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RESEARCH ARTICLE

DETERMINATION OF ANXIETY LEVELS AND KNOWLEDGE LEVELS ABOUT COVID-19 DURING THE COVID-19 OUTBREAK OF PREGNANTS: SURVEY IN TURKEY

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ABSTRACT

Purpose: To determine the anxiety and knowledge levels of pregnant women about outbreaks during the COVID-19 pandemic.
Material and Methods: This study was conducted as a descriptive study with 276 pregnant women presenting to obstetrics and gynecology outpatient clinics of hospitals in eastern Turkey. The data were collected using a personal information form, a form for assessing the knowledge levels of the participants about COVID-19, and the COVID-19 Anxiety Scale.
Results: It was found that 75.4% of the participants were worried that they would catch COVID-19 in the hospital during or after childbirth. The mean COVID-19 Anxiety Scale score of the participants was 6.7±2.4 (min: 5, max: 14). The anxiety levels of the participants who were in the last trimester of pregnancy, those who did not receive information about COVID-19, those who changed their mode of delivery due to the pandemic, those who received inadequate prenatal care, those whose social support decreased, and those who felt vulnerable were significantly higher.
Conclusion: The results of this study revealed that anxiety in pregnant women is affected by various factors. It is important to provide care and support for these groups.

Keywords: pregnancy, COVID-19, anxiety.

INTRODUCTION

The novel coronavirus disease 2019 (COVID-19) first appeared in the Wuhan city in the Hubei province of China in December 2019. It spread rapidly around the world, and the World Health Organization (WHO) declared it a pandemic on 11 March 2020 (1). COVID–19 has been one of the most devastating outbreaks the world has faced this century, with cases exceeding 21 million and deaths reaching 761,779 (1).

This pandemic has significantly affected the daily lives of millions of people worldwide (2). Governments have had to take strict measures to prevent the spread of the virus and recommended that people stay at home (3). Both because of the COVID–19 pandemic itself and because of

Table 1. Distribution of pregnant women by socio-demographic and congenital characteristics (n=276)

Features	n	%
Education Status		
Non-Literate	36	13.0
Literate	24	8.7
Primary School	44	15.9
Secondary School	64	23.2
High School	52	18.8
University-College	56	20.3
Working Status		
Yes	24	8.7
No	252	91.3
Economic Situation		
Profit, less than spending	100	36.2
Profit equals spending	140	50.7
Profit, more than spending	36	13.0
Chronic Disease		
Has	44	15.9
Doesn't have	232	84.1
Assessment of health status		
Well	112	40.6
Moderate	144	52.2
Bad	20	7.2
Pregnancy trimestiria		
1. trimestiri	44	15.9
2. trimestiri	28	10.1
3. trimestiri	204	73.9
Regular medication using		
Yes	108	39.1
No	168	60.9

restrictions in countries, people's anxiety and fear levels have increased (4). In the literature, epidemics and pandemic such as COVID-19 have been shown to have effects on mental health such as high stress levels, anxiety, and depression (5). Pregnancy can be stressful enough in itself; for example, many women may feel fear regarding the protection of their health and that of their babies (4, 6, 7). In addition to this already existing pressure on the mental health of current or expecting mothers, the COVID–19 pandemic may increase the stress and anxiety levels of pregnant women (6, 8). In studies conducted in pregnant women during the COVID–19 pandemic period, the prevalence of anxiety was shown to be between 63% and 68% (9, 10). A qualitative study demonstrated that women experienced increased levels of fear for their own and their baby's health and safety, especially due to fear of infection, and COVID-19 appeared to have contributed to symptoms of anxiety in women already predisposed to anxiety in the prenatal period (11). High levels of stress during pregnancy, anxiety and depression, an increase in blood pressure, premature childbirth, and low birth weight can cause serious health problems such as postpartum depression (6, 8, 12). In fact, it was found that pregnant women skip hospital visits due to the risk of infection and do not receive adequate prenatal care (13). However, the antenatal care manual published by the World Health Organization in 2016 stated that pregnant women should be monitored at least eight times in the prenatal period (14). Lebel et al. (2020) found more prevalent symptoms of depression and anxiety to be associated with concerns about the threats of COVID-19 to the life of the mother and the baby, as well as concerns about not getting the necessary prenatal care, relationship tensions, and social isolation due to COVID-19 (15). The anxiety levels of pregnant women regarding COVID-19 infection can be affected by factors such as their education level, quality of life, occupation, income level, and social support. In addition to all these factors, pregnant women's knowledge levels about COVID-19 can also affect their anxiety and fear of COVID-19 infection (16). However, there is a limited number of studies in the literature that examined pregnant women's fears, anxiety levels, and knowledge levels regarding COVID-19 infection (8). Therefore, the aim of this study is to determine the anxiety and knowledge levels of pregnant women regarding COVID-19 infection.

