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Original Research Article

Assessment of knowledge, awareness and practice of dental practitioners on the relationship between poly cystic ovarian syndrome (PCOS) in periodontally compromised women-A questionnaire based survey

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ABSTRACT

Introduction: Polycystic Ovary Syndrome (PCOS) is a common endocrinal disorder of uncertain etiology characterized by hyperandrogenism, anovulatory infertility, menstrual dysfunction, hirsutism, alopecia and acne. Periodontitis is a common chronic infection characterized by an exaggerated gingival inflammatory response against pathogenic bacterial microflora, resulting in alveolar bone and eventually tooth loss. The relationship of PCOS in periodontally compromised women are very distinctly studied.

Materials and Methods: A cross-sectional survey study design was conducted with close ended questions. The question were self-prepared, validated and made reliable. Data collection done and analyzed using the SPSS software. Descriptive and inferential statistical analyses were determined.

Results: 95 percent of the participants were aware of a condition called PCOS. A total of 71 percent of participants have expressed that they carry out routine screening in their clinical practice. However, only a total of 57% of the total participants were able to diagnose PCOS in their clinical practice. A total of 64% of the participants have expressed that intrigue knowledge on the oral manifestations of PCOS have helped diagnose PCOS in their patients. 63 percent of the total participants were aware of the medical specialty of choice to consult for patients diagnosed with PCOS of which only 28 percent of the total participants were aware of the clinical grading of PCOS.

Conclusion: This survey helps conclude that even though knowledge of PCOS, clinical manifestations and oral manifestations of PCOS are aware for majority, only 10% achieve to diagnose it in daily practice. This study hopes to shed light on the relationship between Poly Cystic Ovarian Syndrome (PCOS) in periodontally compromised women to better enhance the diagnosis, treatment planning and the systemic corelation of the oral manifestations of the condition.

1. Introduction

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder of uncertain etiology characterized by hyperandrogenism, anovulatory infertility, menstrual dysfunction, hirsutism, alopecia and acne. Patients with PCOS are at higher risk of developing cardiovascular risk factors like dyslipidemia, diabetes, insulin resistance (IR), visceral obesity and a state of low-grade inflammation. Raised C Reactive Protein (CRP) levels have also been observed in PCOS patients as compared to systemically healthy females. Insulin resistance in PCOS is due to a post-receptor defect in insulin receptor mediated cells which leads to a decrease in glucose transporters.[1]

Periodontitis is a common chronic infection characterized by an exaggerated gingival inflammatory response against pathogenic bacterial microflora, resulting in alveolar bone and eventually tooth loss. Several

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lines of evidence established the association between periodontitis and systemic disorders, including metabolic syndrome, diabetes, and cardiovascular disease (CVD). Both periodontitis and metabolic syndrome are associated with systemic inflammation and IR as a reason for which these two disorders may be linked through a common pathophysiological pathway.[2]

The advent of modern studies has stated the association of Poly cystic ovary syndrome and chronic periodontitis. The stimulation and chronic secretion of proinflammatory cytokines associated with periodontal infection contributes to Insulin Resistance. This pathognomonic state of systemic inflammation and insulin resistance, present in both chronic periodontitis and PCOS, could be etiologic mechanism linking these two diseases.[2] Diagnosis at an early stage is important to help prevent the progress of such an endocrinal disorder. As dental fraternity, knowledge of its clinical and oral manifestations plays a major role in early diagnosis and progression. With this study we aim to bring the co-relationship of chronic periodontitis and PCOS and to shed light amongst the dental practioners on their role on early diagnosis and disease progression of PCOS.

