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Impact of COVID-19 on mental health of infertile couple: A rapid systematic review

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Abstract:

Infertile couples experience a lot of psychological stress due to the inability to achieve the desired social role. Couples who decide to continue assisted reproductive therapy (ART) during the epidemic also experience the psychological impact of the COVID-19 epidemic, which affects their daily lives due to social isolation, quarantine, travel restrictions, and cancellation of treatment. Therefore, the purpose of this study was to assess the mental health of infertile couple pausing or delaying their treatment due to the COVID-19 pandemic. PubMed, Scopus, Cochrane, Embase, Web of Science, ScienceDirect, Google Scholar, Research Gate, and the World Health Organization databases and websites were systematically searched for original studies concerning abortion in the era of COVID-19 pandemic published by August 15, 2021. We used the following keywords: "COVID-19 Corona virus, infertility, reproductive technique, fertilization, assisted reproduction, pregnant termination, psychological, in vitro mental status, depressive symptoms, and anxiety." In sum, after automatically and manually search and excluding duplicates, 269 articles were found. In final, after screening, 18 articles were selected. Most patients experienced negative emotions during the COVID-19 epidemic. When reproductive services were re-established, participants showed higher levels of anxiety and lower quality of life than before quarantine. Women who thought pregnancy was more important than getting COVID-19 had higher levels of anxiety than women who thought otherwise ($P < 0.05$). The COVID-19 pandemic has negative impacts on the mental health and quality of life of patients seeking fertility services and coping with it requires timely and appropriate psychological intervention, accurate information, and social and organizational support.

Keywords:

COVID-19, infertility, mental health

Introduction

Infertility that defined as being unable to achieve pregnancy after 12 months of regular unprotected sexual intercourse experienced by one in six couples.[1] The procedure of undergoing medical treatment is challenging for infertile couples and needs significant time, budget, and tolerance for the physical effects of actions and hormonal injections.[2,3] Multiple cycles such as frozen embryo transfer and *in vitro* fertilization (IVF) treatments often require to achieve pregnancy that leading to emotional wavering between hope and grief and by this means placing couples at increased risk of mental health disorders.[4,5]

Infertile couples experience a great psychological stress through its failure to achieve a preferred social role.[6] Infertility presents both as an acute and chronic stressor.[7] Infertile couples also experience mental disorder such as depression, anxiety, frustration, low self-esteem, sexual distress, and guilt. Furthermore, not paying attention to the emotional disorders of infertile couples and secondary symptoms to infertility, such as problems in interpersonal relationships, marital dissatisfaction, and

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decreased sexual desire, creates a vicious cycle that reduces the likelihood of infertility treatment.[8,9]

The COVID-19 pandemic that began in early 2020 compounded the situation even more by adding other obstacles and suspensions in fertility treatment. This disease created challenges for all of human race in all aspects of life, especially mental health.[10] Some studies stated that there is poor knowledge on the psychological health of infertile couples during the pandemic.[11-13] The quarantine were inflict on people in order to control and limited the spread of this contagious disease.[14] Couples who have decided to continue with an assisted reproductive therapy (ART) during the pandemic also confronted the psychological effect of the COVID-19 pandemic this is because social distancing, quarantine, travel restrictions, cancellation of treatment have affected every person's daily life.[15] Gordon and Balsom study results showed that the suspension of fertility treatments has had a notable negative impact on women's mental health and quality of life. Optimistic characters, high-quality social support, greater infertility acceptance, and less use of elusion, were protective factors against the negative effects of treatment pause on well-being.[12] Systematic review studies, by clearly stating-the objectives, summarize the reported results and provide the best form of evidence for impartial judgment. They are also an essential tool for summarizing existing evidence accurately, correctly, and reliably. Despite the fact that several studies have been conducted on the mental health status of couples during the COVID-19 epidemic, but the overall impact of this period and the resulting changes, including quarantine, delays, and suspensions of assisted reproductive techniques on the couple's mental state is unclear. So, there was need for a systematic study that results in clear and consistent. Also, it is necessary a comprehensive guide for policymakers and researchers. On the other hand, the results of this study can be used in planning to improve the health of the community. Therefore, the purpose of this study was to assess the mental health of infertile couple pausing or delaying their treatment due to the COVID-19 pandemic.

