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Improving awareness and management of polycystic ovary syndrome

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ABSTRACT

The most common infertility causes among couples at AMC are oligoasthenoteratozoospermia in males (40%) and polycystic ovary syndrome (PCOS) in females (40%). This study aimed to develop an interprofessional collaboration model for the management of PCOS at the Reproductive and IVF Clinic of AMC Muhammadiyah Hospital, with the goal of improving patients' medication adherence and therapy effectiveness. As the initial phase, a PCOS health education webinar was conducted to enhance participants' knowledge and attitudes toward PCOS prevention and management. A pre- and post-test design was employed using an online questionnaire distributed via Google Forms to PCOS community members in Yogyakarta. The instrument assessed participants' knowledge of PCOS, medication adherence, and perceptions of interprofessional collaborative management. Data was analyzed using SPSS software. Thirty-one women participated, of whom 14 (36%) had PCOS, with a median age of 27 years (range: 18–62). The educational webinar significantly improved participants' understanding of PCOS ($p < 0.000$), particularly in terms of knowledge and attitudes regarding its prevention and management. The health education webinar effectively enhanced participants' knowledge and attitudes toward PCOS prevention and management, highlighting the potential of interprofessional collaboration–based education to support comprehensive reproductive health care.

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INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common endocrine disorder with a global prevalence of 5-10% and is an important cause of chronic anovulation in young women (Habiburrahman Said et al., 2023; Sundari et al., 2024)(Sad et al., 2024; Sundari et al., 2024). In Indonesia, research on the epidemiology of PCOS has been limited, resulting in a lack of national-scale publications on the

incidence of PCOS. From several regional-scale studies, it is said that the incidence of PCOS in Indonesia ranges from 4-10% of women of healthy reproductive age (Baziad, 2012; Rahayu et al., 2024; Santoso, 2014), and 45.7% of them occur in the age of 26-30 years (Pngastuti, 2011). This prevalence tends to increase along with changes in lifestyle, particularly among individuals with a high-calorie diet and sedentary lifestyle (Santoso, 2014). The results of RISKESDAS (2018) showed that almost 98.2% of the population consumes less than 5 portions of fruit and vegetables a day, while 47.7% of the population lacks exercise (Kementerian Kesehatan, 2018). These lifestyle changes increase the prevalence of obesity in women, which in turn can increase insulin resistance and increase the risk of ovulation disorders, including PCOS. The study of (Mareta, Amran, & Larasati, 2018) reported that 92.2% of 249 PCOS patients were obese. In the long term, PCOS causes infertility. Approximately 61% – 89.6% of PCOS patients experience infertility. PCOS women have an 8.5-fold risk of infertility compared with women without PCOS.5PCOS accounts for approximately three-quarters of all cases of anovulatory infertility (Baziad, 2012).

PCOS affected women's health namely adverse metabolic (obesity, type 2 diabetes, cardiovascular disease) (Tefagh et al., 2022), reproductive (infertility, miscarriage, pregnancy, and neonatal complications) (Jabeen et al., 2022; Li et al., 2021; Pan et al., 2021), and psychological risks (anxiety, depression, and stress). Lipid imbalance, oxidative stress, insulin resistance, and genetics may cause PCOS. Many studies have linked insulin resistance and compensatory hyperinsulinemia to Polycystic Ovary Syndrome (PCOS). Insulin resistance is higher in PCOS women than controls, reaching 65-75% in normal-weight women and 95% in obese women. Anovulation and monthly abnormalities are linked to hypothalamic-pituitary-ovarian axis dysfunction in PCOS women due to insulin resistance and hyperandrogenism (Baziad, 2012).

Management of PCOS includes giving anti-hyperglycemic drugs and hormone drugs. However, these drugs often cause unpleasant side effects such as joint or muscle pain, nausea, vomiting, diarrhea, and psychological disorders, which can further reduce women's quality of life and increase non-adherence to taking medication (Costello et al., 2016; de Melo et al., 2017). In addition to medical therapy, it is also important to make lifestyle changes. Lifestyle interventions with PCOS will improve body composition, hyperandrogenism, and insulin resistance in women with PCOS (Moran, Hutchison, Norman, & Teede, 2011). Healthy lifestyle behaviors, such as healthy eating and regular exercise, should be adopted. It is recommended for all PCOS sufferers to achieve and/or maintain a healthy weight and optimize hormone levels, general health status, and quality of life. Various balanced dietary approaches can be recommended to reduce energy intake and diet, thereby inducing weight loss in women with PCOS. General principles of healthy eating should be followed for all women with PCOS throughout life. Adaptation to changes in diet can be done gradually and individually. Diets that are too strict and that include foods with unbalanced nutrition often have a bad impact on health (Teede et al., 2018).

