

RESEARCH ARTICLE

Prevalence of depressive and anxiety symptoms among Obstetrics and Gynecology residents-in-training during the COVID-19 pandemic

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ABSTRACT

Background and Objectives: This study aims to determine the prevalence of depression and anxiety among Obstetrics and Gynecology residents-in-training during the COVID-19 pandemic.

Methodology: A cross-sectional study was conducted among Obstetrics and Gynecology residents from December 2020 to January 2021. Participants answered a 37-question survey consisting of sociodemographic and occupational data, as well as the Patient Health Questionnaire-9 (PHQ-9) and General Anxiety Disorder – 7 (GAD-7). The prevalence of the symptoms of depression and anxiety were computed.

Results: A total of 120 (52.6%) residents, 62 from private hospitals and 58 from government hospitals completed the online survey. The overall prevalence of depression among Obstetrics and Gynecology residents was 42.5%, while the overall prevalence of anxiety was 31.7%. Three residents who had suicidal ideations were advised to seek counsel from a mental health professional.

Conclusion: The symptoms of depression and anxiety are common among OBGYN residents in selected tertiary hospitals in the National Capital Region during the COVID-19 pandemic. Quarterly surveys should be carried out for the trainees to increase awareness of depression and anxiety.

Introduction

Depression and anxiety are two of the most common psychological disorders. However, these are often not given due attention, hence, recognition and diagnosis became poor. Health care providers are not exempted from psychological morbidity, with high prevalence of these disorders. A meta-analysis of 31 studies by Mata, *et al.* in 2015 yielded that the prevalence of depression among Resident Physicians and is 28.8% [1]. Medical Residents are often subjected to long working hours, sleep deprivation, and are often witnesses of pain and even death. Their everyday work setting is a dungeon of triggers and stressors put together.

The World Health Organization (WHO) declared COVID-19 as a global pandemic in March 11, 2020 [2]. The pandemic became a strain on the Philippine health care system and to health care providers in the frontlines, such physicians and nurses. Since the start of the pandemic, issues with lack of adequate protective gear, lack of mass testing, on top of fatigue and worry that they themselves may contract the disease, were factors that may have triggered depression and anxiety.

It was difficult adjusting to the "new normal" when one works in the Labor and Delivery Suite. The Obstetrics and Gynecology residents are in constant physical contact with the patient in an enclosed room to monitor the progress of labor, as well as the well-being of both the mother and the baby. During the pandemic where social distancing was required, the resident physicians in the Delivery Suite were at increased risk of contracting the disease.

This study will pave ways for the screening of health care professionals with depression and anxiety during this COVID-19 pandemic using two self-report questionnaires: Patient Health Questionnaire-9 (PHQ-9) and General Anxiety Disorder – 7 (GAD-7). It will provide information regarding what aspect in their health, home, or work could trigger an increase in symptoms of depression or anxiety.

The general objective of the study is to determine the prevalence of symptoms of depression and anxiety among Obstetrics and Gynecology Resident Physicians in selected tertiary hospitals in the National Capital Region (NCR) using the PHQ-9 and GAD-7 during the COVID-19 pandemic. The specific objectives of the study are as follows: (1) to determine the sociodemographic, clinical, occupational profile, perception on safety and preparedness, as well as the symptoms of depression and anxiety of Obstetrics and Gynecology Resident Physicians in selected tertiary hospitals

in the NCR; (2) to determine the level of depression among Obstetrics and Gynecology Resident Physicians in selected tertiary hospitals in the NCR using the PHQ-9 questionnaire; (3) to determine the level of anxiety among Obstetrics and Gynecology Resident Physicians in selected tertiary hospitals in the NCR using the GAD-7 questionnaire.

Methodology

A cross-sectional study using self-administered questionnaires was conducted among Obstetrics and Gynecology residents from selected tertiary hospitals in the NCR from December 2020 to January 2021. Participants who signed the informed consent were included, while those who were on a leave of absence during the data collection period and those who did not complete the survey after three follow-ups were excluded from the study.

