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ANXIETY AMONG PREGNANT WOMEN DURING THE COVID-19 PANDEMIC IN SOUTHEAST SULAWESI: A CROSS-SECTIONAL STUDY IN INDONESIA

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ABSTRACT: The COVID-19 pandemic can affect mental health and psychosocial condition. Pregnant women are at risk of experiencing various psychological and social pressures, especially after the implementation of the large-scale social distancing policy. The aim was to determine the frequency and factors associated with the anxiety of pregnant women during the COVID-19 pandemic.
Material and methods: This was a cross-sectional study conducted on pregnant women who received antenatal care at health care facilities in Southeast Sulawesi, from April to May 2020. Sociodemographic data, obstetric status, and sources of information about COVID-19 were collected using a questionnaire. Anxiety levels of pregnant women were assessed using the Hamilton Rating Scale. Statistical analysis was performed using chi-square tests with a significance value of $p<.05$.
Results: There were 189 respondents, 42.3% with mild anxiety, 43.4% with moderate anxiety, and 14.3% with severe anxiety. Most of the severely anxious: were aged >35 years (31.6%), had a middle education level (21.8%), had self-employed husbands (25.3%), were multiparous (19.6%), were receiving antenatal care in the hospitals (54.0%), and got information from social media (39.6%). There was a correlation between anxiety levels and maternal age (p=.000), education (p=.000), husband's occupation (p=.000), parity (p=.029), health facilities (p=.004), and sources of information (p=.000). **Conclusions:** During the COVID-19 pandemic, more than half of pregnant women experienced moderate to severe anxiety. The anxiety level was related to age, education, husband's occupation, parity, health facilities for antenatal care, and sources of information about COVID-19.

KEYWORDS: anxiety, COVID-19 pandemic, pregnant woman

I. INTRODUCTION

The World Health Organization (WHO), on 30 January, 2020, determined coronavirus disease 2019 (COVID-19) as a Public Health Emergency of International Concern [1]. The number of COVID-19 cases is increasing rapidly across countries, including in Indonesia. Indonesia reported the first positive case of COVID-19 on March 2, 2020 [2].

COVID-19 is a new type of disease that has never been identified before in humans. Common signs and symptoms of COVID-19 infection include symptoms of acute respiratory disorders such as fever, cough, and shortness of breath. In severe cases it can cause pneumonia, acute respiratory syndrome, and death [2,3,4]. COVID-19 can be transmitted from human-to-human via droplets through coughing /sneezing. The people most at risk of contracting the disease are people who are closely related to COVID-19 patients, including those who care for COVID-19 patients [2,4]. The vulnerable groups infected with COVID-19 are the elderly, those with chronic diseases, the physically disabled, children and pregnant women [4,5].

Standard recommendations for preventing the spread of infection are washing hands regularly, applying the ethics of coughing and sneezing, avoiding direct contact with livestock and wild animals, and avoiding close contact with anyone who shows symptoms of respiratory illnesses such as coughing and sneezing. The government has issued a policy for social distancing and reducing activities to stop the spread of the disease [2,6]. Quarantine is implemented to reduce the number of infected people and the number of deaths [7].

The COVID-19 pandemic is a non-natural disaster that can affect the mental health and psychosocial condition of everyone. Several studies related to pandemics, including avian influenza and severe acute respiratory

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syndrome (SARS), have shown negative effects on the mental health of survivors [5]. Research on SARS survivors showed that 41-65% of survivors experienced various kinds of psychological disorders [8]. A study in Hong Kong showed that psychological problems in survivors of SARS did not decrease within one year after the incident; it was estimated that 64% of survivors have the potential to experience psychiatric disorders [9].

Pandemics can cause stress to anyone. Policies for social distancing and reducing activities also have a psychological impact on society. Mental and psychosocial health problems faced include fear, anxiety, and panic about COVID-19 events. People are increasingly reluctant to meet other people as there is a suspicion that other people can transmit the infection. This feeling will respond to the body by quickly taking protection to ensure safety. The initial symptoms are worry, anxiety, panic, fear of death, fear of losing control, fear of contracting the disease, and irritability [5,10]. The people at greatest risk of experiencing the various psychological and social pressures from the COVID-19 pandemic are health workers and women, including pregnant women [5,11].

