

REVIEW ARTICLE

Novel Coronavirus and Sexual Challenge during the Pandemic

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ABSTRACT

Human infection with the novel coronavirus (COVID-19) has provoked public health concerns over sexual health. The novel coronavirus is a serious threat to public health. Evidence suggests that one of the major concerns of couples is sexual intercourse during the novel coronavirus pandemic. Detection of sexual challenge in novel coronavirus pandemic, as one of the risk factors, can promote sexual health. Knowledge about the new coronavirus is limited; little information is available about COVID-19 and sex life during the pandemic. In this review, we summarized the latest research and related reports of the new coronavirus and sex lives and discussed them to protect the sexual health in order to combat COVID-19. To this end, strategies have been proposed to increase sexual health and reduce sexual challenges so that we can avoid the harmful outcome of this virus. We hope that following and applying the sexual health guidelines will be able to overcome this difficulty with the least physical, mental, and social harm. Furthermore, special attention is expected from responsible authorities or public health officials to develop strategic planning for promoting sexual health and improving family relationships during the pandemic of coronavirus.

Keywords: Novel Coronavirus, Covid-19, Sexual Health, Divorce

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INTRODUCTION

Since December 2019, the outbreak of COVID-19 occurred in Wuhan and spread rapidly in almost all parts of China (1). The new virus appears to be highly contagious and has quickly spread around the world (2). The angiotensin-converting enzyme 2 (ACE2) has been suggested as a receptor for the new coronavirus, which is essential for its entry to body. Overexpression of ACE2 in different cells such as the lung, upper esophagus, epithelial cells and enterocytes of the ileum and colon may play a role in the multi-organ infection by the new coronavirus (3-4). The novel coronavirus is thought to be transmitted via droplets, aerosols, close contact, and perhaps fecal-oral route. Patients infected with coronavirus can transmit the virus to other individuals (5- 6); on the other hand, the disease can be conveyed from person to person through small droplets of nasal or oral secretions that are released during coughing or exhaustion of a person with COVID-19. The droplets containing the virus remain on the objects and surfaces around the patient and other people may become infected if they come in close contact with these surfaces (7-8). Also, those coming in contact with virus-infected objects and surfaces and then touching their eyes, nose or mouth catch COVID-19 because of virus infiltration into their bodies (9). Major clinical symptoms

of infection with 2019-nCoV include fever, shortness of breath, generalized myalgia, cough, drowsiness, diarrhea, confusion, dyspnea, and pneumonia (10). Although most persons who become infected show mild illness and recover from the disease, it may be severe in others (9). Since respiratory and body contact, fecal and oral transmission are a potential pathway for modern coronavirus infection, for which no successful antiviral agents or vaccine has been developed, prevention and control of infection and compliance with health principles by the general public is a top priority (11). The current state of the new coronavirus epidemic around the world remains worrisome. A review of literature revealed three important factors of causative agent (virus), environment and host (human) that are involved in preventing, controlling, and treating the disease caused by coronavirus and any other infectious disease (11- 12). Also, it is now recommended that individuals try to stay home as much as possible, keep physical distance of 6 feet from other people and practice social distancing, which definitely makes sexual intercourse a challenge (13).

SEXUAL HEALTH AND CORONAVIRUS

Sexual health is the state of physical, mental, emotional, and social well-being in relation to sexuality that needs a positive and respectful attitude towards sexual relationships and sexuality . In addition, it is associated with safe and pleasurable sexual experiences, free from discrimination, coercion and violence (14). Sexuality is considered as an important component of health (15).

The marital intimacy and sexual satisfaction of couples is a real need, which can result in self-reliance and mental relaxation. Pleasant and safe sex is free from discrimination, violence, coercion and challenge, so the sexual rights of all people must be respected, protected and realized in order to achieve and maintain sexual health (14, 16). With countries on lockdown and millions forced to stay at home so they could keep the casualties down to a minimum, it is not surprising that many couples are wondering what coronavirus means for their sex lives. One of the major concerns of couples is whether coronavirus can be transmitted through sexual intercourse and endangers their sexual health (13). At the present time, limited data are available on sexual health and COVID-19 to serve as a basis for recommendations on specific care about sexual relationship (17). The review of literature suggested that new coronavirus is a serious threat to public health as well as sexual health. According to World Health Organization (WHO), viral diseases pose a serious risk to public health (2). A narrative review showed that in 2020, people all over the world are fighting a new coronavirus that causes an illness named COVID-19. The prevalence of COVID-19 has become a clinical threat to the general population worldwide; on the other hand, the new coronavirus (2019-nCoV) has posed major health threats to the world's public health (11). COVID-19 is a serious public health risk since no vaccine or proprietary drug has ever been made for it (2, 12) and the specific treatment by corticosteroids has not been approved by FDA (18).