The research protocol underwent a technical review by the Department of Obstetrics and Gynecology Research Committee, followed by the review and approval of the hospital's Research Ethical Review Committee. A letter to the chairpersons of the Department of Obstetrics and Gynecology of each selected tertiary hospital requesting for permission to include their respective residents in the study, and for each resident's email address was then sent out electronically. The eligibility of residents to participate in the study was then determined using the inclusion and exclusion criteria. After qualified participants were identified thru the use of Google Forms, the primary investigator sent an email wherein the scope, purpose, and methodology of the study was explained, and an informed consent was obtained online. Participation was voluntary and confidentiality was guaranteed. Once informed consent was obtained, the participants were provided with the link to the online survey.

The online survey was used to collect information regarding sociodemographic/psychosocial, clinical and occupational factors of the study

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population. Patient Health Questionnaire-9 and General Anxiety Disorder-7 for screening depression and anxiety, respectively, were also transcribed into the online survey. All forms and questionnaires were put into Google Forms and were accomplished online. The participants were given two weeks to complete the survey and were reminded after a week through the resending of the Google Form link <https://forms.gle/amMbwVkp9sd3bFj59>.

All survey responses were directed from Google Forms to Google Sheets to the primary investigator's personal Google account. The primary author got in touch with participants who got a score of 10 and above in order to explain the results, and properly refer them to a psychiatrist for further evaluation.

The first section of the online survey addressed the socio-demographic data of the participants which included their age, marital status, participant's living environment/set-up, if they are with or without children, and the participant's number of co-habitants. Clinical characteristics included the presence of comorbidities and if the participant is a cigarette smoker or not.

The second portion of the online survey addressed questions regarding the occupation of the participants – their year levels, number of duty hours per week, and number of hours of sleep. This portion of the survey also touched on factors related to COVID, such as exposure to probable, suspected or confirmed COVID patients, the participants' confidence in handling COVID patients, if they are provided with hazard pay and adequate personal protective equipment, and their confidence with regard to their safety, as well as their confidence in the capability of their colleagues, their hospitals, and their families to cope with the pandemic.

The transcribed Patient Health Questionnaire-9 makes up the third portion of the online survey. The screening tool is composed of questions asking the participants how often they experience a symptom in a span of two weeks. The questions are scored from 0 through 3 (0 – not at all, 1 – several days, 2 – more than half the days, and 3 – nearly every day). The highest score one could get is 27; a score of 5, 10, 15 and 20 represent mild, moderate, moderately severe and severe depression, respectively.

The last section of the online survey is the transcribed General Anxiety Disorder – 7 questionnaire. The screening tool is composed of questions asking the participants how often they experience a symptom in a span of two weeks. The questions are scored from 0 through 3 (0 – not at all, 1 – several days, 2 – more than half the days, and 3 – nearly every day). The scoring in GAD-7 ranges from 0 to 21; a score of 5, 10 and 15 represents mild, moderate, and severe anxiety, respectively.

The target population were the Obstetrics and Gynecology residents in selected tertiary hospitals in the NCR. As of January 2020, there were a total of 99 residents employed in the Pentamed Group of Hospitals. Using 95% confidence level and 23.2% prevalence of depression in healthcare workers in the systemic review and meta-analysis of Pappa, *et al.* last May 2020, the minimum sample size computed was 114 using OpenEpi software. Convenient sampling was used in the study.

The data from the socio-demographic, clinical, and occupational questionnaires were tabulated. Respective symptoms based on the PHQ-9 and GAD-7 questionnaires, and tally of the scores of the participants in these screening tools were also tabulated. The percentage was then computed based on the summarized tabulated data and the prevalence of each of the symptoms were computed.

Results

There were a total of 228 residents from 15 tertiary hospitals (9 private, 6 government hospitals) in the NCR that were included in the study. Out of the 228 residents, 108 were excluded. One resident was on a leave of absence, while the rest did not give informed consent. A total of 120 (52.6%) residents, 62 from private hospitals and 58 from government hospitals completed the online survey.

Of the 120 participants, 63 (52.5%) were less than 30 years of age, 103 (85.8%) were single, 82 (68.3%) were living with their immediate families or partners and 105 (87.5%) were without children. Ninety-eight (81.7%) of the residents have no underlying comorbidities. The most common comorbidity was bronchial asthma ($n = 9$), followed by hypertension ($n = 7$), diabetes mellitus ($n =$

3), heart disease ($n = 3$) such as arrhythmia or valve disorder; immunosuppressive disorder ($n = 1$), thyroid disorder ($n = 1$) and spinal injury ($n = 1$).

