

Short Communication

Awareness regarding oral health among women with polycystic ovary syndrome: a qualitative study

Nivedha K.*, Aparna S., Parangimalai Diwakar Madankumar

Department of Public Health Dentistry, Ragas Dental College and Hospital, Chennai, Tamil Nadu, India

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*Correspondence:

Dr. Nivedha K.,

E-mail: nivedhak120396@gmail.com

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ABSTRACT

Polycystic ovary syndrome (PCOS) is a common endocrine disorder among women of reproductive age. The PCOS primarily affects the reproductive system, with substantial collateral negatively health effects on metabolic, psychologic, and cardiovascular functions. Women with PCOS have increased pro-inflammatory cytokine levels, and this inflammation can lead to several “oral health problems” which are often ignored by patients. This qualitative study aims to explore the knowledge and the impact of oral health in women with PCOS. An in-depth interview was conducted among women with PCOS (aged between 18-35 years) who were diagnosed based on the Rotterdam’s criteria, within the time period of July 2021 to August 2021. Sampling was purposive and continued until data saturation was reached. Data were analysed using the thematic analysis technique with NVIVO 10.0 software (Numerical Analytics Instruments). The analysis of the data helped to extract the main theme of the research as “PCOS impact on oral health” under 3 main category themes and 8 sub-category themes. There is a need for education at the community level to increase general awareness and to understand the condition. Better awareness could also help women to recognise possible symptoms and prompt them to seek help, leading to more timely diagnoses.

Keywords: Polycystic ovary syndrome, Oral health, Bi-directional relationship, Qualitative study

INTRODUCTION

Women of all ages experience multiple health issues related to gynaecological and endocrinal disorders, particularly during their reproductive age. Polycystic ovary syndrome (PCOS) is one of the common endocrine disorders that affect women of reproductive age (15-35 years) with prevalence ranging from 2.2% to 26% across the globe and 9.13% to 36% in India.¹ Polycystic ovary syndrome was first described by Stein and Leventhal in 1935 so it is also known as Stein-Leventhal Syndrome. In 2003, “The European Society of Human Reproduction and Embryology and The American Society for Reproductive Medicine” (ESHRE/ASRM) proposed commonly used and widely accepted diagnostic criteria

for PCOS called “ROTTERDAM CRITERIA,” which was developed to enlarge the diagnosis of PCOS.² According to the criteria two of the three features hyperandrogenism, ovulatory dysfunction, polycystic ovary are required to be present to confirm the diagnosis.

This complex syndrome is due to a combination of genetic and environmental factors. The commonly cited risk factors include obesity, lack of physical exercise, and family history. Polycystic ovary syndrome occurs as a set of symptoms due to elevated androgens (male hormones) in females. The clinical manifestations are diverse, including hirsutism, anovulation or oligomenorrhea, infertility, acne, androgenic alopecia, acanthosis nigricans, increased risk for endometrial cancer and

psychosocial dysfunction. Other associated conditions may include type-2 diabetes, cardiovascular disease, stroke and obstructive sleep apnoea.³ In addition to these clinical manifestations, recent studies have showed a significant association between PCOS and periodontitis.⁴ The chronic low-grade inflammation in PCOS acts as a plausible etiologic mechanism linking periodontal disease and many systemic diseases.

There is extensive literature regarding the association of PCOS and other systemic conditions, the PCOS primarily affects the reproductive system, with substantial collateral negative health effects on metabolic, psychologic, and cardiovascular functions.⁵ While there are only a few studies to establish the link between PCOS and periodontitis, even little evidence suggests that PCOS and periodontitis shares a bi-directional relationship. Women with PCOS have increased pro-inflammatory cytokines levels, which are a group of protein that helps to regulate immunity and inflammation. Bidirectionally these inflammatory mediators are linked with both periodontal inflammation as well as excess androgen production resulting in PCOS. It is also a deep-rooted fact that periodontitis is a chronic sub-clinical inflammation that, leads to Insulin Resistance and initiating the development of type 2 diabetes which is a prominent feature in PCOS.⁶

Women with PCOS suffer from oral health problems like periodontitis and gingivitis, which are often ignored.⁷ Lack of health education and insufficient preventive measure may result in an increased prevalence of oral health diseases.⁸ Although the bi-directional relationship between periodontal inflammation and PCOS has been established women with PCOS, maintaining oral health may benefit the management of PCOS. In order to get insights about this relationship an exploratory qualitative approach was taken to assess the awareness of the relationship between PCOS, periodontal disease, oral health impact of PCOS among women of 15-35 years diagnosed with PCOS.

