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Obesogenic Eating Behavior and Nutritional Status in Polycystic Ovary Syndrome Patients in Women of Childbearing Age at Harapan Kita Mother and Children's Hospital, Jakarta

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A B S T R A C T

Polycystic Ovary Syndrome (PCOS) affects the metabolic, endocrine and psychological systems. PCOS Mostly occurs in women of reproductive age. Problems with nutritional status in PCOS patients are supported by obesogenic eating behavior. This study aims to examine obesogenic eating behavior and nutritional status in PCOS patients. The type of research used is an analytical survey with a cross sectional study approach. This research was conducted at RSAB Harapan Kita. The sample for this study was women of childbearing age aged 20-35 years using a total sampling technique with a total sample of 33 people. Obesogenic dietary pattern data was obtained using SQFFQ (Semi Quantitative Food Frequency Questionnaire) and nutritional status was obtained by BMI/U by directly measuring body weight using a digital scale and height using a microtoa. Data analysis uses Pearson correlation analysis.

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INTRODUCTION

Polycystic ovary syndrome (PCOS) is a health problem that occurs in women whose reproductive system is active or since menarche occurred (Mohammad & Seghinsara, 2017). Three types of PCOS diagnostic criteria are the Rotterdam criteria, the National Institutes of Health (NIH) criteria, the Androgen Excess and Polycystic Ovarian Syndrome Society (AE-PCOS) criteria. The criteria for establishing a PCOS diagnosis applied in Indonesia are the Rotterdam criteria, namely if two of the following three criteria are found, namely ovarian dysfunction, hyperandrogen manifestations, and polycystic ovarian morphology (Andon Hestiantoro, 2016).

The World Health Organization (WHO) explains that 8-13% of PCOS sufferers occur in the group of women of childbearing age (WHO, 2023). The prevalence of PCOS in 2016 was 6-21% among women of childbearing age in the world (Lizneva et al., 2016). The prevalence of PCOS in Indonesia is unknown because there is no official data on case reporting. The results of Devi Anggita Sari's research in 2023 showed that as many as 100 teenagers in Yogyakarta showed clinical signs of PCOS(Sari et al., 2023). Based on social media data, such as: PCOS community Instagram @pcosfighterindonesia has 61,300 followers and PCOS Fighters Facebook has 34,000 followers. However, this data does not yet show the exact number of PCOS diagnoses. Several comments in each social media post stated that most of the followers showed clinical signs of PCOS.

THEORETICAL REVIEW

PCOS is a metabolic disorder associated with insulin resistance which poses a cardiometabolic risk. This situation will be exacerbated by obesity (Teede et al., 2013). Weight gain in women with PCOS is higher than in women without PCOS. Improper handling of weight gain tends to cause obesity which will worsen the condition of PCOS (Farshchi et al., 2007). Excess body weight triggers insulin resistance. Insulin resistance contributes to metabolism, namely an increase in androgen hormones and a decrease in sex hormone binding globulin (SHBG), thereby disrupting the female reproductive system(Jeanes & Reeves, 2017). The results of the study showed that more respondents with PCOS were overweight, obese and as many as 30% of respondents had a body mass index value of >30 kg/m2(Boyle et al., 2012). The results of other research also show that 73% of PCOS respondents have a body mass index (BMI) ≥ 25 kg/m2 (Wiweko, 2016). Increasing BMI affects the folliculogenesis process with clinical manifestations of changes in irregular menstrual cycles (Mohamed Nizaruddin & Thayil, 2018).

Intake of food and drink high in calories, fat, sugar, salt and low intake of micronutrients, fiber such as vitamins and minerals over a long period of time is one of the causes of obesity (WHO, 2021). 40.7% of Indonesian people consume fatty foods, 53.1% consume sweet foods, 93% consume less vegetables and fruit (Litbangkes Ministry of Health of the Republic of Indonesia, 2014)). This high figure is caused by the tendency of people to use obesogenic food products, either directly consumed or with simple processing (Sulistyaningrum et al., 2015). The results of case control research show that the majority of

women who experience PCOS have the habit of consuming foods high in calories and fat (Ahmadi et al., 2013). The results of other studies also show that the eating habits of PCOS sufferers are positively correlated with BMI (Szczuko et al., 2017).