The study population consisted of 43 (35.8%) fourth year residents, 21 (17.5%) third year residents, 27 (22.5%) second year residents and 29 (24.2%) first year residents. All residents (120) go on duty for more than 50 hours a week. Thirty-three (53.2%) private hospitals and 30 (51.7%) government hospitals implemented the skeletal work force wherein only the minimum number of residents go on duty per day.

One hundred sixteen (96.7%) residents have been exposed to patients with unknown COVID status prior to admission, and in 110 (91.7%) of these residents, their patients turned out to be COVID-19 confirmed cases on swab testing. Sixty-two (100%) residents in private hospitals, and 55 (94.8%) residents in government hospitals claimed that proper protective equipment were provided for when they go on duty. However, twenty-three (37.1%) residents in private hospitals and 22 (37.9%) residents in government hospitals felt unconfident about their self-protection. Thirty (48.4%) and 22 (37.9%) of residents from private and government hospitals, respectively, felt unsafe at work while taking care of COVID-19 confirmed cases. A total of 42 (35%) residents felt unconfident in taking care of COVID-19 confirmed patients. One hundred seventeen (97.5%) residents have a colleague who have been infected by the virus. Fifty-five (45.8%) residents were not provided with hazard pay. Eighty-eight (73.3%) were confident that the hospital and their colleagues can cope with the pandemic, while 53 (44.2%) residents believed their families are ready to cope with the COVID-19 pandemic.

Table 1 shows the symptoms of depression that the participants experience. Sixty-nine (57.5%) residents had little interest or pleasure in work and are feeling down. Seventy-four (61.7%) residents had trouble falling asleep, while 90 (75%) had symptoms of feeling tired or without energy. Sixty (50%) residents had the symptom of feeling like a failure. There were 3 residents who reported to have thought about hurting themselves. Two residents rated that the symptom happens for several days in two weeks, while the other resident reported that this symptom happens for more than half of the days. These residents have been contacted and advised to seek evaluation and counsel from a mental health professional.

Table 1 also shows the symptoms of anxiety. Seventy-seven (64.2%) residents had a symptom of nervousness or feeling on edge, while 55 (45.8%) residents had the symptom of feeling worried. Forty-four (36.7%) residents had trouble relaxing, while 23 (19.2%) residents had the symptom of restlessness. Fifty-eight (48.3%) residents were easily annoyed or irritable, while 58 (48.3%) had the symptom of feeling afraid.

Table 2 shows the PHQ-9 Scores of the participants. Thirty (25%) residents had mild depression, 17 (14.2%) residents had moderate depression, 3 (2.5%) residents had moderately severe depression and 1 (0.8%) resident had severe depression. The prevalence of symptoms of depression among residents in private hospitals was 46.8%, while the prevalence of depression among residents in government hospitals was 37.9%. The overall prevalence of depression among Obstetrics and Gynecology residents was 42.5%.

Table 2 also shows the GAD-7 scores of the participants. Twenty-eight (23.3%) residents had mild anxiety, 8 (6.7%) residents had moderate anxiety and 2 (1.7%) residents had severe anxiety. Among residents in private hospitals, the prevalence of anxiety was 27.4%, while in government hospitals the prevalence of anxiety was 36.2%. The overall prevalence of anxiety among Obstetrics and Gynecology residents was 31.7%.

Discussion

Depression and anxiety can affect anyone – they do not choose victims. In a study done by Becker, *et al.*, stressors of residency can be categorized into three – situational, personal and professional [3]. Situational stressors include sleep deprivation, abundance of workload and duty hours on top of administrative duties and difficult patients, and suboptimal environment for continued learning [3]. Personal stressors encompass issues on family, finance, self-care and coping mechanisms. Lastly, patient care, supervision of one's subordinates and future career paths are categorized under professional stressors [3].

