

The Effect of Covid-19 Pandemic on Women's Reproductive Health issues: A Narrative Review

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Review article</p>	<p>Background & aim: Reproductive health is one of the most essential steps in achieving sustainable development, which generally changes in crises. Restrictions such as home quarantine and social restrictions due to Covid-19 pandemic have reduced women's access to the services that is effective on their reproductive health. In this study, the effect of Covid-19 pandemic on women's reproductive health issues was reviewed.</p> <p>Methods: In this narrative review, searches were performed in databases such as PubMed, Google Scholar, Science Direct, Cochran library, and Farsi database of Magiran in 2019-2020 using the keywords including Covid-19, reproductive health, sexual satisfaction, mental health, domestic violence, childbearing, pregnancy, fertility, partner violence, maternal health, and family planning.</p> <p>Results: Covid-19 pandemic has different effects on reproductive health issues. Studies have shown an increase in the frequency of sexual intercourse due to increased presence of the spouse at home, but also there was a decrease in the quality of sexual intercourse due to the stress caused by the Covid-19 pandemic. Also regarding women's mental health, an increase was observed in domestic violence as well as stress, anxiety and depression in women of reproductive age.</p> <p>Conclusion: In the pandemic high-risk situation, it is necessary that health care teams to focus more on women's reproductive issues and screen them in terms of mental health, domestic violence, sexual relationships, use of contraceptive methods and intending for childbearing. Providing virtual group educations and use of national media, could enhance the awareness of women of reproductive age.</p>
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Introduction

The Covid-19 virus became a pandemic worldwide by the end of 2019, and the World Health Organization declared an emergency health status for the whole world. The most common routes of transmission of the corona virus include direct transmission (cough, sneezing, and inhalation of drops) and contact transmission (contact with mouth mucous membranes, nose, and eyes) (1). The current situation in the world has affected almost all important economic, political, social, military and even mental health aspects of the people of

different countries and has caused a state of crisis (2).

Crises are the events that occur suddenly as the result of a natural event or human actions and cause multiple damages to humans and human societies. Reproductive health is one of the most important public health issues in crises. It is necessary to discuss reproductive health in crises due to the collapse of health infrastructure and harm to the families (3).

Reproductive health is considered as one of the most essential steps to achieve sustainable development in different societies (3, 4).

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Reproductive health means complete social, psychological and physical well-being in all matters related to the reproductive system and its functions and processes, not just lack of disease or absence of organ defect (5), and its components include reproductive health rights, sexual health, menopausal physical and mental health, premarital counseling, safety and health during pregnancy and childbirth, men's participation in reproductive health, puberty health in girls and boys, empowerment of women, prevention and treatment of genital cancers in women, prevention and treatment of sexually transmitted infections and AIDS, nutrition and education of children and adolescents, family planning and contraception (6).

One of the dimensions of reproductive health is violence, which increased under the influence of the Covid pandemic due to quarantine conditions and reduced access of the people to the supportive networks. Quarantine policies not only increased domestic violence, but also led to drug abuse, anxiety, depression and suicide (7). Various studies have reported a positive association between domestic violence and depression, unwanted pregnancy and sexual dysfunction (8).

Sexual function is another aspect of reproductive health, which has been influenced by multidimensional changes in the covid pandemic. Sexual desire and the frequency of sexual intercourses have significantly increased, but the quality of sexual intercourse has decreased. Meanwhile, people's desires for pregnancy, use of contraceptive methods and menstrual disorders have significantly increased (9). People's stay at home, social distance, continuous presence of children at home, fear of infection and lack of physical contact with relatives are of the most important causes of changes in sexual behaviors (10).

In the current high-risk situation, due to the uncertainty of the recovery time of this disease, additional psychological pressure is imposed on people. This pressure is mainly due to fear and anxiety about infection and controlling the disease (11). Insufficient information about the disease, long quarantine, financial loss due to restrictions, fear and anxiety about infection, and being away from loved ones can have a

significant impact on mental health of people, especially women (12). Negative emotions and thoughts during this period reduce the function of the immune system and lead the person into a vicious cycle (13).