PSYCHOLOGICAL CONSEQUENCES, SEXUAL HEALTH IN CORONAVIRUS PANDEMIC

Psychological consequences such as fear and stress are increased in the new coronavirus crisis, which can threaten sexual health. Previous studies have reported that many people are faced with high levels of stress related to COVID-19. Moreover, psychological consequences such as stress, anxiety, and depression can endanger sexual function (19-22). This is an important issue because having a healthy sexual life will bring couples closer and increase marital intimacy, so if sexual relationship is disrupted and a partner feels rejected, the marital connection may be weakened, resulting in anxiety and worry (16, 23-24). In a review study, it was indicated that the prospect of quarantine with a partner will be a good opportunity to spend time with each other for some couples, but for others, it may cause severe tension in their relationships (25). This epidemic may lead to a mini "baby boom" in sharing jokes on social media, but many couples show the loss of libido because of stress, anxiety, and low mood. Some couples do not want to be close to their partner because of fear of infection or contamination (23). Rodríguez-Dhaz, a professor in Milken Institute School of Public Health at George Washington University, states that sexual intercourse may be decreased during the next few days. It is normal to have less interest in sex during crisis

coronavirus (13). An individual may feel an aversion for sex with a spouse, which can be a typical reaction (26) because negative psychological consequences such as stress, anxiety or even depression may prevent sexual function (20-21, 27). Therefore, we expect diminished sexual desire in the time of coronavirus relative to the past. It is recommended to not push for sexual relationships because this panicked state can make a person's relationship with the partner more complicated (28), which may cause sexual problems and lead to widespread health problems (29). The only choice to circumvent this obstacle is to create a cozy and secure ambient together with a spouse (28). Taking a deep breath instead of getting angry, focusing on little things and relaxation can help alleviate stress, anxiety, depression, as well as facilitating the process of self-efficacy and sexual function (30-33). Moreover, appreciation on the part of a spouse can resolve the problem with the partner and improve sexual function (28). However, educational interventions to reduce stress should not be ignored. In this context one study found that stressful life-events in the individuals can affect negative emotion regardless of the levels of dysfunctional attitude. They suggested that equipping subjects with self-regulating strategies of managing stress and depression via educational intervention such as stress management training may promote positive attitude towards personal health care, including mental and psychological health (34).

SEXUAL INTERCOURSE AND NOVEL CORONAVIRUS PANDEMIC

Available evidence suggests that sexual intercourse during novel coronavirus pandemic is a major concern of couples (13). On the other hand, one of the questions of couples is how to handle marital relationships in quarantine (17) and whether coronavirus can be transmitted through sex (13). At the present time, limited data are available on sexual intercourse and COVID-19 on which to base suggestions for sexual relationship-specific care; however, initial findings and reports from SARS, MERS do not indicate transmission via sexual intercourse, but it is still too early to draw conclusions about the new virus (35). As there is no currently available vaccine to protect people against this unpleasant virus, social distancing and quarantine can straighten the curve and keep the number of infections as low as possible per day, but the fact is that social distancing means not having sex as much as possible. In many ways, it seems that social distance is the opposite of sexuality. Humans have a natural motivation and sex can be a relaxation way for them to express themselves (36). The truth is that there are no evidence indicating sexual transmission of 2019-nCoV because it is primarily spread through respiratory droplets and the second mode of transmission is through touching contaminated surfaces. If a spouse is infected with 2019-nCoV, the ideal plan is to steer clear of each other as much as possible (13). If a person feels the need