2. Materials and Methods

A cross-sectional survey study design was conducted to assess knowledge, awareness and practice of dental practitioners on the relationship between PCOS in periodontally compromised women. The questionnaires were modified from the key article and self-prepared, validated and made reliable using chi- square test. External and internal validation was conducted. Questionnaires were sent to all the participants through e-mail whose information were obtained from the office of Indian Dental Association, Vadodara. The mail was sent to each participant at the interval of 15 days. A total of 2 months were given for the response of the participants. All content of questioners with respect to multiple options are checked by the experts and its 100% valid. Data collected were entered onto a computer and analyzed using the SPSS software. Descriptive and inferential statistical analyses were carried out in the present study. Results on continuous measurements were presented on Mean ± standard deviation and results on categorical measurements were presented in Number (%). Level of significance was fixed at p=0.05 and any value less than or equal to 0.05 were considered to be statistically significant. Chi square analysis was used to find the significance of study parameters on categorical scale. Student t test (two tailed, independent) was used to find the significance of study parameters on continuous scale between two groups (Inter group analysis) on metric parameters.[3–12]

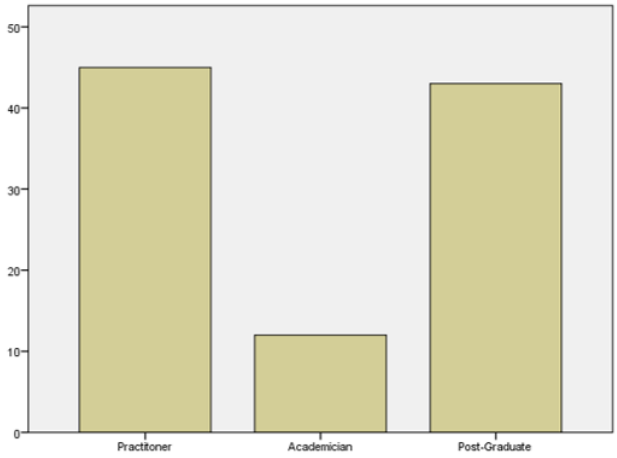

Fig. 1: Percentage of affiliation of participants.

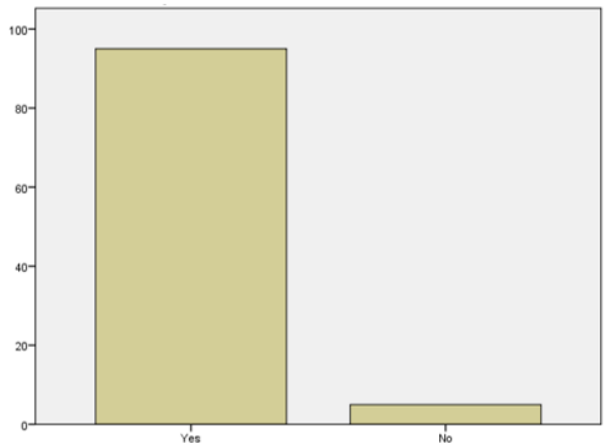

Fig. 2: Percentage of response to the question, are you aware of a condition called PCOS?

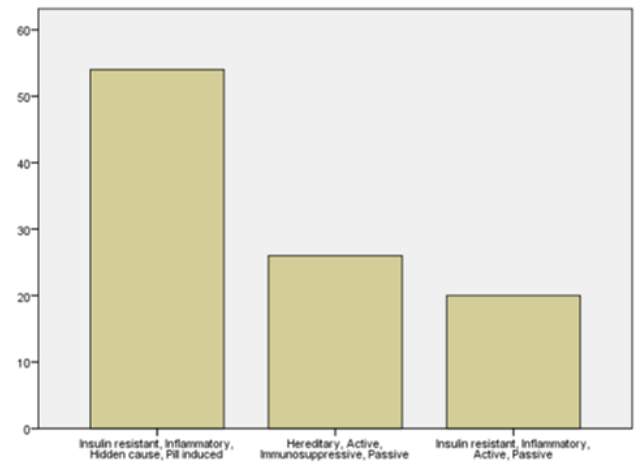

Fig. 3: Percentage of response to the question, what are the different types of PCOS?

