

The Impact of COVID-19 on Sexual and Reproductive Health: A Systematic Review Protocol

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Protocol

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Abstract

Background: COVID-19 affects the sexual health and fertility directly (by eliminating the distance between individuals and saliva exchange and also affecting the reproductive system) or indirectly (refusing the sexual intercourse and reducing fertility) and has consequences for couples and society. The present review study will be conducted to investigate the consequences of COVID-19 on sexual and reproductive health.

Methods: The study will investigate the articles published from the onset of the disease in the world until July 30, 2020. To this end, all articles will be extracted and those with the inclusion criteria will be selected by searching on valid scientific databases, including PubMed, Scopus, Web of Science, *ProQuest*, SID, and Magiran and using keywords relating to the research purpose. Systematic review articles, letters to the editor-in-chief, abstracts, and clinical trials will be deleted. Articles will be separately evaluated by two researchers. The STROBE checklist will be used to check the quality of the articles.

Discussion: The research results will be sent to journals for reviewing systematic articles and will be presented in PROSPERO. Also, this protocol is registered in PROSPERO with number CRD42020212621. The present systematic review will examine the effects of COVID-19 on sexual and reproductive health in women and men. The research results will be a guide for health planners to help reduce fertility and sexual problems during this period of COVID-19 by providing necessary programs in this regard.

Systematic review registration: PROSPERO CRD42020212621

Background

The onset of COVID-19 and a series of strict control measures adopted by governments have had many negative effects on individuals and society. During this pandemic period of coronavirus, societies experience activity limitations, poor mental health, loss of relatives, life-threatening conditions, unemployment, lower income, and separation from family or partners (1). Individuals may experience changes in their sexual behavior in these unprecedented situations (2). Since intimacy between couples occurs due to the physical contact between them, this outbreak disrupts social distance and the saliva exchange that can transmit infection. In addition to stress and fear, this condition leads to the prevention of sexual intercourse even with a healthy partner (3). It is unclear whether COVID-19 can be transmitted through sexual intercourse (4).

The results of some information about the impact of COVID-19 on the reproductive system and sexual behaviors vary from one country to another and represent a change in sexual behavior. COVID-19 affects important body systems such as heart and brain and can cause acute heart damage. This reduces the blood supply to the reproductive system, leading to the impotence (5). In a study on almost more than 9,000 individuals, only 24% said that COVID-19 infection had positive effects on their sexual lives, 28% reported unchanged sex, and 47% reported negative effects (3). A study in China found that sexual

activity decreased among young men and women (6). However, studies in Bangladesh, India, and Nepal indicated that sexual activity increased by 3.3% so that it reached from 1–5 times per week to more than five times (7).

Due to the effect of SARS-CoV2 infection on various body organs, there are many concerns about the impact of SARS-CoV2 on pregnancy and fertility (8). Studies indicated no significant expression of ACE2 or TMPRSS2 in muscles of uterine, ovaries, fallopian tubes or breast. Furthermore, types of cells in the female reproductive organs and the expression of ACE2 proteins with proteases, TMPRSS2, Cathepsin B (CTSB), and Cathepsin L (CTSL), known to facilitate entry of SARS-CoV2 to the host cells indicated that the uterine myometrium, ovary, fallopian tube, and breast may be not infected by SARS-CoV2. According to these findings, it is unlikely that COVID-19 causes unintended consequences of pregnancy such as premature birth, transmission of COVID-19 through breast milk, ovulation, and female fertility (9). On the contrary to this research, reports containing low information about pregnant women indicate that SARS-CoV2 is responsible for abortion, preterm delivery, stillbirth, and intrauterine growth restriction due to placental abnormalities (10, 11).

It is also important that reproductive health issues should not be limited to women, and men may suffer its consequences. SARS-CoV-2 infection may increase the risk of testicular tissue damage (12). COVID-19 uses the Angiotensin-converting enzyme 2 (ACE2) receptors as a point of entry into the respiratory system. ACE2 is involved in protecting the lungs, and thus the viral binding to this receptor may destroy a protective pathway in the lungs. This ACE2 is a product of adult Leydig cells. The probability of testicular involvement increases in patients with COVID-19, so that the probability lower ACE2 and lower secretion of testosterone (a hormone that protects against COVID-19) increases in these patients (13). A study found that the SARS virus causes inflammation of the testicles (orchitis) in men that may lead to male infertility (14).

The pandemic of COVID has had effects on relationships between individuals and couples. The unavailability of reproductive and sexual health services, which are considered unnecessary by some governments (15, 16) poses significant challenges for healthcare providers and women and men of childbearing age. However, sexual behaviors and changes in sexual and reproductive health during the COVID-19 pandemic have been considered as a comprehensive study and review of all studies in various dimensions of its effects on sexual health and fertility. Therefore, the researchers decided to conduct a study to review the effect of COVID-19 on various aspects of sexual health and fertility as a review of studies.

