

## Biopsychosocial Analysis of Factors on COVID-19 Screening Awareness of Infertile Couples in Assisted Reproductive Technology

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### ABSTRACT

**Background:** The development of screening methods for infertility patients during the Coronavirus-2019 (COVID-19) pandemic provides new challenges in the adaptation of children's want programs in the era of the COVID-19 pandemic. Several screening methods have been developed but various factors affect the awareness of couples to want to do COVID-19 screening. This study aimed to analyze biopsychosocial factors associated with awareness of COVID-19 screening in infertile couples.

**Subjects and Method:** A cross-sectional study conducted at The Sekar Polyclinic of Dr. Moewardi Regional General Hospital during the COVID-19 pandemic. A number of 60 infertile couple of reproductive age who underwent the ART program was selected by random sampling. The dependent variable was awareness for COVID-19 screening. The independent variables were anxiety, knowledge, age, and length of infertility. The data were obtained from medical record and questionnaire and analyzed by a multiple logistic regression.

**Results:** Anxiety (OR= 26; 95% CI;  $p < 0.001$ ) and above-average knowledge levels (OR=16; 95% CI;  $p < 0.001$ ) affected awareness for COVID-19 screening. While the age and length of infertility do not affect awareness for COVID-19 screening ( $p > 0.05$ ).

**Conclusion:** Anxiety and above-average knowledge levels affect awareness for COVID-19 screening.

**Keywords:** biopsychosocial, COVID-19 screening, infertile, assisted reproductive technology

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### BACKGROUND

Coronavirus disease-2019 (COVID-19) was first discovered in December 2019 at a local

health care center in Wuhan, China, and spread rapidly to various countries (Pedersen & Ho, 2020; Zhao et al., 2021). COVID-

19 infection in Indonesia until January 2020, amounted to 818,386 positive cases, 673,511 cases recovered and 23,947 cases died. World health organization (WHO) global data shows that 222 countries were infected with COVID-19 with 87,589,206 confirmed cases and 1,906,606 deaths (Wiersinga et al., 2020). The virus is spreading to various countries around the world and poses a major threat to public health, not least in Indonesia with the spread increasing every day (Cullen et al., 2020). The spread occurs during close contact with an infected subject, especially through droplets at the time of the speech, coughing, and sneezing. Common signs of COVID-19 infection, including fever, cough to difficulty breathing. In severe cases, COVID-19 infection can cause the acute respiratory syndrome, pneumonia, multi-organ dysfunction, and death (Fineschi et al., 2020; Huang et al., 2020; Yuen et al., 2020).

The COVID-19 pandemic that began in early 2020 further exacerbated the situation by adding more hurdles and delaying infertility treatments (Alviggi et al., 2020; Seifer et al., 2021). The American Society for Reproductive Medicine (ASRM) issued recommendations to delay the initiation of all new treatment cycles, including ovulation induction, intrauterine inseminations (IUI), and in vitro fertilization (IVF) including the retrieval and transfer of frozen embryos. In addition, they strongly recommend considering the cancellation of all embryo transfers. This statement is comparable to the statement submitted by the European Society for Human Reproduction and Embryology (ESHRE) as well as several other sets (Lawson et al., 2021).

In the current COVID-19 pandemic conditions, where there is a delay in infertility treatment (in the early days of the pandemic until the end of 2020), the

biopsychosocial aspect will affect the desire to continue infertility treatment. For most couples, the diagnosis and treatment of infertility provide a significant psychological burden (Gordon & Balsom, 2020; Stanhise-r, 2018). In this time of the COVID-19 pandemic, various strategies must be explored to minimize the spread between infected and uninfected populations. This is done to restart the program want children in the era of the COVID 19 pandemic and as an adjustment to the new normal pattern (Choi et al., 2021).

The development of screening methods for infertility patients during the COVID-19 pandemic provides new challenges in the adaptation of children's want programs in the era of the COVID-19 pandemic. Several screening methods have been developed, but various factors affect the awareness of couples to want to do COVID-19 screening. Based on this, researchers are interested in researching biopsychosocial factor analysis of awareness of COVID-19 screening of infertile couples in assisted reproductive technology (ART).

## SUBJECTS AND METHOD

### 1. Study Design

This study is an observational analytical study with a cross-sectional study design. The study was conducted at The Sekar Polyclinic of Dr. Moewardi General Hospital, Surakarta, Central Java, from July to September 2021.

### 2. Population and Sample

The study subjects were infertile couples of reproductive age who underwent the ART program at the Sekar Polyclinic of Dr. Moewardi General Hospital during the COVID-19 pandemic. Subjects were divided into 2 groups, namely group I numbering 30 patients who were willing to screen for COVID-19, and group II amounting to 30 patients who refused COVID-19 screening.

In both groups, assessments of age, length of infertility, anxiety, and level of knowledge were assessed.

### 3. Studi Variables

The dependent variables in the study were COVID-19 screening and independent variables were knowledge levels, age, degrees of anxiety, and length of infertility.