Based on a preliminary survey of 10 PCOS sufferers, 75% of patients do not understand many things related to PCOS, including long-term complications that can worsen their quality of life, so some of them are too lazy to take medication and diet. Most sufferers come with complaints of irregular menstruation. When given hormonal drugs to stimulate menstruation and achieve successful menstruation, they do not return for treatment because they feel there is no problem and think that PCOS is a menstrual disorder. PCOS is a chronic endocrine disease; many sufferers feel there is no problem because everything is considered normal, or not a big problem, because it is only related to menstrual disorders. Therefore, their understanding of the causes, symptoms, risk factors, complications, and management remains limited. Based on interviews with several patients, they wanted to know more about complications, prevention, and management, especially those related to diet and exercise, which are important for PCOS sufferers. The problem with service partners is the low awareness and understanding of PCOS and its implementation.

AMC Muhammadiyah Hospital reports that 40% of infertility cases are caused by PCOS, indicating a severe reproductive health burden on the local population. This proportion is

consistent with global evidence that PCOS causes 70–80% of anovulatory infertility and national data that links 50–75% of ovulation disorder-related infertility to PCOS. PCOS's large role in infertility highlights the necessity for multidisciplinary management. Obstetrician–gynecologists, midwives, internists, endocrinologists, nutritionists, and other allied health professionals must collaborate to manage PCOS, which encompasses reproductive, metabolic, hormonal, and psychosocial components. In fertility services, collaborative care routes, including community-based webinars, are crucial to improving PCOS awareness, early detection, and complete management.

Based on the problems described, we aimed to increase the knowledge of PCOS sufferers about pathophysiology, symptoms, complications, and management. Additionally, we aimed to enhance their skills in maintaining a balanced diet and selecting suitable exercises. This increase in knowledge and skills is also aligned with the adoption of new habits in the new normal era, utilizing digital technology that is practical and accessible to many people. With the increasing knowledge and skills of the community regarding PCOS and changes in diet and exercise, it is hoped that the goals of PCOS therapy can be achieved more quickly to avoid long-term PCOS complications. Previous studies have utilized webinars or online modules to enhance PCOS knowledge; however, none have employed an interprofessional approach that integrates gynecological, nutritional, and lifestyle-exercise expertise into a unified digital education program, thereby leaving Indonesian patients without access to comprehensive interventions for PCOS self-management.

RESEARCH METHOD

The quasi-experimental study examined how webinars improved knowledge, attitudes, and management of PCOS. Google Forms questionnaires collected quantitative data on pre- and post-webinar treatments. All webinar attendees, including members of the Yogyakarta PCOS community, are invited to participate in this study. After consenting, participants took the online survey. They were told they could continue the online questionnaire if they participated, but not if they did not. The Ethics Committee reviewed the discussion material and questions from the Universitas Muhammadiyah Yogyakarta Faculty of Medicine and Health Sciences (No. 222/EC-KEPK FKIK UMY/VII/2021) prior to the webinar.

A skilled gynecologist and obstetrician led two Zoom sessions on PCOS management. The webinar explored PCOS's implications on female fertility and health. Interactivity was ensured by a conversation or Raise Hand Q&A session after the lecture.

Participants completed demographic, characteristic, knowledge, and attitude questionnaires before and after the webinar. We learned in a 2-hour webinar. This quantitative analysis employed SPSS 17.0 to examine pre- and post-test results. All demographics were listed. The knowledge and attitude domains for the normalcy test were examined using paired t-tests or Wilcoxon signed-rank tests following pre- and post-tests. A Wilcoxon signed-rank Test (non-parametric) was used to compare accurate answer rates pre- and post-test, and by group, for the knowledge section.