Methods

Search strategy

The present study will systematically review the effects of COVID-19 on sexual and reproductive health in men and women. To conduct the study, the necessary data will be searched in English and Persian in electronic databases, including Scopus, PubMed/Medline, Cochran library, Web of Science, ProQuest,

Embase, and Google scholar search engine using keywords, namely sexual, sexuality, sexual health, sexual activity, sexual intercourse, sexual function, sexual dysfunction, COVID-19, reproductive, reproduction, and genital, coronavirus. Other possible combinations will be done by the simultaneous use of logic operators "AND" and "OR". The time domain of the reviewed articles is set from the outbreak of the disease in the world until July 30, 2020. For more accurate retrieval of articles, the search will be done electronically and manually by two researchers. To complete the study, Persian databases like SID and Magiran will be also searched by equivalent Persian keywords.

Inclusion and exclusion criteria

Inclusion criteria:

- Articles that evaluate the sexual and reproductive health of women and men during the COVID-19 pandemic.
- Studies with available full text.
- All observational studies, including descriptive, and descriptive-analytical studies should be case-control, cross-sectional, and cohort.
- Studies published in English and Persian

Exclusion criteria: studies that have only an abstract available, and those published in a language other than English and Persian, or published outside this time domain, and also articles in which the methods and sample size are not well specified, as well as systematic review articles, letter to the editor-on-chief, abstracts, and clinical trials.

Survey of information

Data survey

The data will be extracted by two authors, and will be resolved by the help of the third author in the case of any conflict. In this step, the authors will first review abstracts of the articles and then the whole text. The data will be then collected in a checklist containing the author's name, year, sample size, research site, sexual and reproductive health, and COVID-19.

Quality assessment

Investigation of quality of study

The study will utilize a STROBE checklist to evaluate the quality of articles. This checklist includes 22 different topics in observational studies (17, 18). This checklist investigates, as far as possible, the titles and purpose of articles, demographic and research samples, sampling methods, the way of controlling the bias sources, validity and reliability of tools in research, data analysis, results, and discussion. Studies, which will obtain 70% of the checklist score (19), will be included in the study.

Primary and secondary consequences

Primary consequences

The present study will investigate the effect of COVID-19 on the female and male reproductive systems, sexual health, and beliefs in sexual relations, and fertility rates.

Secondary consequences

- Access to reproductive sexual health services
- Secondary infertility
- Conflicts caused by sexual problems

Results

This is a systematic review protocol; hence, the results will not be provided. The results of this study will be sent for publication after review and extraction from the studies, and will be presented in the International Prospective Register of Systematic Reviews (PROSPERO) with the registration number CRD42020212621.

Discussion

This systematic review will examine the effects of COVID-19 on sexual and reproductive health in women and men. Due to the effects of COVID-19 pandemic on society, which have caused problems such as social isolation, unemployment, economic problems, staying at home, and depression, they can affect the couple's relationships. During this pandemic, the health attention has been focused on COVID-19, respiratory tract, personal protective equipment, and protection against the virus, and very little attention has been paid to the sexual and reproductive health of men and women. This can pose significant challenges for both health care providers and women and men of childbearing age. Given the effects of this pandemic on sexual and reproductive health, the results of this study can be a guide for health planners to help reduce fertility and sexual problems in this period of the disease by providing necessary programs in this regard, and strengthen the family hearth and marital life.

Limitations

A limitation in our study was the lack of access to gray literature focusing on sexual and reproductive health.

Abbreviations

ACE2: Angiotensin-converting enzyme 2

COVID-19: Coronavirus disease 2019

CTSB: Cathepsin B

CTSL: Cathepsin L

SARS-CoV2: severe acute respiratory syndrome coronavirus 2

STROBE: Strengthening the Reporting of Observational studies in Epidemiology

PROSPERO: The International Prospective Register of Systematic Reviews in health and social care

TMPRSS2: Transmembrane Serine Protease 2

Declarations

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Availability of data and materials

Not applicable.

Ethics approval and consent to participate

The Ethical Committee of Shahid Beheshti University of Medical Sciences, Iran approved this research with the number IR.SBMU.RETECH.REC.1399.468

Consent for publication

The consent form for publication is filled by the authors.

Competing interests

The authors declare no conflict of interests.

Authors' contributions

SHA and GO considered data gathering approaches and prepared the research proposal.

SHA wrote the first draft of the manuscript.

GO contributed the manuscript.

SHA and GO edited the final manuscript.

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