### 4. Operational Definition of Variables

**COVID-19 screening** was patient awareness to perform or reject COVID-19 screening. The measurement scale was continuous, coded 0= reject, 1= not rejected.

**Age** was reproductive age 15-49 years. The measurement scale was continuous, coded 0:  $\geq 35$ , 1:  $\leq 35$ .

**Length of Infertility** was the length of infertility is assessed from the time a couple's 12 months of pregnancy is 12 months after regular sexual intercourse without contraception until the time of the ART program. The measurement scale was continuous, coded 0:  $\geq 5$ , 1:  $< 5$ .

**Anxiety** was measurement of anxiety degrees using the Hamilton Anxiety Rating Scale (HARS) questionnaire. The questionnaire contains 14 categories that are rated 0-4 in each category. A score of 0-24 for a weightless group and a score of 25-40 for a severe anxiety group. The measurement scale was continuous, coded 0= anxious, 1= not anxious.

**Knowledge** was infertile partner's level of knowledge of COVID-19 screening. The measurement scale was continuous, coded 0  $\geq$  mean, 1  $\leq$  mean.

### 5. Study Instrument

The research instrument to support the study is a questionnaire used to measure age, length of infertility, anxiety, and level of knowledge.

### 6. Data Analysis

Bivariate analysis is used in analyzing the relationship of independent variables with dependent variables. The test used is the chi-

square test. Cross-tabulation is done to find out if there is a significant relationship. The Odds Ratio (OR) is used to indicate the closeness of the relationship between the two variables. Multivariate analysis is performed to determine the relationship of more than one independent variable with the dependent variable and determine the most dominant dependent variable. The test used is logistic regression. Processing is done using SPSS 23 data processing application.

### 7. Ethical Clearance

Ethical research includes informed consent, anonymity, and ethical clearance. Ethical clearance was approved by the Research Ethics Committee at Dr. Moewardi Hospital, Surakarta, Indonesia, No. 334/III/-HREC/2021.

## RESULTS

### 1. Respondent's Characteristics

The study sample was 60 people with the characteristics contained in table 1.

### 2. Bivariate Analysis

The bivariate analysis describes the variable relationship of age, infertile length, anxiety, and level of knowledge to awareness for screening. From the relationship of both variables between anxiety and awareness for COVID-19 screening obtained significant values  $p < 0.001$ . This suggests that there is a significant link between anxiety and awareness for COVID-19 screening. Feelings of anxiety will make patients more likely to do COVID-19 screening.

The correlation of the infertile old variable with screening awareness gives significance to  $p = 0.243$ . That is, there is no significant relationship between long infertile and awareness for COVID-19 screening.

In this study, the average knowledge level score was 12.45. From the relationship of both knowledge and awareness level

variables for COVID-19 screening, the significance value of  $p < 0.001$  was obtained. It can be concluded that there is a significant relationship between knowledge level and awareness for COVID-19 screening, which is an above-average level of knowledge having awareness for COVID-19 screening.

In the relationship of the age variable with awareness for screening, a value of  $p = 1.000$  is seen. It can be concluded that there is no significant association between age and awareness for COVID-19 screening. This can be interpreted as that a person's age does not

correlate with awareness for COVID-19 screening.

### 3. Multivariate Analysis

The multivariate statistical results of the study showed that length of infertility exerted an 11.48 times greater effect on awareness for COVID-19 screening (OR= 11.48), anxiety provides 71.12 times greater likelihood for patients aware of COVID-19 screening (OR= 71.12), and above-average levels of knowledge about potential and prevention have an effect of 16.31 times on awareness for COVID-19 screening (OR= 16.31).

**Table 1. Sample Characteristics**

Variable	Screening		Not Screening		Total	
	N	%	N	%	N	%
<b>Age (years)</b>						
>35	5	16.67	5	16.67	10	16.67
≤35	25	83.33	25	83.33	50	83.33
<b>Length of infertility (years)</b>						
≥5	10	33.33	6	20.00	16	26.67
<5	20	66.67	24	80.00	44	73.34
<b>Anxiety</b>						
Anxious	26	86.67	6	20.00	32	53.34
Not anxious	4	13.33	24	80.00	28	46.67
<b>Level of knowledge</b>						
>Mean	24	80.00	6	20.00	30	50.00
≤Mean	6	20.00	24	80.00	30	50.00

**Table 2. Results of Bivariate Analysis of Variables that Affect COVID-19 Screening Awareness**

Variable	Screening Awareness				Total		OR	p
	Yes		No		N	%		
	N	%	N	%				
<b>Age (years)</b>								
>35	5	16.67	5	16.67	10	16.67	1	1.000
≤35	25	83.33	25	83.33	50	83.33		
<b>Length of infertility (years)</b>								
≥5	10	33.33	6	20.00	16	26.67	2	0.243
<5	20	66.67	24	80.00	44	73.34		
<b>Anxiety</b>								
Anxious	26	86.67	6	20.00	32	53.34	26.00	<0.001
Not anxious	4	13.33	24	80.00	28	46.67		
<b>Level of knowledge</b>								
>Mean	24	80.00	6	20.00	30	50.00	16.00	<0.001
≤Mean	6	20.00	24	80.00	30	50.00		