Materials and Methods

Study design

In this rapid systematic review, we systematically searched PubMed, Scopus, Cochrane, Embase, Web of Science, ScienceDirect, Google Scholar, Research Gate, and the World Health Organization databases and protocols and guideline related to infertility. Our search was based on search strategy. After downloading identified studies, the duplicate records were removed. Two researchers followed a two-phase screening process to identify the eligible results. First, they examined the title and abstract of the retrieved records and the ineligible studies were removed. Then, their full texts were evaluated based on their cohesion to the aim and inclusion/exclusion criteria and the eligible studies were included for qualitative synthesis (Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol).

Search strategy

Strategy search included the following:

A: COVID-19, corona virus

B: Infertility OR reproductive technique OR IVF OR assisted reproduction OR "pregnant termination"

C: Psychological OR mental status OR depressive symptoms OR anxiety

D: A and B and C.

Eligibility criteria

We included the original articles related to our research question from the start of the pandemic (December 2019) until September 26, 2021. Therefore, the exclusion criteria are as follows:

1. Nonoriginal studies, including reviews, commentaries, opinions, or any studies with no original data
2. Pure laboratory or animal studies not conducted on humans
3. Duplicated results in databases
4. Ongoing projects (e.g., articles discussing the protocol of a future study).

Study selection and data extraction

Initially, all studies with related keywords were collected. In the next step, the title and abstract of each article were reviewed and irrelevant studies and articles with non-English language were removed. The full texts of the retrieved articles were reviewed by two independent authors (MI and MHB). A third author (NS) was also considered as the arbiter to resolve any disagreements. The studies that went through these steps were arranged according to a predetermined checklist. In this study, extracted variables included the first author, type of study, country (year), main variable of the study, psychological status assessment tool, fertility care duration, main findings, and other Findings. The disagreement between the researchers was resolved through discussion with a third researcher.

Quality assessment

The quality and eligibility assessment of articles was performed by two researchers in parallel and independently. Any discrepancies in their findings were discussed and resolved. The study protocol in PROSPERO is registered with this code CRD42021282312.

Results

Descriptive results

From a total of 269 articles, 251 studies were excluded after peruse [Figure 1]. In the end, 18 were included in our study and their key information is summarized in Table 1. Among these 18 studies, 15 studies were descriptive method, 1 was survey, and 2 were performed in qualitative method. All of these studies five studies conducted in the USA, three studies in Italy, and two studies in Canada, China, and Turkey each had two studies. Israel, Spain, the UK, and India each had a study.

The tools used to assess the psychological status in studies (Table 1) included: The Generalized Anxiety Disorder-7 scale (GAD-7), 27 items of the Ways of Coping-Revised scale (WOCR), anxiety ((6 item short-form State Trait Anxiety Inventory (STAI-6)), resilience ((10-item Connor-Davidson Resilience Scale (CD-RISC-10)), An anonymous 26-item online questionnaire, Quantitative questions were from the daily record-keeping form that was designed from cognitive stress and coping theory, Public Instagram posts, Infertility coping questionnaire, Illness Cognition Questionnaire (ICQ), Psychosocial impact of treatment suspensions, Online questionnaires validated scale(Mental Health Inventory (MHI-5)) , online survey with self-administered questions, short form of the Spielberger State-Trait Anxiety Inventory (STAI), visual analogue scale for anxiety (VAS), Patient Health Questionnaire-9 (PHQ-9), Mental Health Inventory-Short Form (MHI-5), Self-Mastery Scale, Mediterranean diet (MEDAS questionnaire), physical exercise (IPAQ-SF), anxiety and depression questionnaire (HADS), quality of life related to fertility (FertiQol), Life orientation test-revised (LOT-R), and State-Trait Anxiety Inventory (STAI). Also, there were used the survey questionnaire addressed questions to understand any change in their behavior such as sleep pattern, anxiety, anger, and fear during the pandemic, Psychological Questionnaire for Public Health Emergencies, Beck Depression Inventory (BDI), Beck Hopelessness Scale (BHS), Spielberger State-Trait Anxiety Inventory (STAI-T and STAI-S), and Fear of COVID-19 scale (FCV-19S).