to self-isolate based on symptoms such as shortness of breath, fever, flu-like symptoms like coughing, sore throat and fatigue or exposure, it is necessary to avoid sexual partners for at least two weeks. This health issue can affect sexual pleasure and well-being (37). Experts believe that during the outbreak of coronavirus, people need to refrain from intercourse with those with the first symptoms of coronavirus disease, including fever and cough (38). One may want to check his/her partner first. Symptoms such as fever, cough, sore throat, headache, and shortness of breath can be a sign of COVID-19 (36), but for couples who do not show symptoms, do not have any recent likely exposure to infection and have been staying at home, sexual intercourse is a different subject. If someone lives with a regular sexual partner and the couple has no exposure to virus or symptoms, sex could be a great way to have fun, so that the couples can stay connected with each other and relieve anxiety during this potentially stressful time (13). In fact, sex can be a stress reliever because of the secretion of endorphins and emotional release (26); on the other hand, feeling of love leads to the secretion of endorphins. Desirable emotional relationships and sexual health play an important role in strengthening the family and society. Safe sex is a guarantee for a successful life and its quality is of great importance in strengthening the ties of the couple (16, 39-40). Therefore, engagement in sex for couples who do not leave home, try to adhere to health guidelines and have no new coronavirus symptoms will cause gratefulness for that relationship and a feeling of security (26).

COUPLE RELATIONSHIPS AND CORONAVIRUS

A review study revealed that quarantine of couples during coronavirus pandemic might increase the request for ending the relationship (25). Most experts agree that the post coronavirus world will see a spike in two things: babies and divorce rates. Many couples have been bound with each other at home for over a month in coronavirus pandemic, which stimulated their underlying conflicts (41). When couples are encountered with stressful and serious conditions, some of them may reassess their lives and what matters to them (25). There are reports of an increasing request for divorce in China's Xian city as a result of couples being quarantined (23). More than 300 couples in China have filed for divorce after the end of their coronavirus quarantine. It is therefore recommended that couples who are trying to live together in small spaces during the quarantine period stop unpleasant arguments and habits that can adversely affect their marriage and lead to divorce (41).

DOMESTIC VIOLENCE AND CORONAVIRUS

The review of literature showed that COVID-19 may aggravate the risk of violence against women. In principle, violence against women, especially on the part of their intimate partners, is on the rise in emergency

conditions, including the epidemics (42). Despite the scarcity of data, reports from the United Kingdom, the United States, China, and other countries indicate an increase in domestic violence since the outbreak of COVID-19 (43-44). A review study showed that the number of domestic violence cases in Jinzhou (a city in Hubei Province) tripled in February 2020 relative to the same period of the last year (45). It is important to note that the effects of violence, especially intimate partner violence, are serious and vital issues for women's health. Violence against women can lead to grave sexual, reproductive, physical, and mental problems, including sexually transmitted infections, unwanted pregnancies, etc. (42). It seems that access to reproductive and sexual health services, crisis centers, legal aid, protection services, as well as psychosocial support should be facilitated, especially for women in abusive relationships during the current COVID-19 crisis.

SEXUAL TRANSMISSION AND CORONAVIRUS

In literature review, it was showed that new coronavirus can be transmitted through close contact, kissing, facial touching, and face-to-face contact. A common practice during sexual intercourse is kissing and the virus can be transmitted by saliva (14). Health authorities suggest neither hugs nor kisses until the end of the coronavirus crisis (12). Kissing could be the riskiest practice in the bedroom when it comes to transmitting COVID-19 (46). Although new coronavirus is not a sexually transmitted infection (STI), it can be obviously conveyed during sex (37). It is recommended to "take care during sex", which is a good thing and "kissing can easily pass new coronavirus", which is not good. Therefore, a person may want to avoid kissing unless feeling confident that his/her sexual partner is not infected (36). Other studies indicated that the nucleic acid of novel coronavirus are detectable in samples such as nasopharyngeal swabs, sputum, lower respiratory tract secretions, blood, and feces (5-6, 47-48). The NYCDOH guidelines revealed that the virus was found in the stool of patients with COVID-19 but not in their vagina or semen. In addition, there have been no reports of transmission of other coronaviruses through semen or vaginal fluid (36). On the other hand, there is no document showing that the novel coronavirus can be transmitted by either anal or vaginal intercourse (38). According to WHO report, other member of coronavirus family such as SARS and MERSE have not yet been transmitted via sexual intercourse, but it is too early to conclude about the new virus (35). There is no valid information on the stability of COVID-19 in the genital tract, but some case studies on other coronaviruses have shown positive specimens from genital tracts of infected women (7-8). No reliable information is available on the viability of the virus in the male and female reproductive system. However, due to the simple diffusion of the virus, the transmission by sexual intercourse is possible through the respiratory transfer of droplets as a result of physical proximity of

