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Psychological distress levels and its relationship with Socio-demographic factors of polycystic ovarian syndrome population in Allahabad city

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Abstract

Polycystic ovarian syndrome is a metabolic, hormonal, and psychosocial disorder that impacts a patient's quality of life and socio-demographic factors are as important as physical health variables in affecting a person's ability to function normally in their everyday life. This study evaluates the relationship between Psychological Distress and Sociodemographic factors among PCOS subjects in Allahabad city.

Objective: There is a significant association between Socio-demographic factors and Psychological Distress levels among PCOS sufferers.

Materials & Methods: In this cross-sectional, descriptive study, 150 patients with PCOS (case) were recruited from various Hospitals of Allahabad city. Along with it, 150 controls of same age group were selected from University Campus, Girl's Hostels & localities of Allahabad. A self made questionnaire with items related to pieces of information about socio-demographic factors was used for data collection. Psychological Distress levels were assessed using the P.G.I Health Questionnaire N1. Statistical analyses were performed using SPSS Ver. 20.0. Chi Square test was used to test the association between variables.

Results: The findings of the study revealed that PCOS subjects coming from High Income Group to Middle Income Group were moderate to severe neurotic. Most of the severe neurotic patients were found highly educated however they were not employed anywhere. Most of the married and unmarried population were found moderate to severe neurotic. Most of the severe neurotic patients had a serious family issues. Subjects having children were also found moderate to severe neurotic. However, no social pressure has been reported in major population.

Conclusion: The research study revealed that socio-demographic factors has a strong influence on Psychological Distress levels of PCOS population.

Keywords: Socio-demographic factors, psychological distress, PCOS, quality of life, psychosocial disorder

Introduction

Polycystic Ovarian Syndrome (PCOS) is a serious endocrinopathy affecting females of reproductive age. Globally, prevalence estimates of PCOS are highly variable, ranging from 2.2% to as high as 26% of this age group depending on how it is defined. (Joshi *et al.*, 2014) [6] Most studies in India report prevalence of PCOS as 9.13% to 36%. It is a metabolic, hormonal, and psychosocial disorder that impacts a patient's quality of life. They are more likely to develop depression and other associated disorders. Socio-demographic factors are believed to be as important as physical health variables in affecting a person's ability to function normally in their everyday life.

Purpose of Study – To find out the association between Psychological Distress levels & Socio-Demographic factors of PCOS population in Allahabad City.

Hypothesis

- **HoI:** There is no significant association between Groups (case & control) & Socio-demographic factors.
- **Ha:** There is a significant association between Groups (case & control) & Socio-demographic factors.
- **Ho II:** There is no significant association between Groups (case & control) & Psychological Distress levels.
- **Ha:** There is a significant association between Groups (case & control) & Psychological Distress levels.

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Materials & methods

The present research study was approved by Department of Food, Nutrition & Public Health, Ethelind College of Home Science, SHUATS, Allahabad, U.P, India. It was a cross-sectional, descriptive, age matched case-control study. The survey was started in January 2016 and completed in January 2018. The study was carried out in Private Clinics, Hospitals, University Campus, Girls Hostel, Girls College at Allahabad city, U.P, India. Gender and Age based stratification was done to get homogenous population, purposive sampling was done to get 18-48 years female population, after that 150 PCOS patients were recruited as cases and 150 general population were recruited as controls on the basis of Rotterdam Criteria. Subjects having serious metabolic and psychological complications were excluded from the study. All participants were enrolled after obtaining informed consent or assent to participate in the study. Self-made questionnaire was used for assessment of Socio-Demographic Factors. Socio-Economic Status was assessed by Modified Kuppuswami Scale (2017) & Psychological Distress Level was assessed by P.G.I Health Questionnaire N1 (By Wig N & Verma S) SPSS Ver.20 was used as a statistical tool. Chi Square Test was used to test the association between the variables. P value less than.05 (5 %) was considered as statistically significant.