METHODS

Study design

An in-depth interview was conducted among women with PCOS who were diagnosed based on the Rotterdam's criteria, within the time period of July 2021 to August 2021.

Study participants and recruitment

Study participants were aged 18-35 years. Participants were recruited by the "Purposive sampling method" for the selection of information-rich participants, women who are diagnosed with PCOS and can contribute more information to proposed research question. The interested participants were interviewed personally through the online forum using the "zoom" app version 5.7.5 (Zoom Video Communications). Their awareness, opinions

regarding oral health status were recorded. Zoom is a collaborative, cloud-based videoconferencing service offering features including online meetings, group messaging services, and secure recording of the session. Purposive sampling was carried out until no new responses or new ideas were generated. Data saturation was reached after assessing 10 participants. Therefore, a total of 10 participants were recruited in this study.

Ethical consideration

This study was carried out between July to August 2021. The objective of the stud was explained to the participants before the individual interview and the "Informed consent" was obtained from each of the participants, and anonymity and confidentiality were assured.

Assessment tool-interview guide

The following are the assessment tool are: (1) What is your perception about PCOS? (2) Are you aware that oral health can affect PCOS? (2 way/PCOS affecting oral health) (3) Have you noticed any change in your oral health while taking medicines? (oral contraceptives) (4) Could you share briefly about your day-to-day activities? (lifestyle/food habits) (5) What is daily routine to maintain Oral health? (6) Have you noticed any changes in your gums? (colour, texture) (7) Do you have any symptoms of Halitosis, Bleeding gums, tenderness /pain in gums? (8) Did you seek any dental professionals help after diagnosing with PCOS? if why? (9) Have you received any awareness programs about PCOS and oral health from school/college, hospital/doctors/ gynecologists, at home/ social media? (10) What is your opinion on receiving oral health awareness?

Procedure

An in-depth interview was conducted for each participant by utilizing a semi-structured interview guide that included ten questions regarding the awareness of oral health problems among women with PCOS. The individual's interview was initiated with questions like "your perception about PCOS? How it affects your day today activities? Could you share your views?". Open and interpretative answers of the participants guided the course of interview so that we could probe various oral health problems faced by each of them.

The in-depth interview included their perception about PCOS and the link between inflammatory changes in PCOS and oral health, the effect of oral contraceptive pills on oral health, their food and lifestyle habits, any oral health problems after diagnosing with PCOS and oral health hygiene measures and finally it included their opinion on receiving awareness on oral health?

The in-depth interview was conducted in the online forum through the 'zoom' app where the meetings were recorded automatically, and then the recorded audios are

transcribed verbatim. The interview lasted from a minimum of 10 minutes to a maximum of 15 minutes for each participant. The in-depth interviews were continued until it reached data saturation (the point where no new information is obtained).

Data analysis

Data analysis was done following thematic framework analysis where the themes were generated from the data collected. The recordings from the zoom app were utilized and the audios were transcribed to their verbatim format. The recordings were read and familiarised multiple times to generate themes and to achieve a comprehensive understanding of the interview. Initial analysis was undertaken manually and the responses from each participant were identified and charted under the respective key points. The codes (statement and sentences) were collated into potential themes. The codes

with similar meanings were categorized in one group and subcategories were created through an inductive approach. Then the themes were reviewed for generating a thematic map. Finally, interpretative analysis was done to identify recurrent themes which enabled various perspectives of PCOS and its impact on oral health among the participants. The analysis was done using NVIVO 10.0 software (Numerical Analytics Instruments).

RESULTS

Thematic analysis categorized coding strategy under “PCOS impact on oral health” into 3 main category themes and 8 sub-category themes. Themes and sub-themes are as follow (Table 1).

Table 1: Represents codes, sub theme, and main theme extracted from the analysis of interviews.

Assigned codes for participants responds	Theme	Sub-theme
Hormonal problem; Perceptions of health; Oral health changes; Importance of oral health; Ignored; Stress; Challenges; Awareness;	Perception and experiences about the syndrome	• Assumption and knowledge about the condition • perception about other associated symptoms (especially oral health) • Perceived importance of oral health care. • lifestyle/ diet
	Oral health changes	• Symptoms after the diagnosis • Symptoms under medications
	Barriers and enabling factors to create awareness	• Lack of awareness / ignorance (hope of recovery or forgetting mindset) • Promoting oral health (different modes of creating awareness)

Theme-1: perception and experiences about the condition

Women with PCOS had different perceptions about the disease, nevertheless, each of the participants faced different issues.