The physiological process of pregnancy can cause changes in women both physically and psychologically. Physical and psychological changes result in mood swings, fear, stress, and anxiety, which affect the mental health of pregnant women [12,13]. Pregnant women in some developing countries have a high risk of psychological disorders. Poverty, migration, extreme pressure, exposure to violence, emergency and conflict situations, natural disasters, and low social support increase the risk of certain disorders [14]. Prevalence of anxiety and depression in pregnant women in developed countries is around 7-20% and in developing countries is over 20% [15]. In developing countries, mental disorders—especially depression—are experienced by around 15.6% women during pregnancy and 19.8% women after child birth. Maternal mental disorders can be treated and given effective interventions [14]. Mental Health and Psychosocial Support has been used to respond to emergency and disaster conditions, such as the COVID-19 pandemic [16].

Studies on the mental health and psychosocial problems of pregnant women during the COVID-19 pandemic, especially after the restriction on activities, are lacking. Therefore, this study aimed to determine the frequency and factors associated with the anxiety of pregnant women during the COVID-19 pandemic after the restriction on activities in Indonesia.

II. MATERIALS AND METHODS

This was a cross-sectional study conducted from April to May 2020, three weeks after the large-scale social distancing policy came into effect in Indonesia. The target population was pregnant women who received antenatal care at health care facilities in Southeast Sulawesi. Simple random sampling was employed, and participants provided informed consent. Inclusion criteria were pregnant women who were taking antenatal care and were willing to participate in this study. Exclusion criteria were pregnant women who needed immediate medical attention and those with chronic mental illness.

Data, including sociodemographic details, obstetric status, and source of information about COVID-19, were collected using questionnaires. The sociodemographic data included age, educational level, occupation, and husband's occupation. Obstetric status included parity, gestational age, and health facilities for antenatal care. Assessment of the anxiety level of pregnant women was done using the Hamilton Rating Scale, consisting of 14 questions, with each item being scored on a scale of 0 (not present) to 4 (severe), and a total score range of 0-56. Based on the total score of the answers given by each respondent, the level of anxiety for each was categorized into mild anxiety (score of <17), moderate anxiety (score of 18-24), or severe anxiety (score of >25).

Statistical analysis was performed using SPSS for Windows version 23. Chi-square tests with a significance value $p<.05$ were performed to determine the association between levels of anxiety and sociodemographic characteristics, obstetric status, and source of information about COVID-19.

This study was approved by the Health Ethics Commission of Halu Oleo University, with number 475/UN29.20/PPM/2020.

III. RESULTS

This study involved 189 respondents. We found that 42.3%, 43.4%, and 14.3% of pregnant women experienced mild, moderate, and severe anxiety, respectively, during the COVID-19 pandemic.

Most respondents were aged 21-35 years (76.2%), and were housewives (69.8%). Their completed education levels were middle (48.7%), high (35.4%), and low (15.9%). Their husbands were mostly self-employed (46.0%), while others were civil servants (31.2%), or private employees (22.8%) (Table 1).

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Table 1. Anxiety and sociodemographic characteristics of respondents

Sociodemographic characteristics	Anxiety						Total		p-value
	Mild		Moderate		Severe				
	n	%	n	%	n	%	n	%	
Age (years)									
< 20	7	100.0	0	0.0	0	0.0	7	3.7	.000*
21-35	64	44.5	65	45.1	15	10.4	144	76.2	
> 35	9	23.7	17	44.7	12	31.6	38	20.1	
Education Level									
Low	7	23.3	23	76.7	0	0.0	30	15.9	.000*
Middle	44	47.8	28	30.4	20	21.8	92	48.7	
High	29	43.3	31	46.3	7	10.4	67	35.4	
Occupation									
Housewife	51	38.6	62	47.0	19	14.4	132	69.8	.188*
Employees	7	41.2	9	52.9	1	5.9	17	9.0	
Civil servants	22	55.0	11	27.5	7	17.5	40	21.2	
Husband's occupation									
Self-employed	27	31.0	38	43.7	22	25.3	87	46.0	.000*
Employees	17	39.5	23	53.5	3	7.0	43	22.8	
Civil servants	36	61.0	21	35.6	2	3.4	59	31.2	

*Significance value of p<.05 was tested with Chi-square test.