Result

Socio-demographic profile of the respondents

1. Age group of the respondents

		Group		Total
		Case	Control	
Age in years	18-27 Years	69	63	132
	28-37 Years	70	67	137
	Above 38 Years	11	20	31
Total		150	150	300

$X^2(2) = 2.951, P > .05$ Result: Non Significant

2. Marital status of the respondents

		Group		Total
		Case	Control	
Marital status	Married	83	96	179
	Unmarried	65	54	119
	Divorced	1	0	1
	Deceased Spouse	1	0	1
Total		150	150	300

$X^2(3) = 3.961, P > .05$ Result: Non Significant

3. Religion of the respondents

		Group		Total
		Case	Control	
Religion	Hindu	110	125	235
	Muslim	33	21	54
	Christian	7	4	11
Total		150	150	300

$X^2(2) = 4.442, P > .05$ Result: Non Significant

4. Ethnicity of the respondents

		Group		Total
		Case	Control	
Ethnicity	North India	116	127	243
	East India	21	15	36
	West India	5	0	5
	Central India	7	7	14
	South India	1	1	2
Total		150	150	300

$X^2(4) = 6.498, P > .05$ Result: Non Significant

5. Area of residence of the respondents

		Group		Total
		Case	Control	
Area of residence	Urban Area	144	139	283
	Rural Area	6	11	17
Total		150	150	300

$X^2(1) = 1.559, P > .05$ Result: Non Significant

6. Education of the respondents

		Group		Total
		Case	Control	
Education	Illiterate	1	2	3
	< High school	3	0	3
	High school	4	0	4
	Intermediate	9	0	9
	Graduation	46	30	76
	Post-Graduation	75	100	175
	Doctorate	12	18	30
Total		150	150	300

$X^2(6) = 24.473, P < .05$ Result: Significant

7. Occupation of the respondents

		Group		Total
		Case	Control	
Occupation	Working	48	31	79
	Non-Working	102	119	221
Total		150	150	300

$X^2(1) = 4.966, P < .05$ Result: Significant

8. Socio-economic status of the respondents

		Group		Total
		Case	Control	
Socio-economic status	Upper Class	53	66	119
	Upper Middle Class	70	60	130
	Lower Middle Class	24	22	46
	Lower Class	3	2	5
Total		150	150	300

$X^2(3) = 2.476, P > .05$ Result: Non Significant

9. Genetic history of the respondents

		Group		Total
		Case	Control	
Genetic history of pcos	Present	53	4	57
	Absent	84	123	207
	Don't Know	13	23	36
Total		150	150	300

$X^2(2) = 52.248, P < .05$ Result: Significant

10. Infertility among the respondents

		Group		Total
		Case	control	
Infertility among the respondents	Unmarried girls	65	54	119
	Having Children	39	94	133
	No children	46	2	48
Total		150	150	300

$X^2(2) = 64.095, P < .05$ Result: Significant

11. Duration of infertility in respondents

		Group		Total
		Case	Control	
Duration of infertility	Unmarried Girls	65	54	119
	Having Children	39	94	133
	1-5 Years	38	2	40
	6-11 Years	6	0	6
	12-17 Years	1	0	1
	18 Years & Above	1	0	1
Total		150	150	300

$X^2(5) = 64.161, P < .05$ Result: Significant

12. Family pressure on the respondents

		Group		Total
		Case	Control	
Family pressure	Due to infertility	31	0	31
	Due to bad health	16	3	19
	None	103	147	250
Total		150	150	300

$X^2(2) = 47.639, P < .05$ Result: Significant

13: Past family issues of the respondents

		Group		Total
		Case	Control	
Past family issues	Post marriage conflicts or got divorce	27	6	33
	Bereavement of dear ones	21	10	31
	Parents conflict or divorced mother	5	0	5
	Authoritarian father	8	5	13
	Financial Issues	12	15	27
	Previous Health Issues	27	7	34
	Family feuds	43	14	57
	None	7	93	100
Total		150	150	300

$X^2(7) = 123.772, P < .05$ Result: Significant

14. Body image concern among the respondents

		Group		Total
		Case	Control	
Body image concern	Obesity	32	23	55
	Leanness	10	12	22
	Hirsutism	32	0	32
	Acne	18	28	46
	Hairfall or baldness	47	27	74
	Skin Disease	1	0	1
	None	10	60	70
Total		150	150	300

