

**ANXIETY, DEPRESSION, PSYCHOLOGICAL REACTION AND IMPACT  
OF COVID 19 ON HUMAN FERTILITY**

**ABSTRACT:**

**OBJECTIVE:** The current study aim to understand the anxiety, depression, psychological reaction and impact of COVID-19 on human fertility in Karachi, Pakistan.

**MATERIAL & METHOD:** This cross-sectional study was conducted on all married 243 patients at Out Patients Department (OPD) of Gynecology and Obstetrics at Civil Hospital, Karachi, Pakistan. The data were collected through a standardized questionnaire and this was done between from July 2020 to December 2021. Regarding the inclusion criteria, only patients who consulted a gynecologist were invited to participate in the study voluntarily. The principles of research ethics regarding the confidentiality of the data collected and ensure the anonymity of the participants. The data were analyzed by way of descriptive statistics and cross tabulation, with a P value of 5 per cent used to determine level of significance.

**RESULTS:** Mostly patients were observed above 30 years 42.38% with mean age was  $36.12 \pm 3.2$  years (range 18-50 years) and majority of patient's relatively good health status 153(62.96%). Mostly couple 161 (66.25%) avoid the pregnancy in covid-19 period. Patients preferring to avoid the pregnancy due to higher COVID-19 contagion anxiety 121(75.15%) were observed. The main reason for avoid the pregnancy was fear of delivering a baby in the current situation 110(68.32%) cases. Followed by infected 55(34.16%), financial concerns 63(39.13%) and risks for the pregnancy 88 (54.65%) cases. There are significant number of patients, who report moderate anxiety 73(30.04%), severe anxiety 55(22.63%), findings of PHQ9 shows moderate depression 67(27.57%), moderately severe depression 71 (29.21%), and severe depression 25(10.28%).

**CONCLUSION:** In Covid-19 period were observed high rate of anxiety, depression, and psychological reaction in female patients who wants to conceive. Anxiety, depression, and psychological reaction might be leading to changes in sexual behavior can all predict the quality of a couple's relationship.

**KEY WORDS:** Anxiety, Covid-19, Depression, Pregnancy.

## INTRODUCTION

The effort to conceive with a history of infertility are both spiritual and physical due to the large planning and implementation of medical tests and treatments and the lack of transparency or lack of self-awareness<sup>1,2</sup>. Infertility is linked to major depression due to inability to fulfill a desired social role<sup>3</sup>.

The **Coronavirus disease 2019 (COVID-19)** pandemic, which began in early 2020, exacerbated the situation by adding more barriers and delays to fertility **treatments**<sup>4</sup>. Some international studies were lack of awareness regarding the psychological health of infertile couples in the covid-19 period<sup>4-6</sup>.

Numerous studies have confirmed the link between psychological health and the couple relationship quality<sup>5,6</sup>. During the COVID-19 epidemic, people with poor romantic relationships suffered more than those with good quality couple relationships, and stress increased from 13% to 35% based on the quality of marital relationships<sup>7</sup>.

In addition, sperms are also vulnerable the risk of COVID-19 infection and COVID-19 can cause male infertility<sup>8</sup>. **COVID-19** has been shown to have adverse effects on the reproductive system. Other research suggests that COVID-19 affects female fertility and interferes with female reproductive function<sup>9,10</sup>. Given the level of the COVID-19 epidemic, it seems likely that there will be a decrease in fertility<sup>11</sup>.

The COVID-19 pandemic can adversely affect the relationship of female physicians during infertility treatment. For example, **studies find that 33% of participants indicated** that the pandemic affected their relationship with their physician and that 44% stopped consulting specialists and medical procedures during this period. Standard treatment plans of infertility patients was suddenly disturbed during **COVID-19** period<sup>12,13,14</sup>. Therefore, **the current study examines** anxiety, depression, psychological reaction and impact of **COVID** 19 on human fertility and the current covid-19 situation shows the mindset of the patients.

## MATERIAL AND METHODS

A cross-sectional study was conducted on all married 243 patients at Out Patients Department (OPD) of Gynecology and Obstetrics at Civil Hospital, Karachi, Pakistan. The data collection was done through standardized questionnaire from July 2020 to December 2021. Regarding the inclusion and exclusion process, only patients who consulted a gynecologist were invited to participate in the study voluntarily. The principles of research ethics regarding the confidentiality of the data collected and ensure the anonymity of the participants. The data were analyzed by way of descriptive statistics and cross tabulation, with a P value of 5 per cent used to determine level of significance.