This study was conducted nine months from the first reported case of COVID-19 in the Philippines. A long time had already passed since the

Table 1. Frequency Distribution of Depression and Anxiety Symptoms

SYMPTOMS	NUMBER OF PARTICIPANTS n = 120				
	PRIVATE n = 62 n (%)	GOVERNMENT n = 58 n (%)	TOTAL n = 120 n (%)	FREQUENCY OF ASYMPTOMATIC n (%)	FREQUENCY OF SYMPTOMATIC n (%)
SYMPTOMS OF DEPRESSION					
LITTLE INTEREST/ PLEASURE IN WORK					
Not at all	27 (43.5)	24 (41.4)	51 (42.5)		
Several days	31 (50)	29 (50)	60 (50)	51 (42.5)	69 (57.5)
More than half the days	4 (6.5)	4 (6.9)	8 (6.7)		
Nearly everyday	- (0)	1 (1.7)	1 (0.8)		
FEELING DOWN					
Not at all	27 (43.5)	24 (41.4)	51 (42.5)		
Several days	32 (51.7)	31 (53.5)	63 (52.5)	51 (42.5)	69 (57.5)
More than half the days	3 (4.8)	1 (1.7)	4 (3.3)		
Nearly everyday	- (0)	2 (3.4)	2 (1.7)		
TROUBLE FALLING ASLEEP					
Not at all	24 (38.7)	22 (37.9)	46 (38.3)		
Several days	28 (45.2)	26 (44.9)	54 (45)	46 (38.3)	74 (61.7)
More than half the days	10 (16.1)	8 (13.8)	18 (15)		
Nearly everyday	- (0)	2 (3.4)	2 (1.7)		
FEELING TIRED OR WITHOUT ENERGY					
Not at all	17 (27.4)	13 (22.4)	30 (25)		
Several days	40 (64.5)	36 (62.1)	76 (63.3)	30 (25)	90 (75)
More than half the days	5 (8.1)	7 (12.1)	12 (10)		
Nearly everyday	- (0)	2 (3.4)	2 (1.7)		
FEELING LIKE A FAILURE					
Not at all	31 (50)	29 (50)	60 (50)		
Several days	25 (40.3)	24 (41.4)	49 (40.8)	60 (50)	60 (50)
More than half the days	6 (9.7)	5 (8.6)	11 (9.2)		
Nearly everyday	- (0)	- (0)	- (0)		
SUICIDAL IDEATIONS /HURT YOURSELF					
Not at all	61 (98.4)	56 (96.6)	117 (97.5)		
Several days	1 (1.6)	1 (1.7)	2 (1.7)	117 (97.5)	3 (2.5)
More than half the days	- (0)	1 (1.7)	1 (0.8)		
Nearly everyday	- (0)	- (0)	- (0)		
SYMPTOMS OF ANXIETY					
NERVOUS, ANXIOUS OR ON EDGE					
Not at all	21 (33.9)	22 (38)	43 (35.8)		
Several Days	38 (61.3)	35 (60.3)	73 (60.8)	43 (35.8)	77 (64.2)
More than half the days	2 (3.2)	1 (1.7)	3 (2.5)		
Nearly everyday	1 (1.6)	- (0)	1 (0.9)		
FEELING WORRIED					
Not at all	35 (56.5)	30 (51.7)	65 (54.2)		
Several Days	25 (40.3)	22 (38)	47 (39.2)	65 (54.2)	55 (45.8)
More than half the days	1 (1.6)	6 (10.3)	7 (5.8)		
Nearly everyday	1 (1.6)	- (0)	1 (0.8)		
TROUBLE RELAXING					
Not at all	38 (61.3)	38 (65.5)	76 (63.3)		
Several Days	21 (33.9)	15 (25.9)	36 (30)	76 (63.3)	44 (36.7)
More than half the days	1 (1.6)	4 (6.9)	5 (4.1.7)		
Nearly everyday	2 (3.2)	1 (1.7)	3 (2.5)		
RESTLESSNESS					
Not at all	49 (79)	48 (82.8)	97 (80.8)		
Several Days	12 (19.4)	9 (15.5)	21 (17.5)	97 (80.8)	23 (19.2)
More than half the days	1 (1.6)	1 (1.7)	2 (1.7)		
Nearly everyday	- (0)	- (0)	- (0)		
EASILY ANNOYED OR IRRITABLE					
Not at all	35 (56.5)	27 (46.6)	62 (51.7)		
Several Days	22 (35.5)	23 (39.7)	45 (37.5)	62 (51.7)	58 (48.3)
More than half the days	4 (6.4)	6 (10.3)	10 (8.3)		
Nearly everyday	1 (1.6)	2 (3.4)	3 (2.5)		
FEELING AFRAID					
Not at all	38 (61.3)	24 (41.4)	62 (51.7)		
Several Days	19 (30.6)	29 (50)	48 (40)	62 (51.7)	58 (48.3)
More than half the days	4 (6.5)	4 (6.9)	8 (6.7)		
Nearly everyday	1 (1.6)	1 (1.7)	2 (1.6)		