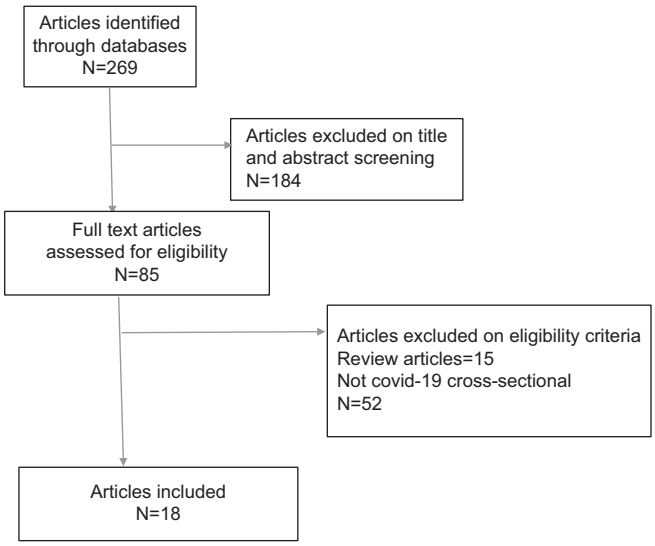

Figure 1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart for the selection of included trials

Analytical results

Infertility was the third most stressful factor among respondents (66%).[16] Most patients had high distress (65%).[17] Most patients experienced negative emotions during the COVID-19 epidemic.[18] Less resilience was associated with a history of anxiety ($P < 0.0001$).[19] The closure of fertility clinics had negative, uncontrollable, and stressful effects on people's lives ($P < 0.001$).[13] Decreased quality of life was associated with decreased mental health associated with delayed infertility treatment ($P < 0.0001$).[15] Grief and anxiety were the most common emotional reactions.[20,21] The prevalence of anxiety and depression was significantly higher in women (41.5%, $P = 0.012$).[11,22] The anxiety scores reported in the Bortoletto study were higher than the depression scores.[23] More than 50% of women were concerned about their infertility treatment plans.[20] More self-control and more social support were associated with less distress ($P < 0.01$).[24] When reproductive services were re-established, participants showed higher levels of anxiety and lower quality of life than before quarantine.[25] Women with an infertility period of more than 3 years (STAI-S, $P = 0.031$) had higher anxiety scores than women with an infertility period of <2 years (STAI-T, $P = 0.005$). Anxiety scores were higher in women who underwent IVF than in women who did not undergo IVF ($P = 0.007$).[26] The effects of cancellation of the couple's infertility treatment cycle were observed in the form of mood disorders, anxiety, sleep disorders, and depressive symptoms.[27] The mental health scores of participants in the COVID-19 disease control period were lower than those in the outbreak period.[28] Most women with secondary infertility ($P = 0.001$) had higher rates of depression and hopelessness than women with primary infertility ($P = 0.000$).[29] State anxiety levels were significantly higher in women over 35 years of age ($P = 0.006$). Women with reduced ovarian reserves had higher anxiety than other causes of infertility. Women with long-term infertility also had higher levels of anxiety. Women who thought pregnancy was more important than getting COVID-19 had higher levels of anxiety than women who thought otherwise ($P < 0.05$).[30]

Discussion

The aim of this study was to review the impact of COVID-19 on psychological status of infertile couple.