According to the study by Yao et al., patients with covid are more at risk of psychological disorders such as stress, depression, fear, and negative thoughts (14). Among these, pregnant women are of particular importance, because if stress and anxiety are not properly identified, they will be associated with an increased risk of pregnancy poisoning, preterm labor, low birth weight, and low Apgar score in the infant (15).

In the current situation, it is necessary to examine the effects mentioned above, because after determining the effects, the health care teams should identify high-risk women, then develop training programs and use social media to complete the necessary training for the public. This review article attempted to summarize the issues related to women's reproductive health in the Covid period and after it. These issues include childbearing in the current situation in the country, evaluation of the impact of Covid disease on Iran's fertility rate, domestic violence, marital relations, unwanted pregnancy and women's mental health during the Covid pandemic.

Materials and Methods

This narrative review study was conducted to investigate the effect of Covid 19 pandemic on women's reproductive health components. In this narrative review study, the search was performed in the databases such as PubMed, Google scholar, Science Direct, Cochran library, Magiran in 2019-2020 by using the keywords including: covid-19, reproductive health, sexual satisfaction, mental health, domestic violence, childbearing, pregnancy, fertility, emotional violence, partner violence, depression, anxiety, stress, post-traumatic stress disorder, maternal health, neonate, sexual dysfunction, psychological, quality of life, family planning and contraceptive. The search process was performed by two authors independently. In the case of disagreement, it was consulted with third person.

The list of references used in the articles was reviewed for a comprehensive search. The results of the studies were evaluated based on

the inclusion and exclusion criteria. Inclusion criteria for initial review included: Persian and English articles, full-text articles that directly addressed the effect of Covid on one or more aspects of reproductive health. Case reports, brief reports and letters to editors were excluded from the study.

Results

The Covid-19 pandemic has different effects on the components of reproductive health, including childbearing, domestic violence, sexual relations, unwanted pregnancy, and the health component. These changes generally include reluctance to childbearing due to the concerns about disease transmission and the consequences of pregnancy and childbirth during this period, changes in the quality of sexual intercourse, increased domestic violence due to more presence at home, lack of access or limited access to different types of contraceptive methods, increasing rate of unwanted pregnancies and women's mental health being at risk, which are described in details below:

1. Childbearing during the Covid Crisis:

What is the purpose of childbearing advices? Contraception or encouraging childbearing One of the most important issues is childbearing. This phenomenon, as a social issue, has affected all societies, especially developing countries. Decreased fertility, as the most important demographic change over the last three decades, has caused concern, especially in Iran. The total fertility rate in Iran has decreased from 7 children in 1978 to 1.9 children in 2016, and this rate has reached to 1.7 children in the census of 1990. The sudden change in the fertility process from very high to very low levels and even below the replacement level is the main concern in the Iranian population pyramid.

Some countries believe that whatever the population become larger, the power of the country will increase, so they try to increase the population. In some societies, by implementing population control policies, they will reduce their population growth rate and this will increase the elderly population (16). The Covid pandemic has created critical conditions for all sections of society. Before emerging Covid, decrease in the population was proposed in the

country; this issue seriously needs further investigation with the prevalence of Covid.

The expansion of Covid can affect birth rates, mortality, immigration patterns, marriage and divorce. This effect will be both direct and indirect; one of the most obvious direct effects is the increase in mortality rate. Increased mortality on the one hand affects the fertility rate and on the other hand causes economic recession (indirect effect), and the lack of welfare facilities for the families can lead to reluctance for childbearing. On the other hand, delay in marriage and aging can lead to loss of fertility and reduce people's access to assisted reproductive techniques (17).

The question which is now proposed is that counseling should be aimed at encouraging the people for childbearing or not. Is there any danger for people? In answer to this question, it should be said that the studies performed on semen and testicular specimens of men recovered from Covid have shown that the virus is not present in genital fluids. Therefore, it does not seem to be transmitted through sexual contact. Therefore, it is possible to try for childbearing after complete recovery from the disease. It should be noted that in men with Covid, the gonads and sex hormones have been damaged, which indicates the need for early pregnancy in childless couples.