MATERIAL AND METHODS

This cross-sectional descriptive study was conducted between 16 June 2021 and 8 July 2021 at a University Hospital in eastern Turkey, and the population of the study consisted of pregnant women who presented to the obstetrics and gynecology outpatient clinics of the hospital. The minimum required sample size of the study was calculated as 212 in a 95% confidence interval and with an error margin of 5% using the G*Power program (version 3.1.9.4). The study was completed with 276 pregnant women who met the inclusion criteria and volunteered to participate in the study. The inclusion criteria of the study were determined as being voluntary, being pregnant, not having a known and diagnosed psychiatric illness, having no communication problems, and having no complications in pregnancy. The potential participants were asked whether they had undergone any psychiatric evaluation before participating in the study. Whether the women who had undergone psychiatric evaluations were diagnosed with any psychiatric disease was evaluated. Those with a psychiatric diagnosis were not included in the study.

Table 2. Distribution of pregnant women according to their thoughts on the pandemic and pregnancy process (n=276)

Features	n	%
Thinking about changing the method of birth due to the pandemic		
Yes	112	40.6
No	164	59.4
Preferred birth method due to pandemic		
Vaginal Birth	188	68.1
Cesarean	88	31.9
Feeling vulnerable because you are pregnant during the pandemic		
Yes	176	63.8
No	100	36.2
Lack of prenatal care due to pandemic		
Yes	164	59.4
No	112	40.6
Decreased social support during pregnancy due to pandemic		
Yes	180	65.2
No	164	59.4
Fears she may catch coronavirus during childbirth		
Yes	208	75.4
No	68	24.6
Worry that the baby may catch coronavirus during or after birth		
Yes	188	65.1
No	88	31.9
Status of receiving information on COVID-19		
Yes	52	18.8
No	224	81.2
Sources of information*		
Web	160	58.0
Social media	148	53.6
The Ministry Of Health(Government)	100	36.2
Family-Parents	60	21.7
Discussion programs(TV shows,Realty shows)	20	7.2

*More than one source of information was preferred.

All participants who were interviewed were COVID-19-negative during the data collection process. Before starting the study, ethical approval was obtained from Bingol University, Scientific Research and Publications Ethics Board (Date: 7/04/2021, Number: E11707).

Data Collection Tools

The data were collected using a personal information form, a form on the knowledge levels of the participants about COVID-19, and the COVID-19 Anxiety Scale.

Personal Information Form

The form consisted of 16 questions on the sociodemographic and obstetric characteristics of the participants, and it was prepared by the researchers based on the relevant literature (16, 17, 18).

COVID-19 Knowledge Assessment Form: The form was prepared by the researchers based on the relevant literature, and it consisted of 18 questions designed to determine the knowledge levels, information sources, and attitudes of the participants regarding COVID-19 (17, 18, 19, 20). Each item in the form was presented with "true", "false", and "don't know" response options. The percentages of the “true” and “false” responses of the participants for the items were calculated to measure their knowledge levels (Table 3).

COVID-19 Anxiety Scale-Short Form: The scale was developed by Lee et al. (2020) to identify dysfunctional anxiety associated with the COVID-19 pandemic. The validity and reliability studies of the scale in Turkey were conducted by Biçer et al. (2020). The scale is a Likert-type scale consisting of 5 items (21, 22). The response options of each item are “0” Never, “1” Rarely, less than one or two days, “2” a few days, “3” more than 7 days, and “4” almost every day in the last two weeks. The lowest and highest possible scores on the scale are 0 and 20. Higher scores indicate higher levels of anxiety about the COVID-19 pandemic. The Cronbach’s alpha coefficient of the scale was found by Biçer et al. (2020) as 0.83. In this study, the Cronbach’s alpha value of the scale was found to be 0.83.