METHODOLOGY

This research uses a cross sectional design with a quantitative approach. This research was conducted at RSAB Harapan Kita in December 2022. Total sampling was taken, namely those who underwent treatment and care and were willing to take part in the research. The respondents in this study were 33 women diagnosed with PCOS. The variables in this study are independent variables: obesogenic eating behavior such as consumption of salty and sweet snacks, processed meat, frozen sweet treats, sweet drinks and fast food. Dependent variable is nutritional status.

Obesogenic eating behavior data was obtained using the Semi Quantitative Food Frequency Questionnaire (SQFFQ) method. Data on nutritional status by calculating body mass index through measuring body weight with digital scales and measuring body height using a digital microtoise. Data analysis using the Pearson correlation statistical test with normality test results using the Shapiro Wilk test showed normal results (p value > 0.05) for all research variables. This research has been approved by the ethics committee of Esa Unggul University with ethics code number: 0923-05.030 /DPKE- KEP/FINAL-EA/UEU/IV/2023

RESULTS AND DISCUSSION

This research was conducted at Harapan Kita Mother and Child Hospital, Jakarta. Respondents in this study were 33 people with a diagnosis duration of PCOS ≥5 years, 45% and a diagnosis duration < 5 years, 55%. WHO explains that PCOS sufferers occur in the group of women of childbearing age (World Health Organization, 2021). This is in accordance with the age group in this study, namely women of childbearing age aged 20-35 years. The main reasons respondents received treatment in hospital were because of irregular menstrual cycles and also infertility or to plan a pregnancy. This is proven by 57.6% of respondents with amenorrhea and 84.8% of respondents with married status. Amenorrhea is a type of menstrual disorder that is an early manifestation of PCOS sufferers. Hyperandrogens cause disturbances in the maturation of ovarian follicles so that ovulation does not occur, which results in no menstruation(Mareta et al., 2018). Shortening or lengthening of the menstrual cycle is caused by metabolic and endocrine disorders (Norlina, 2022). Menstrual cycle disorders that occur in PCOS sufferers are caused by increased activity of cytochrome p-450c17 and increased LH levels due to increased secretion of gonadotropin releasing hormone (GnRH). Therefore, this causes androgen secretion from the ovaries to increase because the ovaries in sufferers of this syndrome are more sensitive to gonadotropin stimulation (Anisya et al.2019.)

Obesity nutritional problems cause poor quality of life for PCOS sufferers ((Blewitt et al., 2016). The accumulation of adipose in the body

stimulates the production of the hormone estrogen to increase, thereby inhibiting ovulation. Excessive body mass index can increase the hormones estrogen and luteinizing hormone (LH) causing follicular immaturation (Fu et al., 2023). The hormone leptin plays an important role in an individual's weight loss and gain. The results of this study showed that the average BMI score for respondents was 28.5 ± 1.34 kg/m2. As many as 75.8% were overweight and obese. Based on the results of a systematic review and meta-analysis, it shows that obesity is closely related to obesity. Treating obesity is an important part of managing PCOS (Lim et al., 2013). The hormone leptin plays an important role in a person's weight loss and gain. Obesity is influenced by the hormone leptin which comes from adipose tissue. The effect on leptin resistance causes an inability to reduce a person's appetite (Jeanes & Reeves, 2017). The research results of Jupri et al (2019) show that there is a strong correlation between nutritional status and individual leptin levels in PCOS sufferers (r=0.644; p=0.000). Circumstances that cause a PCOS sufferer to experience increased food intake.

Diet is a direct cause of nutritional problems, one example of which is obesogenic eating behavior. The following types of obesogenic eating are consumption of salty and sweet snacks, processed meat, frozen sweet treats, sweet drinks and fast food(Alifa et al., 2020). Obesogenic food consumption behavior data uses the sq-ffq questionnaire with the following results; The three groups of obesogenic foods that fall into the frequently consumed category are 1) consumption of salty and sweet snacks, with an average intake of 130 ± 13.89 gr. Salty and sweet snacks that are often consumed in the form of fried flour dough soaked in hot cooking oil. 2) fast food, the average consumption of fast food is 250 ± 24.16 grams, fast food that is often consumed such as instant noodles, sausages, meatballs. 3) sweet drinks amounting to 156 ± 64.05 gr. Sweet drinks that are often consumed, sweet tea, contemporary drinks (Boba Milk Tea, Thai tea, milk coffee ice). Food groups that are rarely consumed are processed meat with an average consumption of 68 ± 34.87 grams and frozen sweet dishes with an average consumption of 54 ± 26.34 grams.