Due to the emerging of Covid disease, the effects of maternal infection during the first trimester of pregnancy are still unclear. Therefore, on the one hand, it can increase concern about the consequences of pregnancy during the Covid period. Although most studies have not reported maternal-fetal transmission; however, vertical transfer from mother to fetus has not been ruled out, which can increase couples' concerns about pregnancy. According to the American College of Obstetricians and Gynecologists Guideline, pregnancy during Covid pandemic is a personal choice and the individuals should become pregnant independently based on their health status, potential risks and other factors such as physical and mental fitness (18, 19). In this period, the contraceptive methods should be available to the public and a range of long-term reversible effect methods to short-term methods, such as

emergency contraceptive pills be introduced to the people.

According to the mentioned above, it is necessary to make a proper plan according to the current situation of the country with the cooperation of health care teams, reproductive health specialists, and economics and health specialists.

2. Covid-19 Pandemic and Domestic Violence:

Violence against women is a pervasive public health issue and a violation of human rights. Domestic violence refers to any sexual, physical or psychological abuse. About 35% of women in the world are subjected to sexual or physical violence, which is usually caused by their husbands (20). Violence against women increases in emergencies, especially epidemics. Coronavirus causes mental disorders such as stress, anxiety, obsession, anger and aggression due to the characteristics such as unknowing the dimensions of the phenomenon, how to prevent and treat the disease, and disruption of normal life processes. In these circumstances, the likelihood of violence and abuse to resolve conflicts and problems in family relationships will increase (21).

The study of Sadrzadeh et al. showed that the most important cause of domestic violence was the unemployment of the spouse and the unfavorable economic conditions of the families (8). Other factors include the couple's level of education and age. In general, women affected by violence with lower economic status are less cared and screened due to their husbands' opposition. Lack of timely detection increases the risk of unwanted pregnancy, miscarriage, and infectious diseases, sexually transmitted infections, and AIDS. In the case of violence during pregnancy, the mother's physical and mental health is also endangered and the child's growth is decreased and motor skills and cognitive development are delayed. Violence against pregnant women is positively correlated with the incidence of nutritional disorders, sleep disorders, psychiatric disorders and suicide. This violence is also considered as a stressful condition for women of reproductive age, which will affect the health acute and chronic reproduction (22, 23).

3. Covid 19 and changes in sexual relations:

Sexual function is an important part of the life and as a human behavior. It is influenced by many biological, psychological and social factors. Sexual dysfunction includes disorders in sexual desire, arousal, orgasm, and sexual pain that cause interpersonal and marital problems (24). The Covid-19 epidemic has changed people's lifestyles. Home quarantine and lack of contact with the outside environment have increased the prevalence of psychiatric disorders such as anxiety, depression, and post-traumatic stress symptoms (25, 26). With emerging of the disease, control of sexual activity is recommended to maintain physical distance; but, on the other hand, people tend to have more sexual relations because of emotional motivation and insecurity situation.

Sexual activity increases as a psychological response to stressful situations. The study by Kissinger et al. showed that increasing sexual relations reduces stress, but the results of the studies showed that the changes in sexual relations after the Covid pandemic were different. The study by Yasser Arfat et al. that evaluated the effect of Covid on the number of sexual relations showed that couples had 1 to 5 times weekly sexual relations with their sexual partners after the start of the holiday (28). The study of Zhian Martin et al. showed that during the quarantine period, the average number of couples' sexual relations has decreased, which is due to the reduction of psychological stimuli and the lack of a safe environment for sexual intercourse (29).