$X^2(6) = 77.948, P < .05$ Result: Significant

15: Health concern among the respondents

		Group		Total
		Case	Control	
Health Concern	YES	106	20	126
	NO	43	130	173
Total		149	150	299

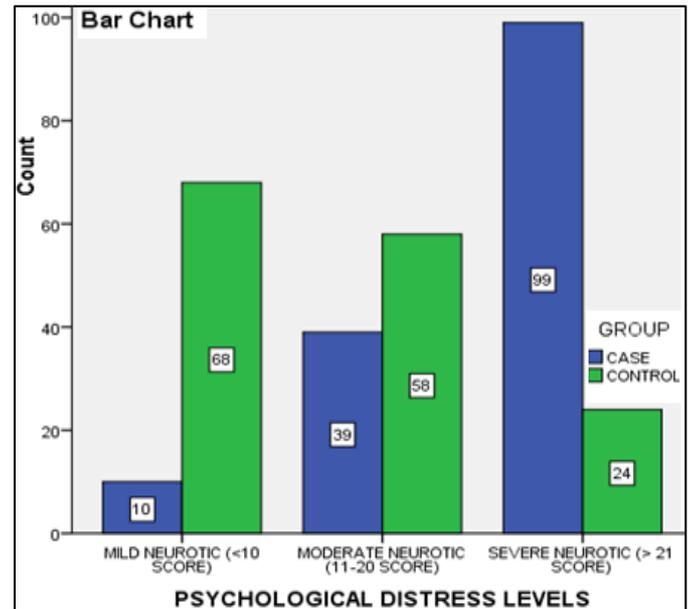
$X^2(1) = 102.448, P < .05$ Result: Significant

16. Psychological health of mother of the respondents

		Group		Total
		Case	Control	
Psychological health of mother	Stressful	75	41	116
	Severely depressed	7	0	7
	Joyful	55	109	164
Total		137	150	287

$X^2(2) = 34.227, P < .05$ Result: Significant

Distribution of respondents on the basis of psychological distress level



$X^2(2) = 92.572, P < .05$ Result: Significant

Result of hypothesis

- Result HO I:** There is a significant association found between Groups and their ten socio-demographic factors (Education, Socio-Economic Status, Infertility, Duration of Infertility, Family Pressure, Past Family Issues, Genetic History, Body Image Concern, Health Concern, Psychological Health of Mother) while there is no significant association found with rest of the six socio-demographic factors. Hence, null hypothesis is rejected, and alternate hypothesis is accepted. Thus, it can be concluded that there is a significant association found between Groups & their Socio demographic factors.
- Result HO II:** There is a significant association found between Groups and their Psychological Distress levels. PCOS subjects (Case) were found more psychologically distressed than Controls. Hence, null hypothesis is rejected and alternate hypothesis is accepted.

Discussion

Socio-Demographic Profile of the Respondents

- Age:** Most of the PCOS subjects (Case) & Controls belongs to almost same age group of 28-37 years. Chi Square test value is $X^2(2) = 2.951, P > .05$ Hence, there is no significant association found between Groups (case & control) and age.
- Marital Status:** Most of the PCOS subjects & controls were married. However, one widow & one divorcee were also reported in Cases. Chi Square test value is $X^2(3) = 3.961, P > .05$ Hence, there is no significant association between Groups (Case & Control) and Marital Status.
- Religion:** Most of the PCOS subjects & controls belongs to Hindu Community followed by Muslim & Christian Communities. Chi Square test value is $X^2(2) = 4.442, P > .05$ Hence, there is no significant association between Groups (Case & Control) and Religion.