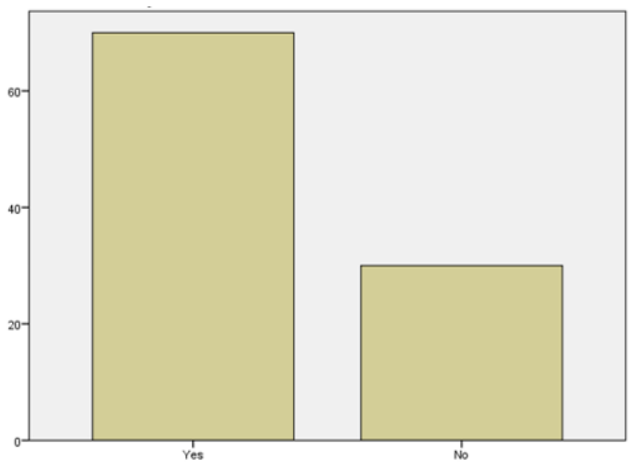

Fig. 4: Percentage of response to the question, are you aware of the oral manifestations of PCOS?

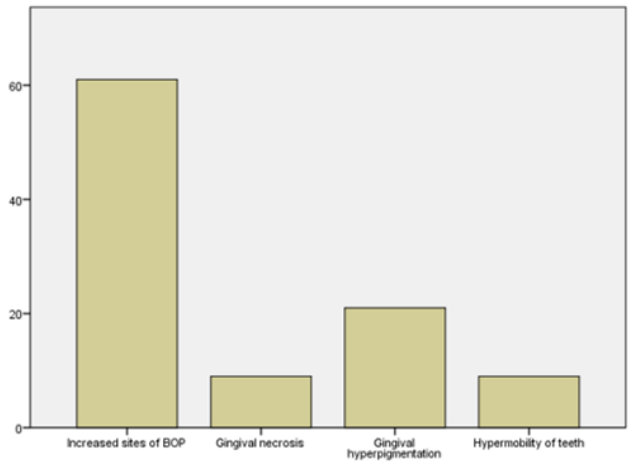

Fig. 5: Percentage of response to the question, which of the following are the oral manifestations of PCOS?

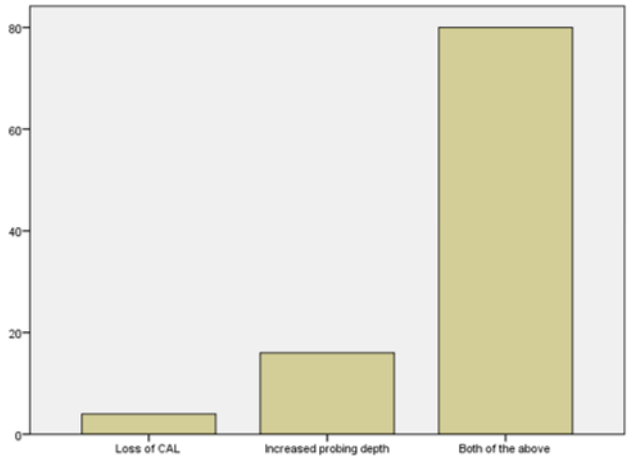

Fig. 6: Percentage of response to the question, periodontal manifestations of PCOS include?

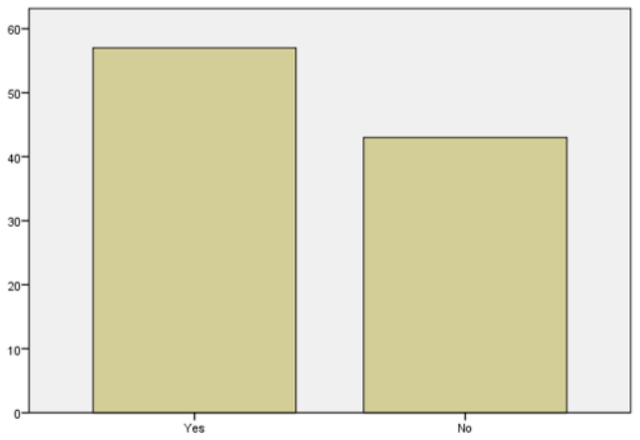

Fig. 7: Percentage of response to the question, Have you been able to diagnose PCOS with your knowledge on its clinical manifestations?

