.

DATA AND MATERIALS AVAILABILITY

All data generated or analyzed during this study are included in this published article.

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