Table 1: Details of the impact of coronavirus disease-2019 on psychological status of infertile couple

ID	First author (reference) and (country year)	Type of study and mainly study variable	Participants and mean age (SD)	Psychological status assessment tool	Fertility care duration (year)	Type of fertility treatment	Main findings	Other findings
1	Lawson, USA (2021)	Cross-sectional, Psychological distress	*n*=787 patients from an academic fertility center, 37.24 (5.34)	The GAD-7 scale 27 items of the WOCR scale	6 month to +2 year	IUI, IVF	About 65% had moderate to high distress	Distress was associated with duration of infertility, age, social support and avoidant coping strategies (P<0.001)
2	Seifer, USA (2021)	Cross sectional cohort, Psychological experience and coping strategies	*n*=240 Female and Male, 35.5 (4.1)	Anxiety 6 item short-form STAI-6 and resilience CD-RISC-10	>1.5 years	IUI, IVF, FET (frozen embryo transfer) Oral medication (Clomid, Letrozole) Egg freezing Donor sperm	Lower resilience associated with having a history of anxiety (P<0.0001) and having received oral medication as prior infertility treatment (P<0.0001) higher resilience scores (P<0.0001) were associated with decreased anxiety	coping skills that use by patient was daily routine, going outside regularly, exercising, maintaining social connection via phone, social media or Zoom and continuing to work
3	Vaughan, USA (2020)	Cross-sectional online, Psychological statue	*n*=2202 non-pregnant women, 35.4 (4.6)	An anonymous 26-item online Questionnaire	-	-	Infertility was the third most common stressor among the respondents (66%)	Only 6% of patients indicated that infertility treatment, including IVF, should not be accessible during the COVID-19 pandemic
4	Boivin, UK (2020)	Cross-sectional, coping strategies and emotional reactions	*n*=450 female and male, 33.65 (4.4)	Quantitative questions were from the daily record-keeping form that was designed from cognitive stress and coping theory	3.5 (2.22) year	IVF	Fertility clinic closure has negative impact on their lives, and to be very or extremely uncontrollable and stressful (P<0.001) Participants described more negative than positive emotions (P<0.001)	To cope with closure slight to moderate ability was reported About 12% reported not being able to cope at all with the condition and severe feelings of hopelessness and deteriorating well-being and mental health
5	Perone, USA (2021)	Qualitative analysis, impact of COVID-19 on IVF patients	*n*=563 public Instagram posts	Public Instagram posts	-	IVF	Most patients were affected by the epidemic and COVID-19 has negative emotions in posts were categorized	Posts that provide support have almost tripled, highlighting the resilience of the IVF community
6	Gordon, Canada	Cross-sectional, depressive symptoms, perceived mental health impact, and Change in quality of life related to treatment suspensions	*n*=92 women that fertility treatments Had been cancelled, 34.2 (4.6)	Infertility Coping Questionnaire ICQ Psychosocial impact of treatment suspensions	36.0 (33.0) month	IUI, IVF, FET	Decrease in overall quality of life (P<0.0001) as well as a significant decline in mental health related to treatment suspensions (P<0.001) was found	52% of women Report clinical signs of depression
7	Haham, Canada	Mixed-methods (cross-sectional/ thematic analysis), emotional Reactions and psychological distress	*n*=181 women, ≤35-≥41	Online questionnaires MHI-5 validated scale	Up to 1 year	IUI, IVF, FET	Sadness and anxiety were the most common emotional reactions	COVID-19-related anxiety (P=0.04) and disagreement with treatment suspension (P=0.001) were found to be significantly related to women's psychological distress