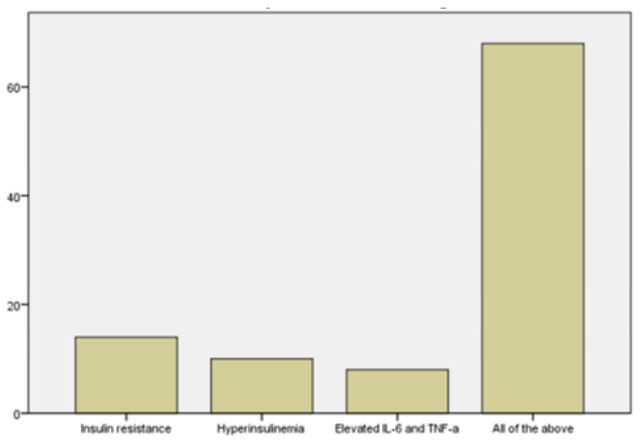

Fig. 8: Percentage of response to the question, what hematological markers do you look for in patients you have diagnosed with PCOS with your clinical knowledge?

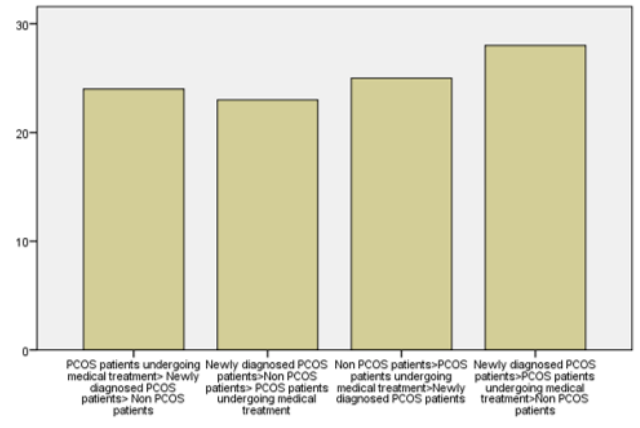

Fig. 9: Percentage of response to the question, with your clinical experience, grade the patients on the clinical oral manifestations of PCOS?

3. Results

Descriptive and inferential statistical analyses were carried out in the present study. Results on continuous measurements were presented on Mean ± SD. Level of significance was fixed at p=0.05 and any value less than or equal to 0.05 was considered to be statistically significant. Student t tests (two tailed, paired & unpaired) were used to find the significance of study parameters on continuous scale within & between two groups. Repeated measures of Analysis of variance (RM-ANOVA) were used to find the significance of study parameters within the group at different time intervals. Further post hoc analysis was carried out if the values of RM-ANOVA test were significant.

The Statistical software IBM SPSS statistics 20.0 (IBM Corporation, Armonk, NY, USA) was used for the analyses of the data and Microsoft word and Excel were used to generate graphs, tables etc. A total of 100 participants took part in the survey to provide their opinions on our choice of questions. Out of the total 100 participants, 53 percent were undergraduates (BDS) and the remaining 47 percent were post graduate participants (MDS). A total of 45 percent were clinical practitioners, 43 percent were post graduate students and 12 percent were academicians. 69 percent of the participants had a total experience less than 5 years whereas, 28 percent of the participants had an experience of 5 to 10 years of work and only 3 percent of the participants had a work experience of more than 10 years (Figure 1). 95 percent of the participants were aware of a condition called PCOS of which 49 percent were undergraduates and 46 percent were post graduates. 94 percentage of the participants knew the expanded form of PCOS. However only 62 percent of participants were aware of the different forms of PCOS out of which 70.3% were post graduates and 54.7% were under graduates (Figure 2). An even less amount of participants (53%) knew the different types of PCOS of which 61.7% were post graduates and 47.2% were under graduate participants (Figure 3). The awareness of the most commonly affected age group of PCOS were correct for 91 percent of the participants and a total of 88 percent of participants were aware of the clinical manifestations of PCOS. A total of 89.4% were amongst the post graduates and 86.8% were amongst the undergraduate students have answered correctly. 70 percent of the participants were aware of the oral manifestations of PCOS and a total of 81 percent were aware that PCOS affects gums the most of which 85.1% of post graduates and 77.4% of under graduate participants have answered correctly (Figure 4). However only a total of 61 percent of participants were aware that increased areas of bleeding on probing was the most common oral manifestation of PCOS of which 72.3% and 50.9% of post graduates and under graduates respectively were aware (Figure 5). A total of 80 percent of the participants were aware that both loss of CAL and increased in the probing depth were both periodontal manifestations of PCOS (Figure 6).