- **Ethnicity:** Most of the PCOS population & Controls belongs to North India. Hence, the inference is applicable to whole North Indian Population. Chi Square test value is $X^2(4) = 6.498$, $P > .05$ Hence, there is no significant association between Groups (Case & Control) & Ethnicity.
- **Area of Residence:** Most of the PCOS subjects & Controls belongs to Urban Area. Chi Square test value is $X^2(1) = 1.559$, $P > .05$ Hence, there is no significant association between Groups (Case & Control) & Area of Residence.
- **Education:** Most of the PCOS population & Controls had Post Graduate Degrees while no. of post graduates & doctorates were more in controls rather than cases. However, 36 PCOS subjects didn't get an opportunity to study further. Chi Square test value is $X^2(6) = 24.473$, $P < .05$ Hence, there is a significant association between Groups (Case & Control) & Education.
- **Occupation:** Most of the PCOS subjects & Controls belongs to almost similar kind of Occupation. Although Controls had highest degrees even more than PCOS subjects but no. of Professionals were almost similar in both the groups & no. of self-employed were more reported in cases than controls. Chi Square test value is $X^2(1) = 4.966$, $P < .05$ Hence, there is a significant association found between Groups (Case & Control) & Occupation.
- **Socio-Economic Status:** Most of the PCOS subjects belongs to Upper & Upper Middle Class equally followed by lower middle class while most of the Controls belongs to Upper class followed by upper middle class & lower middle class in a sequence. However, no. of population belongs to upper class was reported more in Controls. Chi Square test value is $X^2(3) = 2.476$, $P > .05$ Hence, there is no significant association found between Groups (Cases & Controls) & Socio-Economic Status.
- **Infertility:** Most of the Controls had children, while most of the Cases had no children. However, about 27 cases had children too. Unmarried population were almost similar in both the groups. Chi Square test value is $X^2(2) = 64.095$, $P < .05$ Hence, there is a significant association found between Groups (Case & Control) & Infertility. Our finding is concordant with previous finding of Badawy *et al.*, 2011 who reported prevalence of PCOS among infertile women is 15%–20%.
- **Duration of Infertility:** 1-5 years of Infertility was reported in Case, followed by 6-11 years & 12-17 years of Infertility while majority of Controls had children. However, 27 PCOS subjects had children too & 1-5 years of Infertility was also reported in Controls. Chi Square test value is $X^2(5) = 64.161$, $P < .05$ Hence, there is a significant association between Groups & Years of Infertility.
- **Genetic History of PCOS:** Most of the PCOS subjects had genetic history of PCOS in their Family while five Controls had genetic history of PCOS too. Chi Square test value is $X^2(2) = 52.248$, $P < .05$ Hence, there is a significant association found between Groups & their Genetic History of PCOS.
- **Family Pressure:** Most of the PCOS subjects had family pressure due to Infertility followed by Family pressure due to Bad Health. However, only one Control had family pressure due to Infertility & one had family pressure due to Bad Health. Although 1-5 years Infertility has been found in Controls but less family pressure has been reported. $X^2(2) = 47.639$, $P < .05$ Hence, there is a significant association found between Groups (Case & Control) & Family Pressure. Our results are concordant with findings of Eggers *et al.*, 2001 who revealed that PCOS may not only be coinduced by psychosocial factors, its main symptoms such as infertility, menstrual dysfunctions, hirsutism and obesity can be caused by increased psychosocial stress and mood disorders.
- **Past Family Issues:** Post Marriage Conflicts was reported more in Case than Controls, followed by bereavement of dear ones, financial problems, Parents Conflict, Authoritarian Father in a sequence more than controls. However, Parents Health as a family issue was reported more in Controls. Chi Square test value is $X^2(7) = 123.772$, $P < .05$ Hence, there is a significant association found between Groups & their Family Issues.
- **Health Concern:** Most of the PCOS subjects had Health Concern, while only 13 Controls had health concern. Chi Square test value is $X^2(1) = 102.448$, $P < .05$ Hence, there is a significant association found between Groups & their Health Concern.
- **Body Image Concern:** Most of the PCOS subjects had body image concern due to Obesity, followed by Hirsutism, Hairfall, Leanness, Acne, and Skin Allergies in a sequence. However, controls had body image concern due to Obesity, Acne, Hairfall & Leanness. Chi Square test value is $X^2(6) = 77.948$, $P < .05$ Hence, there is a significant association found between Groups & their Body Image Concern. This finding is concordant with the finding of Dixon *et al.*, 2003^[3]. Who reported that women with PCOS have a lower self-esteem, a more negative self-image, and have higher levels of depression and psychological distress owing to the physical appearance characteristics of hyper-androgenism, including obesity, hirsutism, cystic acne, seborrhea and hair loss, possibly by influencing feminine identity. In another study, Kitzinger *et al.* 2002^[7] reported that hirsutism, menstrual irregularity and infertility have been shown to be the most distressing symptoms in adults with PCOS, while Trent *et al.*, 2002^[10] reported that weight difficulties have been identified as the most distressing symptom in adolescents and young women with the disease.
- **Psychological Health of Mother:** Maternal stress was reported in majority of the cases rather than controls even seven mothers were found severely depressed. Thus, it has been revealed in present study that maternal stress might be a cause behind depression among PCOS patients since their birth. Chi Square test value is $X^2(2) = 34.227$, $P < .05$ Hence, there is a significant association found between Groups & Psychological Health of Mother. This finding is concordant with the finding of Catherine *et al.*, 2016 who reported that female fetuses are more vulnerable to high levels of maternal glucocorticoids. They examined whether exposure to prenatal maternal depression, a condition associated with high glucocorticoids, carries greater risk for depression at 12 and 18 years in girls. Increased vulnerability of female fetuses to maternal stress responses during pregnancy persists into adolescence. In recent study Alice *et al.* 2018 reported that high maternal levels of the stress hormone cortisol during pregnancy increase anxious and depressive-like behaviors in female offspring at the age of 2, along with it, "high maternal levels of cortisol during