RESULTS AND DISCUSSIONS

39 participants were included into the study and followed the pretest of knowledge and attitudes towards the prevention and management of PCOS and attended 2-hours webinars with the topics of "The Effect of PCO on Female Fertility" and "Complications of PCO on health", delivered by an obstetrician and gynecologist and an internist respectively. The demographic characteristics of the participants were described in Table 1.

Table 1. Demographic characteristics of participants

Characteristics	Participants (*n*=39)
Age in years, *median (min-max)*	27 (18-62)
PCOS status Yes	
No	14 (36%)
	25 (64%)
Daily consumption of fruit and vegetables Rarely (not always eat in a day)	
Often	18 (46%)
	21 (54%)
Exercise (during pandemic) Never	
Rarely	3 (8%)
Once a week Twice a week	26 (67%)
	14 (36%)
	10 (26%)
BMI	
Underweight (below 18.5)	3 (7.7%)
Normal (18.5-24.9)	22 (56.4%
Overweight (25.0-29.9)	9 (23.1%)
Obese (> 30.0)	5 (12.8%)
Marital status Unmarried	
Married Widowed	14 (36%)
	23 (59%)
	2 (5%)
Length of marriage in years, *median (min-max)*	1 (0-22)
Birth spacing in years, *median (min-max)*	0 (0-22)

Within the questionnaire, we included questions regarding the expected services for PCOS in relation to the multidisciplinary team at AMC Muhammadiyah Hospital. The results are presented in Table 2.

Table 2. Expected PCOS services in the reproductive and fertility clinic in AMC Muhammadiyah Hospital

Variables	Participants (*n*=39)
Interprofessional collaboration Yes	
No	38 (97%)
	1 (3%)
Service providers	
Involving administrators, midwives, obstetricians and gynecologists, pharmacists, Involving other multidisciplinary teams	33 (85%)
	6 (15%)
Patients' satisfaction with multidisciplinary services (although the PCOS program has not succeeded)	
Yes No	
Do not know	27 (69%)
	9 (23%)
	3 (8%)

Table 2 shows that most webinar participants supported multidisciplinary services in managing PCOS at AMC Muhammadiyah Hospital (38 or 97%) consisted of administration officers, midwives, obstetricians and gynecologists, and pharmacists (33 or 85%). The participants stated that they still would satisfy with the inter professional collaboration practice even if the PCOS program has not succeeded (27 or 69%).

Table 3. Attitudes towards taking PCOS drugs and daily lifestyle improvement

Variables	Participants (*n*=9)
Duration of taking PCOS drugs, *median (min-max)*	
Boredom in taking PCOS drugs	
Yes	9 (100%)
No	0
Adherence to take PCOS drugs	
Yes	9 (100%)
No	0
Desire to improve diet and exercise	
Yes	9 (100%)
No	0

14 of 39 (36%) participants declared acquired PCOS. 9 of 14 (64%) participants consumed PCOS drugs for 1 week to 1 year. All 9 participants stated that they are obedient to take PCOS drugs (100%), but they feel bored with taking PCOS drugs prescribed by doctors (100%). Before the webinar, 2 participants stated that they did not need to improve their lifestyle, but after the webinar, all participants (100%) wanted to improve their diet and exercise.

Table 4. Scores of knowledge of webinar participants

			Median (min-max)	*P* value
Knowledge (n=39)	before	the webinar	6 (1-9)	0.000
Knowledge (n=39)	after	the webinar	9 (1-10)	

The questionnaire results showed that the posttest scores were significantly higher than the pretest scores (p = 0.000). The Shapiro-Wilk test showed non-normal distribution of knowledge before and after the webinar. The improvement score was shown to have a median increase of 3 points, from 6 at the pretest to 9 (on a 0-10 scale) at the statistically significant posttest (p = 0.000), based on the Wilcoxon test. This result showed that educational intervention through a webinar could improve the knowledge regarding the prevention and management of PCOS.

This study aimed to evaluate the effect of a health education webinar on improving knowledge and attitudes toward the prevention and management of polycystic ovary syndrome (PCOS). The findings demonstrated a significant increase in participants' posttest scores compared with pretest scores (p = 0.000), indicating that educational intervention through webinars effectively enhanced participants' understanding of PCOS. This outcome aligns with the study's objective of developing an interprofessional collaboration model in PCOS management by strengthening patients' awareness and self-management behaviors since it is important to mix self awareness, lifestyle management, and support for women with PCOS (Percy, Turner, & Orr, 2024).