Note: Symptoms were based from the Patient Health Questionnaire-9 and General Anxiety Disorder-7 surveys.

Table 2. Frequency Distribution of PHQ-9 and GAD-7 Scores

SCORE	NUMBER OF PARTICIPANTS			
	n = 120			
	PRIVATE n = 62	GOVERNMENT n = 58	TOTAL n = 120	
FREQUENCY n (%)	FREQUENCY n (%)	FREQUENCY n (%)		
PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)				
None (0-4)	33 (53.2)	36 (62.2)	69 (57.5)	OVERALL PREVALENCE OF DEPRESSION: 42.5%
Mild (5-9)	20 (32.3)	10 (17.2)	30 (25)	
Moderate (10-14)	8 (12.9)	9 (15.5)	17 (14.2)	
Moderately Severe (15-19)	1 (1.6)	2 (3.4)	3 (2.5)	
Severe (20-27)	-	1 (1.7)	1 (0.8)	
GENERAL ANXIETY DISORDER-7 (GAD-7)				
None (0-4)	45 (72.6)	37 (63.8)	82 (68.3)	OVERALL PREVALENCE OF ANXIETY: 31.7%
Mild (5-9)	12 (19.4)	16 (27.6)	28 (23.3)	
Moderate (10-14)	3 (4.8)	5 (8.6)	8 (6.7)	
Severe (>15)	2 (3.2)	- (0)	2 (1.7)	

Note: PHQ-9 and GAD-7 scores and computed prevalence rate for depression and anxiety among the study population.

implementation of new guidelines and strategies on how to mitigate the spread of the virus. The concept behind the COVID-related questions used in this study was taken from the study of Dai, *et al.*, which tackled the risk perception of healthcare workers in China [4].

During the pandemic, the work of Obstetrics and Gynecology residents hasn't changed. The resident physicians are still in constant contact and communication with parturients in an enclosed room, sometimes having to sit at bedside while monitoring the maternal and fetal well-being which may last for hours. Some of the cases that the residents handle have an uncertain COVID status on admission, and some would turn out to be positive for the infection when the results come out.

One-hundred sixteen residents have been exposed to patients with unknown COVID status prior to admission, and in one hundred ten of these residents, their patients turned out to be COVID-19 confirmed on swab testing. Among residents in private and government hospitals, 37% feel unconfident about their self-protection. The emergence of COVID-19 may have put an added stress to the resident physicians having to work in an environment where they may be easily infected.

In this study, the PHQ-9 and GAD-7 were used as screening tools. The PHQ-9 makes use of the 9 DSM-IV criteria for depression and has a 93% sensitivity and 85% specificity when used as a screening tool [5]. It has an 88% sensitivity and specificity when used to diagnosed depression [6]. The GAD-7 is a seven-point item survey that reflected Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) symptom criteria. It is used to screen for anxiety, with an 89% sensitivity and 82% specificity [7].

Among symptoms of depression noted in the study population for several days in two weeks, 63.3% of residents feel tired and 52.5% feel down, while 50% have little interest in their work and 40.5% feel like a failure. The most common symptom of anxiety when rated to occur nearly every day or more than half of the days is getting easily annoyed, while the most prevalent symptom to occur several days in two weeks is the feeling of nervousness at 60.8%.

The PHQ-9 and GAD-7 are self-rating questionnaires, where the participants rated how often they experienced each symptom in a span of two weeks. Since both questionnaires only monitor the symptoms in a span of two weeks, it only reflects their responses at that point in time. Hence, this study was limited to draw any conclusions with regard to the persistence of symptoms or if these symptoms have ceased to occur.