the sex partners (7). A review of literature suggests that in some cases the coronavirus may be present in feces (8). Although fecal-oral transmission has been shown to be definitive in SARS, it has not yet been fully ascertained in the case of new coronavirus (49). Wang and et al. (2020) conducted a study entitled "Detection of SARS-CoV-2 in Different Types of Clinical Specimens" on 205 patients admitted to three hospitals in Hubei, handong and Beijing provinces of China. Researchers reported that a number of fecal samples also tested positive. SARS-CoV-2 is detected in various biological samples of patients with COVID-19, including feces. The important point was the isolation of live virus from the feces of two infected patients without any symptoms of diarrhea, suggesting that the virus may be transmitted through feces (50). Other studies showed that fecal-oral transmission could be possible given that SARS-CoV-2 has been detected in stool specimens (51-52). Zhang et al. (2020) have detected the SARS-CoV-2 in blood and fecal swabs, which indicates the possibility of multiple ways of transmission (53). Consistent with this research, a study conducted by Xu K et al. (2020) reported that viral nucleic acids can be found in 10% of blood samples of patients in the acute period and 50% of patients with positive RT-PCR in stool specimens. Live viral strains were also isolated from the stool, indicating potential contamination of stool (54) and the presence of the new coronavirus has been shown in patient's stool (55). However, whether the new coronavirus can be transmitted through the stool and fecal-oral route is still unknown (11).

PREVENTION STRATEGIES IN CORONAVIRUS PANDEMIC

Prevention strategies aimed at minimizing transmission in the community are currently the best weapon against the virus (2). Powerful strategies to support sexual health during novel coronavirus crisis are as follows:

Avoid intercourse with suspected or infected persons

One of the ways to support sexual health during times of novel coronavirus crisis is to avoid intercourse with those showing the first symptoms of coronavirus disease. Studies have suggested refusing to have sex with suspected cases of new coronavirus (7-8). Therefore, sex partner should be honest about whether they feel sick because intercourse obviously involves close contact (46).

Avoid illegitimate relationships

According to the present project, illegitimate relationships can be considered as a dangerous behavior, especially in the time of novel coronavirus pandemic. The growing rate of infection is a possible indicator of the impact of extramarital sex on coronavirus epidemic. Previous studies indicated that the phenomenon of extra-marital sexual relationships is a great concern for the risk of HIV/STI transmission (56). Illegitimate relationships are

dangerous liaisons and individuals are at an extremely high risk of different diseases (17). Experts ask high-risk people who usually have sex with several people to stay at their homes in the current situation and not have any sexual intercourse. They recommend that a sex partner who lives separately or is among those vulnerable to coronavirus should avoid sex (38). The NYCDOH guidelines report, "the safest partner is someone you live with" (where there is a better sense of her/his risk of carrying a virus) (36).

Avoid sex in high-risk individuals

This finding indicated that people with an underlying disease should avoid sex. The elderly (>65 years of age) and individuals with underlying diseases are susceptible to serious infections such as cytokine storm and acute respiratory distress syndrome (ARDS) (57). In addition, the NYCDOH warns, "if someone or their partner has a medical situation such as lung disease, diabetes, cancer, heart disease, or a weakened immune system that may lead to more severe new coronavirus, they had better avoid sex (36). Experts insist that couples who live together and are currently in quarantine should refrain from sex if one of them has an underlying disease and other diseases like HIV that weaken the immune system. Infectious disease specialists also recommend that other high-risk individuals, including pregnant women and those over the age of 70 also avoid close contact with their sexual partners (38).

Avoid oral and anal sex

A review of the literature indicated that oral-fecal transmission of the novel coronavirus has been documented and anilingus may be a risk factor for COVID-19 (13). However, in the guidelines of New York City Department of Health (NYDOH) entitled "Sex and Coronavirus Disease 2019 (COVID-19)", it has been reported that the virus can also be transmitted through direct contact with the infected person's saliva or mucosa (36). Oral and fecal secretions contain viruses and can be transmitted to a sex partner during anal or oral sex (17). Rimming or lick of the anus of a sexual partner as a means of sexual stimulation should not be practiced in a sexual relationship because it may spread new coronavirus via entering virus from feces to the mouth of the sexual partner (36).