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ID	First author (reference) and (country year)	Type of study and mainly study variable	Participants and mean age (SD)	Psychological status assessment tool	Fertility care duration (year)	Type of fertility treatment	Main findings	Other findings
8	Cirillo, Italy	Cross-sectional, lifestyle and emotional state	*n*=140 women , 39.4 (5)	Online survey with self-administered questions	-	ART	Levels of anxiety and sadness were increased in about 30%, and of boredom in 25%. The percentage of women worried about their planning infertility treatment was >50%	Changes in body weight during lockdown in 80% of women
9	Esposito, Italy	Cross-sectional, anxiety	*n*=627 patients, 31-39	Short form of the Spielberger STAI VAS for anxiety	<1 year to longer than 2 years	ART	The mean STAI score reported 49.8±15.3 with an overall incidence of STAI >36 of 71% The mean VAS scale for anxiety perception reported 45.3±15.3	Women were more emotionally distressed, anxious and depressed than men In addition to the COVID-19 epidemic itself, ART cessation programs increase the level of psychological stress in patients
10	Barra, Fabio, Italy (2020)	Cross-sectional, Presence, severity of anxiety and depression; risk factors related to these psychological disorders	*n*=646 Infertile women and men, age of the women and men included in the study was 37.3±4.6 and 38.4±6.2 years	GAD-7 and the PHQ-9	-	IVF	The prevalence of anxiety and/or depression was significantly higher in women (41.5%, *P*=0.012)	Time spent on COVID-19 news (>1 hours per day, *P*=0.034), partner with evidence of psychological disorder (*P*=0.017), and in women with a diagnosis of poor ovarian reserve (*P*=0.052) and endometriosis (*P*<0.001) or uterine fibroids (*P*=0.037) were significantly associated with depression or anxiety
11	Reut Ben-Kimhy, Israel (2020)	Cross-sectional, the perceptions of infertility patients and the factors correlating with their psychological distress, following suspension of fertility treatments during the COVID-19 pandemic	*n*=297 women whose fertility treatment was suspended following the COVID-19 pandemic, 37±6.23	Short Form and Self-Mastery Scale	2.67±1.77 month	-	More self-control and more perceived social support were associated with less distress (*P*<0.01)	None of the background characteristics had a significant contribution to the psychological status of patients. Feeling forlorn following the pendency of treatments was associated with higher distress (*P*<0.01)
12	Gemma Biviá-Roig, Spain	Cross-sectional, To analyze the effects of confinement and the suspension of reproductive medical care on the lifestyle (diet, physical exercise, and smoking habits), anxiety and depression, and quality of life of infertile women	*n*=124 Infertile women, 33.5±3.7 years	Mediterranean diet (MEDAS questionnaire), physical exercise (IPAQ-SF), anxiety and depression (HADS), and quality of life related to fertility (FertiQol)	-	-	Levels of depression and anxiety increased significantly. When reproductive services were re-established, participants showed higher anxiety level scores compared to the pre-quarantine situation and lower mean scores on the FertiQol Scale	There was a significant increase in levels of depression and anxiety (*P*<0.001) and an increase in tobacco use in women smokers before and during quarantine. On average, participants spent more hours sitting (*P*<0.001)