A total of 71 percent of participants have expressed that they screen patients in their clinical practie to corelate oral manifestations of systemic diseases to help diagnose at a faster pace. However, only a total of 57% of the total participants were able to diagnose PCOS with knowledge of its clinical manifestations. 64% of the total participants have expressed that intrigue knowledge on the oral manifestations of PCOS have helped diagnose PCOS in their patients (Figure 7). A total of 68 percent of participants were aware of the haematological markers that we look for in patients diagnosed with PCOS of which 72.3% were among the total post graduate participants and 62.4% were among the total under graduate participants who've taken part in this study (Figure 8).

On the management and follow up protocol of patients diagnosed with PCOS, only 63 percent of the total participants were aware of the medical speciality of choice to consult for patients diagnosed with PCOS of which 66.4% were post graduate participants and 60.2% were under graduate participants involved in this study. Grading patients based on the clinical oral manifestations of PCOS have helped determine the knowledge and awareness of the participants on PCOS and its impact on the oral tissues including the periodontium. Only 28 percent of the total participants were aware that the clinical grading of PCOS was as follows: Newly diagnosed PCOS patients>PCOS patients undergoing medical treatment>Non PCOS patients. Only a total of 34.7% of the post graduates and 22.6% of the under graduates involved in this study were aware of the clinical grading of PCOS which quite helps to filter the participants with better knowledge and understanding on the clinical aspects of PCOS. Helps rule out the chances of bias with guessing which might have arisen in the course of answering the closed ended questions involved in this survey (Figure 9).

4. Discussion

Polycystic ovary syndrome (PCOS) is a common disorder affecting 6%–8% of women of reproductive age. Women with PCOS have an adverse cardiometabolic risk profile, including insulin resistance (IR), central obesity, dyslipidemia, and increased prevalence of cardiovascular risk factors. Accordingly, PCOS might be viewed as a gender-specific form of the metabolic syndrome.

Periodontitis is a chronic inflammatory process that occurs in response to predominantly Gram-negative bacterial infection, characterized by local and systemic elevations of proinflammatory cytokines resulting in loss of connective tissue attachment and alveolar bone resorption which can result in tooth loss. Erhan Dursun, in the year 2010 has conducted a study in which he examined 27 PCOS patients and 27 healthy controls and assessed the

periodontal parameters and found out that an increased susceptibility for periodontitis and a local/periodontal prooxidative state in lean and normal glucose-tolerant women with PCOS compared with healthy women. Finding of higher scores of periodontal indices in PCOS patients compared with age- and weight-matched healthy control women denotes that periodontal health is deteriorated and that gingival inflammation (gingivitis) is a common finding in these patients. In our study only 61% students were aware of the same.

Wild et al[6] in his study has pinpointed the effects in long term for PCOS on the periodontium and the impact that it creates on long standing periodontally compromised patients. New patients developed with periodontal complaints are to be screened for oral manifestations of PCOS to help prevent. If found present, to help diagnose it in a primitive stage preventing further progress of the condition. Our study showed that only a total of 57% of the total participants were able to diagnose PCOS with knowledge of its clinical manifestations and 64% of the total participants have expressed that intrigue knowledge on the oral manifestations of PCOS have helped diagnose PCOS in their patients.