Assumption and knowledge about the condition

Most of the participants were worried about the condition and assumed that PCOS cannot be cured/ there are no treatments that can cure or control PCOS.

I think so much about the condition. Sometimes it would feel like ‘What kind of life is this?’ ... Will this illness be with me all my life... should I take pills all my life (participant No. 6, 24 years)

Few participants and their attitude towards the condition was appreciable. They were almost trying to cope up with the condition.

The disease is common nowadays even my friends have the same problem, so it doesn't affect me much. Though initially, it was a tough phase for me, as I was too young to understand the disease. Later I am used to it that is I am coping with the disease. (participant no.9, 27 years)

Perception about other associated symptoms

Almost all the participants were aware of the other associated symptoms of PCOS but they were not aware of the oral health problems that arise from PCOS and also oral health changes that can affect PCOS. Only two of the participants were aware of the oral health problems caused by hormonal changes that too they just correlated with their oral health findings, yet they do not know about the exact reason behind the link of PCOS and periodontitis.

Yes, I know PCOS can cause many problems like obesity, respiratory problem, abnormal periods cancer and it also certainly leads to infertility etc.... but nowhere I read or heard about oral health problems can cause PCOS which I couldn't even expect..... (participant no.5 24 years)

Yeah, I know PCOS is associated with many other conditions..... once had a gums problem then I suspected that it could be due to the hormonal imbalance..... I thought it might be my assumption and even my doctor doesn't mention anything about that... (participant no.9 27years)

Even though participants were not aware of inflammatory changes between PCOS and oral health, they didn't make any effort to know about the condition and its consequence. Which shows they were least bothered about the symptoms.

No, I am not aware and I didn't put any effort to find its complication..... (participant no.1 23 years)

Perceived importance of oral health care

Here participants were asked for how many times they brush in a day, duration of brushing, other than brush any other oral aids are used or not etc. Almost all participants reported that they follow their daily routine for oral health care properly.

Mostly I brush twice a day for 5-10 mins.... But I never mouth wash or floss basically I don't know how to use them all.... (participant no.5 24 years)

Lifestyle/ diet

Some of the participants were under stress and depression which might cause a detrimental effect on the oral health and it can also affect their metabolism like depression about the disease and its ill effects, stress due to personal problems can also affect their metabolism and oral health wise versa.

"I went to the doctor, I took medicines, but it didn't get better, I am exhausted with this condition.... I can't take medicines anymore"... (participant no.6 age24 years).

I was studying for exams for months I was under stress only... since I had no time, I didn't take medicine also regularly..... (participant no.4 age 22 years)

Diet-related habits like continuous eating, unhealthy food habits can affect their metabolism (PCOS) and also their oral health.

"I like eating sweets and snack/junk foods... never mind about gaining weight..... (participant no.7 21 years)

Theme 2: oral health changes

Symptoms after diagnosing

Many participants talked about many oral health issues which they had, but they were not able to find the reason behind those problems.

"Sometimes while brushing I can spot some blood in my brush, even I felt my gums were enlarged.... Later, I visited a dentist and he told me that I need to clean my tooth and then had a tooth cleaning too.... Later I didn't have those problems again." (participant no.2 22 years)

"yes, I had few problems.... But my parents told it is all common.... Really we didn't give importance to it" (participant no.10 26 years)

Symptoms under medication

It is suggested that women with PCOS who are receiving oral contraceptives may be at lower risk for periodontal. This could be caused by promoting regular menstrual cycles and improvements in insulin regulation, contributing to improved oral health and reduced low-grade chronic inflammation. While many participants were not under medication for several reasons and some of the participants did not notice any changes in having medications

"I took those medicine for not more than 2 months, during the course of medication I had severe headache and nausea so I couldn't continue medicine regularly as advised by doctor..... during the course also I didn't find any changes" (participant no.8 25 years)

Theme 3: barriers and enabling factors to create awareness

Lack of awareness/ ignorance (hope of recovery or forgetting mindset)

Participants had limited knowledge on PCOS and its related effect on oral health. Participants faced few barriers on receiving awareness about the disease. Even though few participants had signs of oral health problems they misunderstood about the condition and were misled by other's opinions.

"Only when my symptoms get worsen my parents will take me to the hospital..... and even my gynaecologist also didn't specify anything like that...." (participant no.7 21 years)

None of them had received any awareness programme about oral health changes and PCOS. And also they felt uncomfortable talking about these issues in public.

" I feel little shy to discuss this to everyone..... I assume these symptoms will settle by its own and I was thinking this might be normal because of the hormonal imbalance".(participant no.5 24 years)

Promoting health (different modes of creating awareness)

Almost all the participants insisted for an awareness programme, they considered receiving awareness about

PCOS and oral health is very essential and will be easy to utilize.