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ID	First author (reference) and (country year)	Type of study and mainly study variable	Participants and mean age (SD)	Psychological status assessment tool	Fertility care duration (year)	Type of fertility treatment	Main findings	Other findings
13	Pietro Bortoletto, USA (2021)	Web-based cross-sectional, The psychosocial response of the infertile population whose care was truncated due to the COVID pandemic	*n*=117 Infertile patients, 38.3±4.2	LOT-R and the HADS	-	Ovarian stimulation, ovulation induction, embryo transfer cycle	28.2% of the reported scores of depression and 64.6% of the reported scores of anxiety in HADS were in the borderline-abnormal to abnormal range	The mean score of the revised life orientation test was 14.1 (5.1) with an optimism score of 6.8 (2.6) and a pessimism score of 7.3 (2.9)
14	Lian-Bao Cao, China (2021)	Cross-sectional, To compare the anxiety level between infertile female patients in quarantined and nonquarantined areas during the second wave of COVID-19 epidemic	*n*=759 infertile female patients	STAI	<2 years and >3 years	IVF/non IVF	The mean STAI-S score (P=0.031) and the STAI-T score (P=0.005) of women who were infertile for >3 years were significantly higher than women with <2 years of infertility history. The score of T-state anxiety questionnaire in infertile women who underwent IVF was higher than non-IVF women (P=0.007), but no significant difference was observed with STAI-S score	There was no significant difference in the mean STAI score of the two groups of infertile women, but the response to the emotional state showed that women in the quarantine group were more prone to anxiety. Participants in the quarantine group spent more time each day paying attention to the dynamics of the epidemic, and their sleep (P<0.01) and mood (P<0.01) were worse than those outside the quarantine group. The family relationships of the quarantine group were darker than those of the nonquarantine group
15	Harpreet Kaur, India (2020)	Survey, The impact of the COVID-19 pandemic on the patient's behavior and fertility treatment	*n*=100 Patients (female and male) enrolled for infertility treatment, 70% of respondents were in the age group of 25-35	The survey questionnaire addressed questions to understand any change in their behavior such as sleep pattern, anxiety, anger, and fear during the pandemic	-	IVF, IUI, FET	The effect of canceling the infertility treatment cycle in couples was observed in the form of mood disorders, anxiety, sleep disorders and depressive ideas.	The results showed that 95% of couples find the cancellation of the treatment cycle distressing and 16% find it very distressing. About half of the couples (49.4%) wanted to start fertility treatment immediately

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ID	First author (reference) and (country year)	Type of study and mainly study variable	Participants and mean age (SD)	Psychological status assessment tool	Fertility care duration (year)	Type of fertility treatment	Main findings	Other findings
16	Pengfei Qu, China (2021)	Cross-sectional, Mental health of women undergoing assisted reproductive technology (ART) treatment during the novel coronavirus pneumonia	n=1491 women undergoing ART, The majority of participants were between 30 and 35 years old (50.58% for the outbreak period and 46.08% for the control period)	Psychological questionnaire for public health emergencies	-	IVF	The total scores related to mental health among participants during the control period were lower than participants in the period of disease outbreak. Lower scores were observed for depression, neurasthenia, fear, compulsive anxiety, and hypochondriasis during the control period compared to those during the outbreak period (P<0.001)	Both ART-treated women who were screened during the outbreak period and those who were screened during the control period had high scores in the area of fear (0.88, 0.51)
17	Banuhan Şahin, Turkey (2021)	Cross-sectional, Level of depression and hopelessness during the COVID-19 outbreak	*n*=220 Infertile women, 30.66±6.064 years, ranged between 18 and 48 years	BDI and BHS	-	-	Most women with secondary infertility (P=0.001) had higher mean scores of depression and hopelessness than women with primary infertility (P=0.000). For each group, a strong positive correlation was observed between levels of depression and hopelessness	
18	Vehbi Yavuz Tokgoz, Turkey (2020)	level of fear and anxiety related to the COVID-19 outbreak, in infertile women whose ART cycles were delayed due to the pandemic	*n*=101 infertile women, 33.3±4.3 years	Spielberger STAI-T and STAI-S and Fear of COVID-19 Scale (FCV-19S)	-	ART	The state- anxiety levels were significantly higher in women over 35 years (45.0±5.2 versus 42.2±4.5, P=0.006). Women with reduced ovarian reserve had more anxiety than other causes, but this difference was not significant (44.7±5.2 versus 42.5±5.0, P=0.173). Women who thought that pregnancy was more important than being infected with COVID-19 had higher levels of anxiety than women who thought otherwise. Decreased ovarian reserve and long duration of infertility were significantly associated with higher levels of anxiety (OR=2.5, P<0.05)	