Data Collection

The data were collected by the researchers using the face-to-face interview technique by taking protective measures for COVID-19. The participants were informed about the study and given the necessary explanations, and then, their consent was obtained.

Data Analysis

All statistical analyses were performed using IBM SPSS Statistics version 23.0 (IBM Inc., Armonk, NY, USA). Percentage and frequency analyses, independent-samples t-test, and one-way analysis of variance (ANOVA) were used to analyze the collected data. The results were evaluated in a 95% confidence interval, and the level of statistical significance was accepted as $p<0.05$.

Table 3. Information of pregnant women about the covid-19 pandemic (n=276)

	Correct Answers		Wrong Answers	
Information Questions	**n**	**%**	**n**	**%**
Covid-19 is a respiratory infection caused by a new type of coronavirus. (T)	232	84.1	44	15.9
Pregnant women are as much at risk of contracting covid-19 as anyone else. (T)	176	63.8	100	36.2
The elderly and those with chronic disease are as at risk of contracting Covid-19 as anyone else. (T)	256	92.8	20	7.2
Covid-19 is transmitted by respiratory droplets such as coughing and sneezing. (T)	244	88.4	32	11.6
Covid-19 virus is transmitted by touching contaminated objects or surfaces through direct contact with infected persons. (T)	236	85.5	40	14.5
Covid - 19 is transmitted by touching the nose, eyes and mouth with dirty hands. (T)	232	84.1	44	15.9
Hands should be washed frequently with soap and water to avoid Covid-19. (T)	256	92.8	20	7.2
A surgical mask should be worn to protect against Covid-19. (T)	244	88.4	32	11.6
Social distance should be considered to protect from Covid-19. (T)	260	94.2	16	5.8
To avoid Covid-19, it is necessary not to touch the face and mouth with dirty hands. (T)	264	95.7	12	4.3
Alcoholic disinfectants can be used for disinfection during the covid-19 outbreak. (T)	264	95.7	12	4.3
There is no harm in breastfeeding while the covid-19 outbreak continues. (T)	216	78.3	60	21.7
A mother infected with the Covid-19 virus should breastfeed her baby. (T)	176	63.8	100	36.2
Anomalies occur in the baby of a pregnant woman infected with the Covid-19 virus. (F)	100	36.2	176	63.8
A mother infected with the covid-19 virus has a risk of premature birth in her baby. (T)	100	36.2	176	63.8
A pregnant baby infected with the Covid-19 virus is also born with the Covid-19 infection. (F)	56	20.3	220	79.7
Common symptoms of Covid-19 include fever, cough, and shortness of breath, but nausea and diarrhea have rarely been reported. (T)	224	81.2	52	18.8
The diagnosis of Covid-19 can be diagnosed by PCR testing on samples collected from nasopharyngeal and oropharyngeal discharge or sputum and bronchial Flushing. (T)	184	66.7	92	33.3

Ethical Aspects of the Study

This study was approved by the Bingol University Scientific Research and Publication Ethics Committee (Approval date: 07/04/2021, Number: E11707). Permission has been obtained from the Republic of Turkey Ministry of Health regarding the execution of COVID-19 studies (Dated:06.06.2021). Furthermore, the women who participated in the study were given a brief description of the study, and consent was received from those who agreed to participate in the study.

RESULTS

In the study, the mean age of the participants was 28.3±5.8 (min: 17, max: 46), all participants were married, and the mean duration of their marriages was 6.0±5.4 years (min: 1; max: 26). The mean gestational week of the participants was 28.1±10.8 (min: 5, max: 40), and the mean total number of their pregnancies was 2.3±1.3 (min: 1, max: 6). It was found that 23.2% of the participants had completed secondary school, and 8.7% worked in income-generating jobs. According to their self-reports, 40.6% of the participants had a “good” overall health status. The rate of the participants who were using medication regularly was 39.1% (Table 1).