4. Unwanted Pregnancy and Covid-19 Pandemic

Pregnancy is considered as one of the stages of women's self-actualization; however, unplanned pregnancies can lead to the problems such as domestic violence, rejection, imposing new responsibilities on women, and increasing the adverse consequences of pregnancy, including: intentional abortion, maternal death due to infectious abortion, premature labor, and low birth weight. Unplanned pregnancy is associated with an increase in negative feelings about pregnancy and increases a person's perception of pain during labor and the chance of postpartum depression is increased (30). During the Covid epidemic, health organizations'

funding was spent on providing masks and personal protective equipment, virus detection services, ventilators, and construction in hospitals to increase ward space for hospitalization. This led to no attention to reproductive health and created new challenges for health care providers and women of reproductive age. Lack of access to family planning services has increased the likelihood of unwanted pregnancies and unsafe abortions (31).

Governments' focus on preventing the spread of the virus, the cost of making vaccines, and prioritizing emergency health services has made it difficult to discuss family planning counseling and contraception. Studies have shown that unwanted pregnancies have increased during the Covid crisis due to lack of access to contraceptives, leading to increased mortality and morbidity in mothers and infants. The data show that the rate has been higher in developing countries. On the other hand, the adverse consequences of pregnancy is increased in women who become pregnant during this period that the most important reason is the lack of access to appropriate health care services. The American Society of Obstetrics and Gynecology recommends that remote health visits for counseling, screening, prescribing, and management of family planning complications be placed on the programs of health care providers during this time. Familiarity with emergency methods of contraception and how to use it be taught to people. The World Health Organization has also recommended virtual education by health care providers (32).

5. Covid-19 pandemic and women's mental health

Covid epidemic and home quarantine have had different effects on the psychological and social aspects of society. According to the study by Wu et al., conducted on the Covid epidemic, depression significantly increased in pregnant women (15). This increase can lead to restrictions and reduced communication with relatives. Pregnancy is associated with an increased need for emotional support; but some pregnant women reduce their contact due to fear of coronavirus disease and even may not perform prenatal care. Stress caused by disease can also increase the risk of preterm labor by increasing blood cortisol levels (33).

Increased maternal anxiety and stress are also associated with pregnancy poisoning, low birth weight, low Apgar score, nausea and vomiting during pregnancy. According to the research conducted in China, the incidence of depression during pregnancy has increased during this period. Regarding to the concern related to vertical transfer from mother to fetus, pregnant women might delay prenatal care; so psychological issues will not be identified in the early stages of the disease. Meanwhile, many women wanted to have a cesarean section due to excessive anxiety and concern. Mothers' concerns about postpartum care, including vaccinations and screening at birth, will continue (34).

Discussion

The overall results of the study showed that the Covid pandemic could have a negative impact on women's reproductive health aspects; reluctance to childbearing is the most important part, because if there is no counseling, it may have a negative impact on the overall fertility rate of communities in the future. To increase fertility rate, special programs should be planned on the agenda to strengthen the family foundation, empower and support the couples and improve their living conditions. Given the public's concerns about pregnancy at this time, it is necessary to raise public awareness. Then, create a proper culture by the relevant authorities and help people to resume a new lifestyle and prioritize childbearing over the marginal issues of the disease (17).

The increase in domestic violence against the target group of women due to special restrictions, psychological pressures caused by economic and cultural factors, and the reduction of social support networks have been other effects of the Covid pandemic. If this issue is not addressed, not only the health of the woman but also the mental health of the children is in serious danger. Therefore, it is necessary to screen for controlling domestic violence. In the current situation, which has imposed many economic problems on families, particular attention should be paid to vulnerable groups, including women living in rural areas, homeless or poorly cared, pregnant women with a history of violence, women with a low level of education, and women with poor social

networks (35). Health care providers need to be aware of the dangers of increasing violence against women, and screen all women of reproductive age regularly and periodically, and try to end violence using appropriate training and counseling methods.

Sexual relation is another important and significant issue in the field of reproductive health, which has undergone two-sided changes in the Covid pandemic. Regarding Covid's influence on sexual relation, it should be noted that the change in the frequency of sexual intercourse seems to be due to intimacy and peace of mind and spending more time with the spouse. The increase in the frequency of sexual intercourse resulting from home quarantine has also increased life satisfaction. This facilitates sexual intimacy and increases marital satisfaction. There are now two major issues about marital relationships. According to the study by Pinado Ibara et al., psychological factors and special moods can inhibit sexual desire during the Covid 19 epidemic; on the other hand, the study by Ferrio et al. showed that although sexual desire and the frequency of sexual intercourse significantly increased at this time, but Covid disease significantly reduced the quality of life (36).