**Patient Health Questionnaire (PHQ-9):** “The PHQ-9 is a multipurpose instrument for screening, diagnosing, monitoring and measuring the severity of depression”.

**Generalized Anxiety Disorder (GAD-7):** A 7-item scale measuring generalized anxiety.

## RESULTS

Survey conducted on 243 patients. Mostly patients were observed above 30 years 42.38% with mean age was  $36.12 \pm 3.2$  years (range 18-50 years) and belong to middle class 110(76.92%) family. Distribution of various socio-demographic variables (Table 1) shows that majority of patient’s relatively good health status 153(62.96%). In our study mostly couple 161 (66.25%) avoid the pregnancy in covid-19 period. Patients preferring to avoid the pregnancy due to higher COVID-19 contagion anxiety 121(75.15%) were observed. The main reason for avoid the pregnancy was fear of delivering a baby in the current situation 110(68.32%) cases. Followed by infected 55(34.16% ), financial concerns 63(39.13%) and risks for the pregnancy 88 (54.65%) cases.

There are significant number of patients, who report moderate anxiety 73(30.04%), severe anxiety 55(22.63%), findings of PHQ9 shows moderate depression 67(27.57%), moderately severe depression 71 (29.21%), and severe depression 25(10.28%) Table No.1. Chi-

square test shows (Table 2) highly significant association between age and anxiety with p value 0.003. Similarly association between health status and anxiety with p value 0.002. Based on the PHQ9 scale (Table 3), age, avoid for pregnancy due to COVID-19 situation were reported significant association with depression p values 0.001 respectively.

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**Table No. 1**  
**Demographic Variables**  
**(n=243)**

Variables	Frequency	Percentage
<b>Age</b>		
18 – 20 years	61	25.10
21 – 30 years	79	32.51
>30 years	103	42.38
<b>Economic level</b>		
Low	90	37.03
Middle	110	76.92
High	43	17.69
<b>Parity</b>		
Nulliparous women	19	7.81
Parous women	224	92.18
<b>Health status</b>		
Very healthy	56	23.04
Relatively good	153	62.96
Moderate or bad	34	13.99
<b>Couple Planning for pregnancy</b>		
Yes	82	33.74
No	161	66.25
<b>Couple Not Planning for pregnancy due to (n=161),</b>		
- Anxiety	121	75.15
- concern of being infected	55	34.16
- Financial concerns	63	39.13
- risks for the pregnancy	88	54.65
- fear of delivering a baby in the current situation	110	68.32
<b>GAD – 7</b>		
Absent	67	27.57
Mild anxiety	48	19.75
Moderate anxiety	73	30.04
Severe anxiety	55	22.63
<b>PHQ – 9</b>		
Minimal depression	47	19.34
Mild depression	33	13.58
Moderate depression	67	27.57
Moderately severe depression	71	29.21
Severe depression	25	10.28

**Table No.2**  
**Chi-square relationship of GAD-7 with socio-demographic details**  
**(n=243)**

<b>Variables</b>	<b>GAD - 7</b>				<b>P Value</b>
	<b>Absent</b>	<b>Mild anxiety</b>	<b>Moderate anxiety</b>	<b>Severe anxiety</b>	
<b>Age</b>					
18 – 20 years	22	13	11	15	<b>0.003</b>
21 – 30 years	29	22	17	11	
>30 years	16	13	45	29	
<b>Economic level</b>					
Low	25	16	23	26	<b>0.016</b>
Middle	22	24	41	23	
High	20	8	9	6	
<b>Parity</b>					
Nulliparous women	6	4	5	4	<b>0.115</b>
Parous women	61	44	68	51	
<b>Health status</b>					
Very healthy	15	8	22	11	<b>0.002</b>
Relatively good	42	30	43	36	
Moderate or bad	10	10	8	8	
<b>Couple Planning for pregnancy</b>					
Yes	16	25	33	8	<b>0.245</b>
No	51	23	40	43	

**Table No. 3**  
**Chi-square relationship of PHQ-9 with socio-demographic details**  
**(n=243)**

Variables	PHQ-9					P Value
	Minimal depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression	
<b>Age</b>						
18 – 20 years	12	10	18	13	8	<b>0.001</b>
21 – 30 years	22	10	16	15	16	
>30 years	13	13	33	43	01	
<b>Economic level</b>						
Low	18	13	25	23	11	<b>0.012</b>
Middle	21	20	25	30	14	
High	8	0	17	18	0	
<b>Parity</b>						
Nulliparous women	5	4	1	6	3	<b>0.141</b>
Parous women	42	29	66	65	22	
<b>Health status</b>						
Very healthy	2	19	16	11	8	<b>0.015</b>
Relatively good	38	9	39	51	16	
Moderate or bad	7	5	12	9	1	
<b>Couple Planning for pregnancy</b>						
Yes	9	17	21	15	20	<b>0.001</b>
No	38	16	46	56	5	

## DISCUSSION

The COVID-19 pandemic has spread around the world<sup>15</sup>. It is important to do a preliminary study during this crisis, to understand how doctors can help women overcome their problems during the Covid-19 period.