Table 1. Relationship between obesogenic eating behavior and nutritional status in PCOS sufferers at Harapan Kita Mother and Child Hospital, Jakarta

No	Independent Variable (obesogenic eating behavior)	Mean ± SD	P-value	r
1	consume salty and sweet snacks	130 ± 13,89 gr	0,001	0,78
2	processed meat	68 ± 34,87 gr	0, 108	0,32
3	frozen sweet treat	54 ± 26,34 gr	0,080	0,56
4	sweet drink	156 ± 64,05gr	0,065	0,43
5	fast food	250 ± 24,16 gr	0,021	0,58

The results of the Pearson correlation test show that there is a significant relationship between the consumption of salty and sweet snacks and the nutritional status of PCOS DI Harapan kita mother and child hospital's with a very strong correlation and the direction is positive, meaning that the more you consume salty and sweet snacks, the higher the IMT score. conversely, the less frequently you consume salty and sweet snacks, the lower the IMT score ($p < 0.05$, $r = 0.78$). In this study, the salty and sweet snacks consumed by respondents were fried foods. The results of this study are in line with Muhhamad Diguna's research in 2015 which showed that there was a significant relationship between consumption of fried food and nutritional status ($p=0.02$) (Diguna et al., 2015). The results of interviews with several respondents explained that they consume fried food an average of twice a day. Trisna Amerdista's research results (2021) show that fried food has a high calorific value and if you consume 1 piece of fried food every day it is not in accordance with what is recommended by the Indonesian Ministry of Health based on nutritional adequacy figures (Trisna Amerdista, 2021). The habit of high intake of salty and sweet snacks in the long term will increase complications of both obesity and PCOS (Rodrigues et al., 2015). The results of this study are in accordance with the results of Leila Hajivandi's research in 2020 which showed that overweight and obese teenagers who have PCOS have the habit of consuming salty, high sugar, fatty and low fiber foods (Hajivandi et al., 2020).

Fast food is one part of obesogenic foods. The habit of eating fast food among respondents in this study is classified as frequent. The results of the Pearson correlation test show that there is a significant relationship between fast food and the nutritional status of PCOS sufferers with a strong relationship and a positive correlation, namely the more often you consume fast food, the higher your BMI score and vice versa, the less fast food you consume, the higher your BMI score. less and less ($p<0.05$, $r = 0.58$). Fast food is dominantly consumed by respondents, such as instant noodles, sausages which are part of junk food. Junk food slows down the body's metabolism, junk food indirectly triggers the rise and fall of andorogen levels through insulin resistance. Increased insulin levels cause a decrease in sex hormone binding globulin, as occurs in PCOS sufferers (Begum et al., 2023). The results of this study are in line with research by Maÿgorzata Szczuko et al. in 2017 which showed that statistically diet was positively correlated with nutritional status in PCOS sufferers (Szczuko et al., 2017).

Apart from eating fast food, obesogenic foods that are often consumed by PCOS respondents are sweet drinks. However, statistically the habit of consuming sweet drinks is not significantly related to nutritional status in

PCOS sufferers. The calculation of sweet drinks for respondents in this study was the weight of the drink as a whole, namely water and the components in the drink. So the weight of sugar and additional ingredients which have a high calorific value are not calculated. Other variables that were not statistically related to nutritional status in PCOS respondents were processed meat and frozen sweet treats.

CONCLUSIONS AND RECOMMENDATIONS

Consumption of salty and sweet snacks and fast food is associated with nutritional status in PCOS sufferers at Harapan Kita Mother and Child Hospital, Jakarta. It is hoped that PCOS sufferers will consume salty and sweet snacks made from fruit, avoid consuming fried foods and fast food which are high in calories.

FURTHER STUDY

Obesogenic Eating Behavior and Nutritional Status in Polycystic Ovary Syndrome Patients in Women of Childbearing Age at Harapan Kita Mother and Children's Hospital, Jakarta It is hoped that the results of this study will provide new insights for the medical and healthcare community, help improve understanding of PCOS management, and open the door to the development of more personalized and targeted intervention strategies. The conclusions generated from this study are expected to make a positive contribution to the clinical management of PCOS patients, with a focus on potentially beneficial changes in eating behavior.

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