Wash before and after sexual intercourse

The result of the present study indicated that the virus is present in all the mucosa such as oral and nasal mucosa. Therefore, it is recommended that couples take a shower before sexual intercourse. Also, they should take a shower again after having sex because it is possible for a person to contact his/her face or nose and then touch the body of the sex partner, which will spread the virus when they touch sex partner's body (17). In addition, the NYCDOH guidelines emphasize the need for washing oneself before and after sex, and everything one uses as part of sex should be thoroughly cleaned (36).

The same study showed that if a person has sex with a spouse, good hygiene such as hand washing before and after intercourse helps prevent the spread of viruses and bacteria (37). One key step to protecting people's health and kicking out the new coronavirus is regular hand washing with soap and water or an alcohol-based solution (an alcohol-based hand rub) (8, 58). People should learn how to wash their hands for 20 seconds, do not touch their faces and clean different products (46). Experts also consider the precondition for safe sex during the outbreak of the coronavirus to be washing hands and sex toys with water and soap for 20 seconds (38). It is recommended to use only soap and water for cleaning sex toys (13) and to ensure that the sex toys are in good hygiene (37).

Use a condom

Another result of this study is the recommendation to use a condom in sexual intercourse with a spouse during coronavirus pandemic. Although there is currently no evidence that the virus is present in semen or vaginal secretions, it is better to use a condom because COVID-19 is a new virus and it is likely that scientists present new findings about it later (17). The NYCDOH guidelines also recommend wearing condoms and dental dams depending on the condition when a person is exposed to saliva or feces such as anal and oral sex (36). Infectious disease specialists also recommend that condoms should be used to reduce direct contact with sexual mucosa (38). In addition, there is no opportunity for sexually transmitted infections (STIs), the risk of having another infection concurrently, and pregnancy in the epidemic time. The guidelines emphasize that one should make sure to have an effective form of family planning for the coming weeks. In addition to the instability of the state of the current health care system, it is best to wait until ensuring regular physician visits (36).

Avoid direct and close contact

The findings of this research represented that the primary epidemiologic risk factors for novel coronavirus include direct and close contact with infected individuals (18). Coronavirus can be transmitted during close contact. Sex is the very definition of close contact; therefore, having sex with a sexual partner is the close contact with the partner (37). Sexual intercourse is threatened in these confinement days in which close contact between people should be as minimal as possible. Dr. Fernando Serrano believes that people could enjoy sexual intercourse in the time of coronavirus. The guidelines for having sex during new coronavirus quarantine suggest the practice of the best sexual positions so that the faces of sexual partners are not so close to one another. Although it is not certain that the spread of new coronavirus can be avoided with these sex positions, they can be a good alternative to reduce the risk of disease transmission (59). As the face is a center of disease transmission at the time of coughing and sneezing, it is better to avoid

face-to-face contact (no facial contact) (17). In addition, face masks may not help a person in sexual relationships during the pandemic (36).

Avoid hugging and kissing

The gathered data represented that the new coronavirus is present in the mouth (37). One key step to kicking out COVID-19 and protecting people's health is not touching face particularly eyes, nose or mouth (58). According to epidemiologists, it is recommended to avoid any physical contact until the diffusion methods of coronavirus have been definitively identified, so it is not recommended to have sex with a person with coronavirus or a quarantined person (35). Kissing will pass on COVID-19 to a sexual partner (37); therefore, people should avoid touching hands, hugging and kissing. Although the transmission of new coronavirus through sexual intercourse has not yet been proven, due to the physical contact such as hugging, kissing and the exchanging of breath through foreplay, it is recommended that a person with symptoms of coronavirus refuse to have sex or close contact with their partner (35). In emphasizing this matter, experts recommended that people should avoid face-to-face contact and kissing during intercourse to circumvent the risk of possible virus transmission through facial touching, kissing and salivary secretions (38).

CONCLUSION

The mentioned health issues can help prevent the spread of viruses in sexual life. However, whether these efforts will achieve the control of COVID-19 transmission via sex is unclear. Furthermore, interventions for the empowerment of couples concerning sexual and reproductive health are recommended for minimizing the sexual challenge. Further research to explore new strategies to maintain sexual health in the face of COVID-19 is suggested.

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