Rhiminejad et al[7] in the year 2015 conducted a study in which he assessed 197 females among them 98 were suffering from PCOS and 98 were healthy. He found out that CAL and sites with BOP were significantly higher in women with PCOS. This shows a strong relationship between PCOS and periodontium. In this study, only 61 percent of participants were aware of the fact that increased areas of bleeding on probing was the most common oral manifestation of PCOS. Above studies had proved the existence of a positive relationship between PCOS and periodontitis. Even though the presence of relationship was proved, awareness about this among the dentist still remains limited. In our study a total of 80 percent of the participants were aware of the fact that both loss of CAL and increased in the probing depth were both periodontal manifestations of PCOS.

Ram Nidhi et al.[8] conducted a study and found that out that the Prevalence of PCOS in Indian adolescents is 9.13%. Our study established that 95 % of the participants were aware of a condition called PCOS of which 49 percent were undergraduates and 46 percent were post graduates.

Ozgun Ozcxaka et al.[9] had conducted a study to find the relationship between gingival inflammation and periodontitis and found out that PCOS and gingival inflammation appears to act synergistically on the proinflammatory cytokines IL-6 and TNF-a. Thus, PCOS may have an impact on gingival inflammation or vice versa. 81% of our study population were aware that the oral manifestation of PCOS which affects the gums. Out of the total participated, 85.1% post graduates and 77.4% under graduate participants have answered correctly. However only a total of 61 percent of participants were aware of the fact that increased areas of bleeding on probing was the most common oral manifestation of PCOS of which 72.3% and 50.9% of all post graduates and under graduates were aware. A total of 80 percent of the participants were aware of the fact that both loss of CAL and increased in the probing depth were both periodontal manifestations of PCOS.

Porwal et al.[10] in his study stated that the BOP and CAL correlated positively and significantly with CRP in which the multivariate linear regression analysis revealed that BOP and CAL had significant association with CRP. Knowledge of the haematological markers are essential in the rightful understanding and treatment of PCOS. A total of 68 percent of participants were aware of the haematological markers that we look for in patients diagnosed with PCOS in our study.

Tanguturi et al.[11] in her study has descriptively explained the association of the pathophysiological mechanisms that link both PCOS and periodontitis. Kelleserian et al in his study has highlighted the management protocols essential to control after the association of periodontal diseases and PCOS. In our study only 63 percent of the total participants were aware of the medical speciality of choice to consult for patients diagnosed with PCO. Only 28 percent of the total participants were aware of the clinical grading which reveals the knowledge of the participants on the type, form and extend of the condition.

This study shows an increased understanding on the essential groundwork on the relationship between periodontitis and PCOS, and its diagnosis and treatment plan to help prevent or in case help control the further progress of the condition. Knowledge on the basic concepts and medical and dental manifestations of PCOS were present among the population of study. However, understanding of the clinical grading, management protocols and treatment modalities will help in rendering the provision of a holistic treatment for periodontitis and PCOS.

5. Conclusion

Doctors of the dental profession play a major role in crafting knowledge, awareness and practice on the relationship between Poly Cystic Ovarian Syndrome (PCOS) in periodontally compromised women. The results of this survey study showed that more than 90% prospective dental professionals were aware of a condition called PCOS. 70 percent of the participants were aware of the oral manifestations of PCOS and only 28 percent of the total participants were aware that the clinical grading. To decrease the negligence and lack of understanding of the dental fraternity, improved education, advanced update on research and unbiased studies need to be promoted, supported and done to ensure quality of work and treatment

given to each patient. This study hopes to shed light on the relationship between Poly Cystic Ovarian Syndrome (PCOS) in periodontally compromised women to better enhance the diagnosis, treatment planning and the systemic corelation of the oral manifestations of the condition.

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7. Source of Funding

None.

8. Conflicts of Interest

None.

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