**Tabel 3. Multiple Logistic Regression Results on the Relationship of Length of Infertility, Anxiety, and Levels of Knowledge on COVID-19 Screening Awareness**

Independent Variables	OR	95% CI		P
		Lower Limit	Upper Limit	
Length of infertility (<5 years)	11.48	1.00	131.78	0.050
Anxiety (Anxious)	71.12	6.47	782.59	<0.001
Level of knowledge (>Mean)	16.31	2.72	97.85	0.002

N Observation= 60  
 Log-Likelihood= 83.173  
 Adj. R<sup>2</sup>= 0.73  
 p= 0.001

### DISCUSSION

The BOM Massage method that has been carried out with the assistance of the husband as a support process for postpartum mothers has a fairly large and significant impact on the recovery process, especially the fatigue experienced by the mother.

Measures for patient safety include patient screening, respiratory transmission prevention measures, and telemedicine consultations to minimize transmission of COVID-19 in treatment and treatment in clinics. This is a reminder that we must have an infection control policy in every clinic, namely by screening for COVID-19 (Chen et al., 2020; Elston, 2020). Efforts to prevent infertility treatment continue in the era of the COVID-19 pandemic and clear guidance on the process of detecting COVID-19 in infertility is expected to prevent transmission (Papathanasiou, 2020).

Prevention of the spread of COVID-19 in the treatment of infertility patients, of course, is related to the level of awareness of infertile couples. Based on the results of statistics (table 3), it was found that there is a significant association between length of infertility and awareness for COVID-19 screening. This is in line with previous research by Barra et al. (2020) who reported that increased anxiety was experienced by patients with a length of infertility of more than 2 years. The length of infertility is suffered by the couple, the more anxiety

from the couple will increase. Anxiety will cause couples to be more aware to undergo COVID-19 screening. Not only afraid about the transmission of COVID-19 while undergoing infertility therapy, but also because of anxiety about the status of treatment and infertile conditions suffered (Barra et al., 2020).

There is a significant association between anxiety and awareness for COVID-19 screening. This can be interpreted that a person's anxiety correlates with awareness for COVID-19 screening. Feelings of anxiety will encourage couples to do COVID-19 screening. Factors that affect anxiety and then encourage couples to want COVID-19 screening need to be investigated further. Awareness for this screening can be driven by anxiety about contracting COVID-19 and the desire to immediately continue the program of wanting to get pregnant.

A study of 200 infertile couples reported that 50% of women and 15% of men felt that infertility was the saddest experience of their lives. Many women with infertility feel they have lost control of their lives and experience a sense of loss of identity, as well as feeling disabled in themselves (Stanhiser, 2018). In addition, studies in the field also show that infertility can lead to physical, emotional, economic, and social exclusion (Salie et al., 2021). This depressive factor affects the anxiety of the couple. Anxiety also increases with the delay of the

program wants the child, so the need to continue the program wants the child can help reduce anxiety. This is the basis why the higher the anxiety, will make patients more aware to want to do COVID-19 screening (Tokgoz et al., 2020).

There is a significant relationship between the level of knowledge about the potential transmission and prevention of COVID-19 transmission to awareness for COVID-19 screening. The higher the level of knowledge about the potential and prevention of COVID-19 transmission will provide desire and awareness for COVID-19 screening. Limited patient knowledge about the safety of the COVID-19 detection process in infertility clinics leads to low patient awareness to carry out detection. In line with research by Boivin et al. (2020) stating that the patient's limited knowledge of the safety of the COVID-19 detection process in infertility clinics leads to low patient awareness to carry out detection (Boivin et al., 2020). Knowledge about the potential, mode of transmission, and prevention of infection will make couples tend to be more courageous in doing programs to want children more safely. Socialization regarding the program and safety of health care providers' clinics also determines the patient's desire to do a treatment. This is exacerbated by an increase in psychological disorders in infertility patients who experience ART delays during the COVID-19 pandemic (Boivin et al., 2020; Esposito et al., 2020).

In this study, there was no significant association between age and awareness for COVID-19 screening. This can be interpreted that a person's age does not correlate with awareness for COVID-19 screening. In contrast to previous studies that reported that anxiety is known to increase at the age of more than 35 years (Barra et al., 2020). This reveals that awareness for COVID-19

screening is determined by a variety of factors.

Prevention of COVID-19 transmission in the context of infertility therapy, of course, is influenced by various things. In addition to awareness for COVID-19 screening, infection control policies, socialization of transmission prevention methods carried out by infertility clinics, and various other factors, it is necessary to continue to be done in the prevention of COVID-19 transmission. Further research on these factors is needed in the continuity of the application of infertility treatment and therapy with ART in the new normal era (Chen et al., 2020; Elston, 2020).

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#### **CONFLICT OF INTEREST**

There are no conflicts of interest.

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