“Yes, it is important to know all about this.... It will be surely helpful... receiving awareness through social media will have a good reach among young women.... So that we would probably overcome many problems as earlier we can” (participant no.8 25 years)

“I would encourage and support to receive awareness from the gynaecologist directly because when I had these problems I first visited them and probably they could have told me about all this”....

DISCUSSION

According to Ma et al, qualitative studies of women with PCOS are few compared with quantitative studies.⁹ Qualitative research focuses on experience rather than measurement and is well suited to generate data. In this qualitative study, data were generated under the following themes perception and experiences about the condition, oral health changes, barriers and enabling factors to create awareness.

Findings from our first theme, it could be understood that women diagnosed with PCOS were almost unaware of the bi-directional relationship between PCOS and oral health. Most of the participants who had faced oral health problems were not aware that it will relatively affect their metabolism.

Participants in our study reported that they are more worried about their condition and also assume that PCOS cannot be treated. This could be probably due to misinformation, lack of awareness or unintended anxiety among them. Participants also reported severe distress because of this condition.^{10,11} According to Naz et al, it was important to have a clear knowledge about the syndrome, its complication and also how to overcome or cope with the condition in a positive attitude. His study aimed to understand the experiences and circumstances of individuals with PCOS; the outcome of his study participants used a positive attitude to solve their problems with positive thoughts and managed to deal with the stressful conditions of life.¹²

Data from the second theme gave an idea of how drugs can influence oral health. In a meta-analysis done by Machado et al, female subjects with PCOS had 28% more risk towards periodontal disease (PD), and female subjects with PD had 46% more risk to have PCOS. Polycystic ovary syndrome females with PD had higher gum bleeding, periodontal pocket depth and clinical attachment loss than non-PCOS females with PD.¹³ Evidence also suggests that, there is a possible bi-directional relationship between these two entities and it is already known that certain drugs which help in treating PCOS would have a positive influence on oral health as well.

According to Tanguturi et al, the classical treatment approach for PCOS includes metformin, omega 3 fatty acids, vitamin D which reduce the androgen level and in turn reduce the inflammatory burden that causes periodontal diseases. Similarly, in our study participants under medication also noticed an improvement in their oral health.⁴ However, a few of our participants (6 participants) also resisted/ neglected their treatment due to various reasons. Being a combination of many different symptoms with a varied range of clinical presentation amongst women of all age groups, effective treatment is possible only through continual adherence with the treatment protocol and medications prescribed. Therefore, it is important to keep insisting women with PCOS to follow their prescribed medicines.¹⁴

The next theme that arrived from our study was on barriers in receiving awareness about the condition. It suggested significant concerns surrounding diagnosis, treatment and relationships with healthcare professionals like perceived delays in treating, inadequate advice and a lack of accurate information about the condition and oral health change.¹⁵ Concomitantly, participants in our study reported health care professionals especially gynaecologist shows little concern regarding other PCOS allied condition like oral health problems. The data suggest that healthcare professionals should have a concern about general health, oral health and emotional consequences of PCOS and educate patients in terms of interaction. Further health care providers must aid them in identifying the condition and provide adequate skills and knowledge to manage periodontal health and PCOS effectively.¹⁶

Early diagnosis, treatment, and prevention of long-term sequelae can be done by understanding the clear and stronger bi-directional association between these two entities. Health care professionals, gynaecologists, and endocrinologists, as a team, need to proactively motivate patients diagnosed with PCOS to maintain good oral hygiene at all times and refer to the dentist to avoid periodontal complications.⁴ This referral care and teamwork need more effort and support to enlighten women with PCOS.

Several works of literature have concluded that there is a need to provide information about diagnosis and help women with PCOS to understand their condition, and providing such information improves their wellbeing.¹⁷ Literatures emphasise and indicate that there is a need for psychological support, awareness program and education at the time of diagnosis also improves women day-to-day living.^{18,19}

Since young women, predominantly adolescent population are largely affected.²⁰ It is important to educate them earlier at schools/ colleges in order to help them to know more about the condition and to practice good oral hygiene and have a positive impact on their lives.

CONCLUSION

Participants' experiences highlighted the significance of the health and emotional impact of PCOS on their everyday lives and difficulties in coping with the condition. There is a need for education at the community level to heighten general awareness and understanding of the condition, thereby fostering a more empathetic attitude towards women with PCOS. Better awareness could also help women to recognise possible symptoms and prompt them to seek help, leading to more timely diagnoses.

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