It was found that 40.6% of the participants changed their preference of mode of delivery during the pandemic period. Of the participants, 68.1% said they preferred vaginal delivery. While 59.4% of the participants stated that they did not get enough prenatal care because they had skipped their prenatal follow-ups due to the pandemic, 65.2% stated that their social support during pregnancy decreased due to the pandemic. It was found that 75.4% of the participants were worried that they would contract COVID-19 in the hospital during or after childbirth. The vast majority of the participants (81.2%) stated

Table 4. Distribution of covid-19 Anxiety Scale scores according to socio-demographic and congenital characteristics of pregnant women (n=276)

Features	COVID-10 Anxiety Scale Score	Test* and pValue	
Education Status			
Non-Literate	8.6±3.6[1]	F=8.099	**p=0.001**
Literate	6.6±2.6	2<1	
Primary School	7.1±3.2[2]		
Secondary School	5.6±0.9[2]		
High School	6.4±1.4[2]		
University-College	6.7±2.0[2]		
Working Status			
Yes	6.1±1.0	t=-2.401	**p=0.020**
No	6.8±2.5		
Economic Situation			
Profit, less than spending	7.4±3.0[1]	F=9.784	**p=0.001**
Profit equals spending	6.1±1.7[2]	2<1	
Profit, more than spending	7.3±2.3[1]		
Chronic Disease			
Has	7.2±3.1	t=1.197	p=0.237
Doesn't have	6.6±2.2		
Assessment of health status			
Well	6.5±1.7	F=2.859	p=0.059
Moderate	7.0±2.9		
Bad	6.0±0.9		
Pregnancy trimestiria			
1. trimestir	5.3±0.4[1]	F=15.664	**p=0.001**
2. trimestir	5.5±0.9[1]	1<2	
3. trimestir	7.2±2.6[2]		
Regular medication using			
Yes	6.2±2.2	t=-2.788	**p=0.006**
No	7.0±2.5		

* F: ANOVA test, t: Independent-samples t-test.

that they had not received information about COVID-19 (Table 2).

It was found that most participants marked the option "true" regarding their use of substances related to protection from COVID-19. To the statement "COVID-19 is also seen in the baby of the mother who is infected", the vast majority of the participants responded as "false". The rates of the participants who responded as "true" to the statements "anomalies are observed in the baby of the mother who is infected with COVID-19" and "the mother who is infected with COVID-19 has a risk of premature childbirth" were both 36.2% (Table 3).

The mean COVID-19 Anxiety Scale score of the participants was 6.7±2.4 (min: 5, max: 14). There was a statistically significant difference between the mean COVID-19 Anxiety Scale scores of the participants who were illiterate (8.6±3.6) and the participants who were university graduates (6.7±2.0) ($p<0.05$). The COVID-19 Anxiety Scale scores of the participants who were not working, those who expressed their income as less than their expenses, those who were in the last trimester of pregnancy, and those who did not take regular medication were significantly higher. No significant relationship was found between the presence of chronic diseases and the overall health status assessment variables of the participants and their COVID-19 Anxiety Scale scores (Table 4).

The mean COVID-19 Anxiety Scale score of the participants who considered changing their mode of delivery was 8.2±2.8, while the mean score of those who did not consider this was 5.7±1.4 ($p<0.05$). The

Table 5. Distribution of COVID-19 Anxiety Scale score averages according to pregnant women's thoughts on the pandemic and pregnancy process

Features	COVID-19 Anxiety Scale Score Average	Test and P Value
Thinking about changing the method of birth due to the pandemic		
Yes	8.2±2.8	t=8.560 **p=0.001**
No	5.7±1.4	
Preferred birth method due to pandemic		
Vaginal Birth	6.4±2.3	t=-1.664 p=0.097
Cesarean	6.9±2.5	
Feeling vulnerable because you are pregnant during the pandemic		
Yes	7.5±2.8	t=8.729 **p=0.001**
No	5.5±0.7	
Lack of prenatal care due to pandemic		
Yes	7.1±2.4	t=3.350 **p=0.001**
No	6.1±2.3	
Decreased social support during pregnancy due to pandemic		
Yes	7.1±2.6	t=3.883 **p=0.001**
No	6.0±1.7	
Fears she may catch coronavirus during childbirth		
Yes	7.2±2.6	t=9.497 **p=0.001**
No	5.3±0.5	
Worry that the baby may catch coronavirus during or after birth		
Yes	7.0±2.5	t=3.481 **p=0.001**
No	6.0±2.0	
Status of receiving information on COVID-19		
Yes	6.3±2.0	t=-4.285 **p=0.001**
No	8.4±3.3	

mean COVID-19 Anxiety Scale scores of those who felt vulnerable because they were pregnant during the pandemic and those who expressed decreased social support due to the pandemic were found to be significantly higher ($p<0.05$). The mean COVID-19 Anxiety Scale score of the participants who were concerned that they or their baby would contract COVID-19 in the hospital during childbirth was significantly higher (Table 5).