The improvement in knowledge and attitudes following the webinar can be attributed to several factors. First, the educational materials were delivered by experienced specialists through an interactive format that encouraged participants' engagement and discussion. Educational interventions are known to improve comprehension and retention, particularly when they involve active learning strategies. Moreover, most participants were in their reproductive years (median age 27), a population at higher risk for PCOS, which may have increased their motivation to learn and apply the information provided. It is in lie with the studies who reported that lectue and educational module increase self-awareness (Alshdaifat et al., 2021; Gour, Dubey, Goel, & Halder, 2022).

The results of this study are consistent with findings from previous research. Mani et al. reported that a structured 12-month educational program conducted alongside routine medical

treatment significantly improved participants' understanding and adherence to PCOS management (Ishaqui et al., 2025; Lau et al., 2022; Mani et al., 2018; R. A. Mohamed et al., 2024). Likewise, Mohamed found that an educational intervention among adolescent girls aged 17–22 years enhanced their knowledge of PCOS regarding its causes, risk factors, complications, and management (H. A. A. Mohamed, 2016). Alharbi also demonstrated improved awareness of PCOS and its association with obesity among participants aged 18–50 years (Alharbi, 2020). These consistent findings support the important role of continuous education in improving knowledge and promoting lifestyle changes among women with PCOS.

Another significant finding of this study was the participants' strong support for multidisciplinary and interprofessional collaboration in PCOS care (97%). This demonstrates an increasing awareness of the importance of integrating multiple health professionals, including obstetricians, internists, nutritionists, pharmacists, and nurses, in managing PCOS. Collaborative practice provides holistic care that addresses both medical and lifestyle factors, leading to improved outcomes such as weight management, insulin sensitivity, and ovulation restoration (Baziad, 2012; Mareta et al., 2018; Moran et al., 2011).

However, despite the positive outcomes, some participants reported boredom in taking long-term medication, which reflects the common challenge of maintaining adherence to chronic pharmacological therapy (Costello et al., 2016; Melo, Reis, Ferriani, & Vieira, 2017). This finding suggests the need for ongoing educational support, follow-up counseling, and possibly digital health interventions to sustain patients' motivation and lifestyle modifications over time (Alharbi, 2020).

Overall, this study confirms that a health education webinar can effectively enhance knowledge and attitudes toward PCOS prevention and management. The findings underscore the importance of integrating health education into interprofessional collaborative care to enhance patient adherence and long-term health outcomes. Future studies with larger sample sizes and longer follow-up periods are needed to evaluate the sustainability of behavioral and clinical improvements following educational interventions.

CONCLUSION

The education program, delivered through a webinar, can improve knowledge and attitudes towards PCOS. The Q&A session, conducted at the end of the presentation, might support the interactive discussion. Further research is needed regarding the interprofessional collaboration approach in the management of PCOS at the reproductive and IVF clinic at AMC Muhammadiyah Hospital, Yogyakarta, to improve medication adherence and increase the effectiveness of PCOS therapy through medication and daily lifestyle.

Community-based webinars can enhance interprofessional collaboration in PCOS care, benefiting midwifery and PCOS service management. The webinar approach increased women's knowledge and attitudes about PCOS prevention and care and showed a strong patient demand for integrated midwife, obstetrician–gynecologist, internist, nutritionist, and pharmacist services. The findings highlight the importance of midwives as the primary point of contact for PCOS diagnosis, lifestyle counseling, and multidisciplinary care. This study presents a realistic and scalable approach to enhancing collaborative PCOS care in reproductive health and midwifery settings, demonstrating that digital community education can stimulate patient engagement, increase multidisciplinary awareness, and promote adherence.

Multi-phase mixed-methods studies with larger, more diverse samples, behavioral and clinical metrics, and structured interprofessional collaboration methods like MDT case conferences, coordinated dietary and medication counseling, and digital follow-up systems should be used in future studies. A careful follow-up and assessment of how easy it is to implement, how effectively individuals work together, and how effective it is in treating people will create a long-term PCOS treatment approach including many professionals.

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