As shown in Table 1, all respondents aged <20 years experienced mild anxiety. Most of those with severe anxiety were aged >35 years (31.6%). Maternal age was significantly associated with anxiety levels (p=.000). Severe anxiety was experienced by those who had completed middle education (21.8%) and higher education (10.4%). Education was significantly associated with anxiety levels (p=.000). Housewives and private employees mostly experienced moderate anxiety, while civil servants experienced severe anxiety (17.5%). Occupation of the pregnant women was not associated with anxiety levels (p=.188). However, husband's occupation was significantly associated with anxiety levels (p=.000). Most of the women with severe anxiety had self-employed husbands (25.3%), with moderate anxiety had privately employed husbands (53.5%), and with mild anxiety had husbands who were civil servants (61.0%).

Table 2. Anxiety and obstetrics status of respondents

Obstetrics status	Anxiety						Total		p-value
	Mild		Moderate		Severe				
	n	%	n	%	n	%	n	%	
Parity									
Primiparous	38	49.3	34	44.2	5	6.5	77	40.7	.029*
Multiparous	42	37.5	48	42.9	22	19.6	112	59.3	
Gestational age									
Trimester 1	5	31.2	7	43.8	4	25.0	16	8.5	.472*
Trimester 2	19	41.3	23	50.0	4	8.7	46	24.3	
Trimester 3	56	44.1	52	40.9	19	15.0	127	67.2	
Health facilities for antenatal care									
Primary health facilities	44	50.6	38	43.7	5	5.7	87	46.0	.004*
Hospital	36	35.3	44	43.1	22	21.6	102	54.0	

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*Significance value of p<.05 was tested with Chi-square test.

As shown in Table 2, more than half of the women were multiparous (59.3%) and in the third trimester (67.2%). The antenatal facilities were accessed by them in either the hospitals (54.0%) or the primary health facilities (46.0%). A majority of those experiencing severe anxiety were multiparous (19.6%). This association was statistically significant (p=.029). Most of those experiencing severe anxiety were in the first trimester (25.0%); gestational age was not associated with anxiety levels (p=.472). Severe anxiety for those in the hospital was 21.6% and for those in the primary health facilities was 5.7%. Health facilities for antenatal care was associated with anxiety levels (p=.004).

Table 3. Anxiety and source of information about COVID-19

Source of information	Anxiety						Total		p-value
	Mild		Moderate		Severe				
	n	%	n	%	n	%	n	%	
Television	43	48.9	41	46.6	4	4.5	88	46.6	
Social media	11	19.0	24	41.4	23	39.6	58	30.7	.000*
Several sources	26	60.5	17	39.5	0	0.0	43	22.8	

*Significance value of p<.05 was tested with Chi-square test.

As shown in Table 3, the major sources of information about COVID-19 were television (46.6%), social media (30.7%), and several sources (22.8%). Most of those with severe anxiety received information from social media (39.6%), while most of those with mild anxiety received information from several sources (60.5%). Source of information about COVID-19 was associated with anxiety levels (p=.000).

IV. DISCUSSION

This study found that after the implementation of the large-scale social distancing policy in Indonesia during the COVID-19 pandemic, pregnant women experienced various levels of anxiety. More than half of pregnant women experienced moderate to severe anxiety. This finding differs from the study of Simarmata et al. [17] conducted before the pandemic. The policy of limiting activities to reduce the spread of COVID-19 causes changes in health services, including antenatal care and childbirth. Such changes in social conditions can trigger anxiety in pregnant women.

Anxiety in pregnancy is an emotional reaction of pregnant women related to concerns towards their own well-being and that of their baby. Anxiety can affect feelings, thoughts, behaviors, and physical well-being. The increased vulnerability of pregnant women to mental illness is influenced by bio-psychosocial factors, including biological, psychological, and social factors. Biological factors are influenced by hormones. Psychological vulnerability is caused by fears regarding their new life of motherhood and the ability to maintain their own health as well as their baby's health. Social vulnerability results from an increased demand for support and family care during the critical phases of life, including the risk of contracting COVID-19 during pregnancy and childbirth [12,18].

The COVID-19 pandemic is an emergency condition that can affect the mental and psychosocial health of pregnant women. The emergency conditions and low social support during a pandemic can increase the risk of psychological disorders in pregnant women [14]. Emergency conditions often make people depressed. During the COVID-19 outbreak, one factor causing pressure on the community is the risk of being infected and infecting others, especially because the mode of transmission of COVID-19 is still unknown [11,14,16].