DISCUSSION

Pregnancy is a period when women are emotionally sensitive and prone to anxiety due to hormonal and biopsychosocial changes, as well as physical changes. During this period, women often experience various concerns about themselves, their baby, their healthcare experience, childbirth, and parenting skills. The consideration of maternal-fetal risks and social isolation in addition to these concerns associated with being infected with COVID-19 due to the need to receive regular prenatal care increases anxiety in pregnant women, although research on the effects of this infection during pregnancy is insufficient (23, 24, 25, 26). In this study, the participants had low levels of COVID-19 anxiety (mean scale score: 6.7±2.4). A study conducted during the COVID-19 pandemic similarly found that 44.6% of pregnant women had anxiety (27). In a qualitative study conducted during the Zika outbreak, pregnant women were reported to feel fear, helplessness, and sadness (28). A meta-analysis published in 2017 reported a prevalence of 15.2% for any anxiety disorder and a rate of 22.9% for anxiety symptoms during pregnancy without any chronic diseases or pandemic (29). In another meta-analysis study, in which 15 studies conducted worldwide covering 11187 pregnant women in total were included, it was revealed that the rate of depression was 30%, and the rate of anxiety was 34% during the COVID-19 pandemic period (30). It is observed that the anxiety levels of pregnant women have increased during the COVID-19 pandemic period compared to the period before COVID-19. In this study, it was found that the participants responded to the items

about the effects of COVID-19 on their baby at a high rate of the option “true”. The inaccurate knowledge of pregnant women regarding the health of their children in the context of COVID-19 may be an important factor in their anxiety.

As in Turkey, women are disadvantaged in education and work environments due to the gender discrimination they experience in most societies, and unemployment in the process of conception and a pandemic fuel this situation for women. Low education and low socio-economic status among pregnant women are factors that affect their health-related behaviors and awareness levels (31, 32). In this study, it was found that the participants who were illiterate, those who were not working, and those who had less income than their expenses had significantly higher levels of COVID-19 anxiety. The lack of safe health-seeking behaviors among these pregnant women, their limited access to healthcare, and their limited knowledge of COVID-19 may have led to their anxiety due to uncertainty. Additionally, the participants of this study who had not received any information about COVID-19 had significantly higher levels of COVID-19 anxiety. It is believed that this situation may be related to the crisis environment caused by the pandemic and the fear of the unknown. Pregnant women around the world have been identified as among the most at-risk groups for the psychological outcomes of the COVID-19 pandemic (33). In this study, the participants who were in the last trimester of pregnancy and those who were not using regular medication (e.g., additional vitamins, minerals) had significantly higher levels of COVID-19 anxiety. This result was not surprising given the health risks brought about by the pandemic, as it is known that during the last trimester of pregnancy, women are more concerned about their child's health, they have fears about childbirth, and risky situations increase their anxiety about themselves and their baby (24). A similar conclusion was reached in the study conducted by Demir and Kılıç (2020) (27). Likewise, the Turkish Society of Obstetrics and Gynecology organized information meetings and published written documents related to prenatal monitoring and childbirth management to reduce anxiety in pregnant women (34).