Regarding to the bilateral changes (positive and negative) of Covid-19 on sexual relations, it is necessary to use the remote education method to provide sexual counseling to the couples. Other issue that have caused concern among reproductive health professionals is the lack of access to free family planning services during the Covid-19 period; the World Health Organization recommends to use new and more innovative educational methods to raise public awareness of contraceptive methods. The focus of educational methods is on virtual education via SMS, WhatsApp, and video calls. In this critical period, more attention should be paid to the group of vulnerable women who are more exposed to unwanted pregnancies, including HIV-positive women, rural and remote area women, illiterate and low-income women, prisoner women, women with underlying diseases, immigrants and refugees.

Training of the use of contraceptive methods in postpartum care and before hospital discharge should be considered during this

period (37). People can be advised to use long-acting reversible methods to facilitate family planning and prevent unplanned pregnancies. Face-to-face counseling should be limited for women who want to become pregnant for any reason or who are at risk for serious side effects (38). Regarding to the above mentioned, due to limited access to family planning services, the possibility of unwanted pregnancies has increased; therefore, to control unplanned pregnancies, it is necessary to provide the possibility of telephone and remote counseling by health care teams. Training should be done in such a way that people be directed towards self-care and self-management, so that in the case of pregnancy, even unplanned, they can reduce the complications of the disease and help increase the fertility rate in the next years of society (39).

Covid-19 pandemic has caused psychological symptoms in clients by changing the health and socio-economic system. Many people are at risk during this period due to insufficient financial, medical and support resources. Pregnancy is a complex and vulnerable period for women that lack of timely evaluation can cause serious mental disorders during pregnancy and after childbirth. To ensure, maintain and promote women's mental health, it is recommended to identify and treat talented people through online programs and video conference. Healthcare providers should provide easy access to mental health services as a strategy to avoid the long-term effects of Covid on mental health of mother and infant (37, 2, 40, 41). In this regard, mental health screening, women's empowerment, teaching coping strategies, and the need to establish a remote education system is recommended (42-47).

One of the limitations of the study was that due to the nature of the study (a narrative review), no specific protocol for systematic review studies was used. It also has limitations related to narrative review studies (due to the nature of the study, evaluating the studies' bias was not possible). Also, in narrative review studies compared to systematic review studies, there is no need to provide more accurate aspects. Another limitation of the study was the impossibility of reviewing articles in all international databases. Lack of access to the full text of some studies in this field, the new

emerging of Covid disease, its unknown dimensions, as well as the lack of reviewing all aspects of reproductive health are the most important limitations of the present study. This study can be a guide for planners in responding to the threatened dimensions of reproductive health in the Covid period. It is suggested that systematic review and original studies be conducted in the field of change in other aspects of reproductive health during the Covid epidemic. Also, the effectiveness of various trainings in a virtual way should be examined by researchers. In this study, the principle of trust has been observed in collecting information and the principles of scientific resources in writing the research.

Conclusion

As the findings of the present study indicated, the current number of children had a statistically negative relationship with marital relationship quality. Moreover, this variable was positively associated with positive fertility motivation in the couples. Desired number of children showed a statistically positive relationship with marital relationship quality and positive motivations among the couples. Accordingly, effort should be made to empower employed women to maintain and improve the quality of their marital relationships and reduce their working hours. Moreover, this group should be provided with workplace childcare facilities and the necessary support to increase their fertility motivation.

Results of the present study provide policymakers with useful information for revising and re-establishing the working hours of women. Moreover, they can empower working women with the aim of improving the quality of their marital relationships by stepping up to improve marital relationship quality and increase childbearing. This research could also serve as a basis for future studies on the barriers to childbearing and research on men as a group involved in fertility.

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Conflicts of interest

Authors declared no conflicts of interest.

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