pregnancy appear to contribute to risk in females, but not males." and as we know chronic stress may leads to insulin resistance, a prominent reason responsible for PCOS. In another study, Hollinrake *et al.*, 2007^[5] reported that depression has been associated with increased cortisol levels, increased sympathetic activity and decreased serotonin levels in the central nervous system, features also associated with insulin resistance. Hence, we can say that maternal stress might be a probable factor behind PCOS.

- **Psychological Distress Levels of the Respondents:** Most of the PCOS subjects were reported severe neurotic while most of the controls were found moderate neurotic. Chi-Square test value is $X^2(2) = 92.572$, $P < .05$. Hence, there is a significant association found between Groups & Psychological Distress Levels. This result is concordant with finding of Barry *et al.*, 2011^[1], who revealed that patients with PCOS were significantly more neurotic (had difficulty coping with stress), anxious and depressed than the controls. PCOS affects quality of life and can worsen existing anxiety and depression either due to the features of PCOS or due to the diagnosis of a chronic disease as reported by Farideh *et al.*, 2012

Conclusion

The present study reveals that most of the PCOS patient comes from unmarried population of 29-38 years of age group. Most of the population belongs to Hindu religion, comes from Middle Income to High Income Group of North India. Most of them were having post graduate degree while majority of them were not occupied to any profession. Majority of the population were either unmarried or having children prior to diagnosis of PCOS, hence they were considered under not applicable category, while most of the married subjects were not having children and had 1-5 years infertility. Majority of the population were not having any social pressure or family pressure but they had serious family issues in past. Most of the PCOS population were found moderate to severe neurotic. Lots of variation in Socio-Demographic profile was reported between the concerned groups, although both the groups (case & control) belongs to almost same age group, having similar type of ethnic origin, marital status, residential area, occupation, religion. Hence, the present study concludes that Socio-Demographic factors of PCOS population might be one of the prominent reason responsible behind Psychological Distress levels of the concerned group.

Recommendations

- Socio-demographic factors like ethnic origin, past family issues, genetic history, socio-economic status, maternal stress etc. of the respondents must be kept in mind while prescribing any treatment to the patient as it somehow influence the manifestation of PCOS and may be helpful in revealing the facts behind it's origin.
- The present study draws the attention of researchers towards the family and social life of PCOS sufferers and time has come to upgrade our social norms for the sake of vulnerable group.

Limitations

- Sample size of the population was small due to unavailability of the concerned subjects and their reluctance towards the survey. Hence, larger studies may

have the power to detect the relationship between the variables.

- It is very difficult to conduct the survey on large scale as PCOS population is still not so common in Allahabad city and many of them are still unaware about the complexity of the disease. Moreover, most of the parents of the subjects didn't preferred to discuss about the issue prior to marriage of concerned population.
- Hormonal tests are very expensive to carry out a survey on large population.

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