In our study, the level of anxiety was related to the age of pregnant women. Almost one third of women aged >35 years experienced severe anxiety. Some studies have found that depression scores were positively associated with the older age of pregnant women [15]. Pregnant women aged over 35 years have greater psychological and social pressure. Pregnancy at an age >35 years is classified to be high risk, thus triggering anxiety for pregnant women. In addition, during the COVID-19 pandemic, worries of pregnant women have escalated as they are also concerned about their other children who live by themselves without proper care and support as schools are closed. Other major concerns include the fear of lack of protection and the fear of losing family members because of the spreading virus, or the fear of contracting the disease and being separated from the family because of quarantine rules [11,14,16]. These results differ from the study of Sapkota et al. [19] in

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Kathmandu and Cunha et al. [13] in Brazil, which found that there was no correlation between anxiety and the age of pregnant women.
Most of the severe anxiety in this study was experienced by pregnant women who have completed middle education level. Antenatal depression and anxiety are more common among women with low education [15,17]. Education level is related to communication and information. COVID-19 is a new disease; hence, it can cause a lot of misunderstanding, such that general symptoms of fever can be misinterpreted as being a sign of COVID-19 and consequently, create a fear of infection [11,14,16]. These results differ from the study of Cunha et al. [13] in Brazil, which found no correlation between anxiety and education.

The WHO recommends quarantine to reduce and control the spread of COVID-19. Quarantine means separating healthy people from other healthy people, in case they have a virus and can spread it. A similar recommendation is isolation, which is intended for people with COVID-19 symptoms, and social distancing, which requires people without symptoms to maintain physical distance from each other [6,7]. Stay-at-home policy causes many people to stop working and earn a living. Decreased income, or even no income, can lead to problems in the family. Worries about not being able to meet their daily needs arise, especially if they have many family members. This study found respondents whose husbands work in sectors that require independence, such as private or self-employment, experienced severe to moderate anxiety. One cause behind this anxiety could be the fear of losing their livelihoods, and their husbands being unable to work, or being expelled from work, due to the pandemic [10,11,16].

Experiences from previous pregnancy and childbirth can also affect maternal anxiety. This study showed that severe anxiety was mostly experienced by multiparous women. These results are similar to studies from Simarmata et al. [17] in East Kalimantan and Sapkota et al. [19] in Kathmandu.

In any outbreak, it is natural for people to feel depressed and worried. Public opinion that the hospital is a high-risk place for transmission of COVID-19 causes fear in people regarding visiting the hospital. This study found that severe anxiety was mostly experienced by respondents who were receiving antenatal care in the hospital. Common responses from people affected, directly or indirectly, include fear of contracting the disease, fear of falling ill, and fear of death. The result is worry, and reluctance in visiting or avoiding health care facilities for fear of contracting the disease during an examination or treatment. People are also afraid of being isolated by the community because they are considered to come from places affected by the disease [10,11,16].

The COVID-19 pandemic caused significant challenges to the health system, and resulted in many rumors and misinformation about the etiology, results, prevention, and cure of the disease [20]. Mass media has an important role as a source of information. Technological advances have enabled the mass media to provide information to the public during pandemics and epidemics. Information from the mass media can help develop public health policies [21]. Social media is cheap, easy, and fast to access; hence, people are more interested in finding and consuming news from social media than from traditional media. However, social media has also been used to spread fake news, which has a strong negative impact on individual users and the wider community [22]. This study showed that severe anxiety was mostly experienced by respondents who got information only from social media as compared to those who got information from several media.

Anxiety can affect the quality of antenatal care. Low birth weight is associated with antenatal care [23]. Anxiety in pregnancy can also cause premature birth. Anxiety during pregnancy is a risk factor for psychiatric disorders or depression in the postpartum period [24,25]. In severe cases, the mother may commit suicide. Mental disorders may affect the role and function of mother in the family. As a result, it affects the growth and development of children. Therefore, in emergency situations, vital forms of external or local support are needed to protect or improve the psychological well-being and psychosocial conditions, and/or prevent and treat the mental health concerns of pregnant women [14].

V. CONCLUSIONS

Based on this study's results, we concluded that during the COVID-19 pandemic, more than half of pregnant women experienced moderate to severe anxiety. The level of anxiety was related to age, education, husband's occupation, parity, health facilities for antenatal care, and information sources. This underlines the importance of conducting preventive interventions to reduce the side effects of anxiety in the family, community, and other settings to improve maternal mental health.

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Conflicts of Interest

There are no conflicts of interest.

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