In our study mostly patients were above 30 years 42.38% with mean age was  $36.12 \pm 3.2$  years, moderate anxiety observed in 25(10.28%) while Severe anxiety were in 29(11.93%) patients. However in the study of Tokgoz VY<sup>16</sup> reported higher anxiety level were observed in infertile women age more than 35 years during pandemic period because whose ART cycle has been delayed. While moderate to moderately severe depression were in 76(31.27%) patients after age of 30 years.

Low-income families are more likely to be unemployed, reduce working hours, and face greater challenges in accessing health care and home-based education. COVID-19 exacerbated food insecurity in low-income households and forced very low-income households to adopt a less healthy diets. In our study observed mostly patients belongs to middle class and low income families<sup>17</sup>. In our study observed mostly families belongs to middle and lower class were 110(76.92%) and 90(37.03%) patients respectively. An international study conducted by Lian-Bao Cao also reported mostly patients were belongs to middle and lower class<sup>18</sup>.

Large-scale disaster-affected societies and individuals, such as global pandemics, can cause stress-related disorders<sup>19</sup>. Previous studies on the emotional response to epidemics or quarantine have focused on emotions such as anger, sadness, helplessness, relief, and anxiety<sup>19,20</sup>. In COVID-19, there was suddenly suspended fertility treatment, leaving them with a high level of uncertainty and loss of control concerning the future.

The social distancing and the partial loss of social support, combined with these complaints can be exacerbated, contributing to high levels of distress.

International studies were observed increased the level of anxiety and depression in women whose under treatment of fertility in COVID-19 pandemic period due to closure of fertility clinics<sup>21,22</sup>. In our study couple avoids the planning of pregnancy due to anxiety 131(75.15%) and fear of delivering a baby 110(68.32%) in the current situation of COVID-19.

As far as the population is concerned, it is important to consideration that a downturn in the economy will necessarily mean a peak in the unemployment rate and a decline in the birth rate<sup>23</sup>. Many couples cannot afford to have children in such an economic context due to the cost of nutrition, education and well-being<sup>24</sup>. The current study also reported that couples avoid the conceived because of financial concerns 63(39.13%) in the COVID-19 pandemic.

So many studies have confirmed that COVID-19 can adversely affect people's mental and psychological health<sup>18</sup>. An important part of life is sexual activity, sexual health is an important part of quality of life and a significant aspect of well-being<sup>25,26</sup>. Psychological symptoms due to anxiety, lack of privacy and fear of health conditions, caused by covid-19 lockdown can affect the quality of sex life<sup>24,25</sup>. Studies based on changes in sexual activity due to lockdowns in different populations and countries have reported mixed results<sup>25-27</sup>.

In the present study, around 52.67% [GAD-7: moderate anxiety = 73(30.04%), severe anxiety = 55(22.63%) and 67.07% [PHQ-9: moderate = 67(27.57%), moderately severe = 71(29.21%), severe depression = 25(10.28%)]. However the study of Meng Dong<sup>28</sup> reported COVID-19-related extremely anxiety 38 (4.04%) mildly anxiety 211 (22.45) cases and avoid the sexually relationship of couple. While stress level were observed very high in 67 (7.13%) cases and high 188 (20%) cases. Sexual behavior and couple relationship quality of patients in our study can be associated anxiety and depression with infertility during the COVID-19 lockdown situation faced in Pakistan. The COVID-19 outburst has disturbed the whole world. However, in comparison the situation is worse in the countries having weak healthcare strategies and structure. Especially in Pakistan, this pandemic has been a discourteous wake-up call regarding our weak health infrastructure as it comes under intolerable strain during this period.

## CONCLUSION

The COVID-19 outbreak has brought unprecedented changes to every aspect of life and healthcare. In Covid-19 period were observed high rate of anxiety, depression and psychological reaction in female patients who wants to conceive. Anxiety, depression, and psychological reaction might be leading to changes in sexual behavior can all predict the quality of a couple's relationship. Couple need attention and provision of professional help from mental health practitioners.

### Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

### Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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