It is important that nurses and midwives observe pregnant women more frequently during the pandemic period, especially toward the last gestational weeks, evaluate their feelings and thoughts, and take evidence-based initiatives to reduce negative emotions and ill-advised practices among these women. It has been reported that most pregnant women who have planned their childbirth before the pandemic are left alone due to transport problems and the risk of transmission to their families during pregnancy and childbirth due to mandatory restrictions, their birth planning is disrupted, and they are worried about these issues (10, 23, 25). In this study, it was observed that the participants who were considering changing their mode of delivery due to the pandemic had significantly higher levels of anxiety about COVID-19. In a systematic review, it was seen that 76.8% of 137 pregnant women preferred cesarean delivery during the COVID-19 pandemic period (35). It has even been reported that pregnant women want to start childbirth early or give birth by cesarean section due to the anxiety and stress they experience (23). It was argued that during the COVID-19 pandemic period, some pregnant women take precautions to protect themselves and their babies from this infection, which has a potential of mortality and a high risk of transmission (36). Considering that these conditions have a similar rationale, studies have also shown that pregnant women with concerns about being infected with COVID-19 prefer private medical institutions and cesarean section deliveries, which they find safer in terms of the risk of transmission at childbirth, so the number of vaginal births decreases (36, 37). This may lead to maternal and fetal health risks that pregnant women may face due to surgery when trying to avoid danger, as well as worsening the course of the disease in case of transmission (37).

Failure to provide the necessary social support in crisis periods such as the COVID-19 pandemic sets the stage for the anxiety of pregnant women who may not feel safe and could become lonely (38). In this study, it was found that the participants who felt vulnerable during the pandemic and those whose social support decreased had significantly higher levels of COVID-19 anxiety. Similarly, it has been reported that due to the pandemic, pregnant women do not feel social support because their relatives are not allowed in the maternity ward and due to the possibility of not being close to their family at the time of childbirth (23, 27, 38). It may be for this reason that the concerns of pregnant women about the process of childbirth are increasing (23, 27, 38). Linde and Siqueira (2018) stated that pregnant women are unable to control their lives, and they feel under pressure during the pandemic period (28). As seen

here, needs for healthcare and social support increase due to the growing concerns and problems that pregnant women experience during pregnancy and during the pandemic (25, 26, 39). According to the guidelines of WHO published in 2020, the incidence of COVID-19 in pregnant women is low, while pregnant women are closely monitored and supported by holistic care practices during the pandemic period, and the Association of Obstetrics and Gynecology recommends that the number of pregnancy follow-ups be limited to 6 between the 16th and 40th weeks of gestation (38, 40). However, most pregnant women delay routine health checks or even do not attend them unless they must, because they fear that they will contract COVID-19 on their way to or at a medical facility (10, 23, 25). In this study, it was found that the participants who received insufficient prenatal care had significantly higher levels of COVID-19 anxiety. It is believed that this condition occurs due to the physical and mental effects of the pandemic on pregnancy, as well as the insufficient satisfaction of the growing needs of women and neglect. This result highlights the importance for healthcare professionals to regularly monitor the health of pregnant women and their babies during prenatal care, inform women about the methods and effects of COVID-19 prevention, monitor their anxiety levels, and provide psychosocial support (24, 25, 26, 41). Due to concerns about the safety of pregnant women and their children, the constant use of alcoholic disinfectants and various antiseptics has posed a risk of poisoning. Additionally, some pregnant women have reported concerns that the pandemic could affect childbirth, postpartum breastfeeding, and infant care (23, 25, 26). In this study, it was determined that the participants who were worried that they or their child would contract COVID-19 during/after childbirth had significantly higher levels of COVID-19 anxiety. Demir and Kılıç (2020) reported that pregnant women's fears of dying due to COVID-19 were associated with high levels of anxiety (27). Considering the negative maternal, fetal, and neonatal consequences of anxiety during pregnancy, the importance of careful and adequate prenatal care and psychosocial support needs to be emphasized.

Limitations

A limitation of this study was that it was conducted in one of the eastern provinces of Turkey. Another limitation was that the study was conducted only in one health center.

CONCLUSION

As a result of this research, it was found that the variables such as education level, not using regular medication, income level, employment status, month of pregnancy, presence of social support systems, thinking that oneself or her baby will get Covid 19 infection during birth, and wanting to change the way of delivery preference affect the average score. In addition, it was determined that the presence of chronic disease did not affect the anxiety score.

In this study, anxiety levels were found to be higher in the participants who wanted to change their mode of delivery. For this reason, there is a need for studies to evaluate the mode of delivery preferences and delivery processes of women experiencing anxiety due to COVID-19. According to the results of this study, it may be recommended to provide training on COVID-19 to pregnant women and increase recommendations for the psychological health of pregnant women. Web-based training programs and web-based psychological support units can be established for pregnant women who cannot present to a health institution due to fear of infection.

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