GAD-7=Generalized Anxiety Disorder-7, WOCR=Ways of Coping Revised, IVF=*In vitro* fertilization, STAI-6=State-Trait Anxiety Inventory, CD-RISC-10=10-item Connor-Davidson Resilience Scale, ICQ=Illness Cognition Questionnaire, MHI=Mental Health Inventory, STAI=State-Trait Anxiety Inventory, STAI-T and STAI-S=Spielberger STAI, VAS=Visual Analog Scale, LOT-R=Life Orientation Test-Revised, HADS=Hospital Anxiety and Depression Scale, BDI=Beck Depression Inventory, BHS=Beck Hopelessness Scale, COVID-19=Coronavirus disease-2019, IPAQ-SF=International Physical Activity Questionnaire-Short Form, HADS=Hospital Anxiety and Depression Scale, MEDAS=, PHQ=Patient Health Questionnaire, FET=Frozen embryo transfer, ART=Assisted reproductive therapy, SD=Standard deviation, OR=Odds ratio, IUI=Intrauterine insemination, FertiQol=Fertility quality of life questionnaire

The findings showed that pregnant women had higher levels of anxiety about COVID-19 when compared to infertile patients. This may have been influenced by the vulnerability of pregnant women and fetuses to natural disasters and major disease outbreaks and the lack of clarity about the impact of COVID-19 on the fetus.[31] These factors also reduce the desire and motivation of infertile couples to start or continue infertility treatments. In Peivandi's study, the greatest factor in reducing the desire and motivation to start or continue treatment was due to fear of developing COVID-19 due to being in the treatment environment and feeling afraid of the negative impact of the virus on pregnancy. So that women who were well aware of COVID 19, this decrease in desire and interest was observed in them less.[32] Furthermore, to prevent the spread of coronavirus, childbirth preparation classes, which have played an important role in raise awareness and reducing the fears and anxieties of pregnant mothers, are not held.[31]

The present study showed that quarantine can reduce the quality of life and mental health status of people during the COVID disease epidemic. Because during quarantine, people's lifestyle changes and this can affect their quality of life and mental health. Studies have shown that smokers increase their smoking, change their eating habits, and decrease their mobility, all of which affect their quality of life. An unhealthy diet along with reduced physical activity leads to weight gain during quarantine, all of which lead to a reduced chance of a successful pregnancy in women.[20,25] Due to the harmful effects of sedentary and sedentary lifestyle on health, experts encouraged people to exercise at home. However, scientific evidence shows that outdoor exercise, especially in green spaces, can have a positive effect on health compared to indoor exercise.[25]

Infertility diagnosis and fertility treatments can cause depression and high levels of anxiety, even under normal circumstances. In the coronavirus epidemic, psychological problems increase due to the suspension of treatment programs and their impact on treatment cycles and quality of life.[24] Of course, the level of social support for people is very important and can reduce the level of anxiety and depression.[12,24] Furthermore, infertile couples think that they themselves have no control over the infertility treatment process and this is emotionally damaging them, they will feel helpless if treatment is suspended, which is directly related to depression and anxiety.[24,26] Women who had been trying to conceive for a longer time reported a greater negative mental health effect of treatment suspensions.[12]

Infertile patients undergoing IVF have higher levels of anxiety and depression. Probably, low perception of personal control and avoidant coping style might be positively associated with fertility-related stress and state anxiety. State-anxiety levels were higher in women above 35 years. Probably, diminished ovarian reserve and previous ART failure are effective in clinical state-anxiety.[22,30] On the other hand, studies have shown that depression in men reduces the volume and quality of sperm, which exacerbates the problems of infertile couples.[32]

Limitations

The limitation of this study was that due to the high heterogeneity between the studies and tools used and primary outcomes measured, a more objective systematic review of each psychological outcome could not be performed. The positive point of this study is to collect all the related psychological situation of infertile couple following COVID-19 pandemic in the world as a comprehensive study which can help health provider for deeper understanding of these couples in order to identify psychosocial needs. It is suggested that future studies to design comprehensive studies with appropriate psychological intervention in this field.

Conclusion

The COVID-19 pandemic has negative impacts on the mental health and quality of life of patients seeking fertility services and coping with it requires timely and appropriate psychological intervention, accurate information, and social and organizational support.

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Conflicts of interest

There are no conflicts of interest.

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