Without a doubt, residency training in Obstetrics and Gynecology, its responsibilities, tasks and workload is stressful and exhausting, as also seen in other studies. Symptoms of both depression and anxiety are prevalent. In this study, the prevalence of symptoms of depression among OBGYN residents in tertiary hospitals in the NCR is 42.5%, while that of anxiety is 31.7%.

A meta-analysis of 13 studies on the prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic in China determined that the prevalence of depression is 22.8% while that of

anxiety reached up to 23.2% [8]. The studies included in the meta-analysis used the Zung Self-Rating Depression Scale (SDS) and PHQ-9 for depression and the Zung Self-Rating Anxiety Scale (SAS) and the GAD-7 to screen for anxiety [8]. The prevalence of depression and anxiety in our study using PHQ-9 and GAD-7 is much higher than the pooled prevalence reported in the meta-analysis.

Another study done in Singapore made use of Impact of the Events – Revised (IESR) and Depression, Anxiety, and Stress Score (DASS 21) questionnaires to study the psychological impact of the COVID-19 pandemic to their health care workers [9]. Out of 470 participants, 8.9% screened positive for depression while 14.5% screened positive for anxiety [9].

According to Kroenke, *et al.*, individuals with PHQ-9 score of more than or equal to 10 is 7.6-13 times more likely to be diagnosed with depression by psychiatrists [6]. While most patients diagnosed with general anxiety disorder had a cut-off score of more than or equal to 10 [7].

Of the 120 residents in our study population, 21 (17.5%) scored more than 10 on the PHQ-9 self-screening tool and are classified to have moderate depression in 14.2%, moderately severe depression in 2.5% and severe depression in 0.8%. On the other hand, ten residents (8.3%) scored more than 10 on the GAD-7 questionnaire; and of these, 6.7% and 1.7% are classified to have moderate and severe anxiety disorder, respectively. All of these residents with high scores were contacted and given advice with regard to monitoring and seeking further evaluation by a mental health professional.

A cross-sectional study by Lai, *et al.*, monitored the degree of symptoms of depression, anxiety, insomnia and distress. They also made use of PHQ-9 and GAD-7 in screening for depression and anxiety among their sample population. Their study showed that the prevalence of mild, moderate and severe depression among physicians were 31.8%, 8.9% and 4.9%, respectively, while the prevalence of mild, moderate and severe anxiety were 29%, 6.9% and 4.7%, respectively [10].

There were three (3) resident physicians who have reported to have thought about hurting themselves - two rated this symptom to happen several days in two weeks, while the other one reported to happen more than half of the days. These residents were contacted and advised to seek evaluation and counsel from a mental health professional.

In a study by Xu, *et al.*, that assessed the psychological status of surgical staff in China during the pandemic, the degree of anxiety and depression among surgical staff are significantly higher during the pandemic compared to when they surveyed during the non-outbreak season [11]. Apart from the stress of having to familiarize oneself with the new norms and having to deal with the uncertainties during the pandemic, another source of emotional exhaustion is having to witness the struggles of the patients themselves, as well as the fear of possibly infecting not only their colleagues but also their families when they go home [12].

Limitations

For some reasons, there were plenty of resident physicians decided not to participate in the study. A total of 107 residents out of 228 (46.9%), did not give informed consent. Due to the pandemic, the researchers opted to conduct an online survey to limit any further exposure to both the researchers and participants. The lack of personal interaction and face to face interviews limited the researchers to explain the significance of the study to the participants.

The data gathered does not reflect all Obstetrics and Gynecology residents in the NCR, and since a number of residents did not participate in the study, this may have had an effect on the computed prevalence of depression and anxiety. Therefore, more hospitals, if not all, should be included in further studies.

Conclusions

The study showed that symptoms of both depression and anxiety are common among Obstetrics and Gynecology residents in selected tertiary hospitals in the NCR during the COVID-19 pandemic. Furthermore, there were resident physicians who have reported to have thought about hurting themselves.

Due to these findings, the researchers would like to recommend to the Training Committees of the department to carry out quarterly surveys for their trainees, in order to increase the awareness of depression and anxiety among Obstetrics and Gynecology residents.

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