

Sexual Health Implications of COVID-19 Pandemic



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ABSTRACT

Introduction: A novel coronavirus (COVID-19) reached pandemic levels by March 11th, 2020, with a destructive impact across socioeconomic domains and all facets of global health, but little is known of its impact on sexual health.

Objective: To review current knowledge on sexual health-related containment measures during pandemics, specifically COVID-19, and focus on 2 main areas: intimacy and relational dynamics and clinical effects on sexual health.

Methods: We carried out a literature search encompassing sexual health and pandemic issues using Entrez-PubMed and Google Scholar. We reviewed the implications of the COVID-19 pandemic on sexual health regarding transmission and safe sex practices, pregnancy, dating and intimacy amid the pandemic, benefits of sex, and impact on sexual dysfunctions.

Results: Coronavirus transmission occurs via inhalation and touching infected surfaces. Currently, there is no evidence it is sexually transmitted, but there are sexual behaviors that pose a higher risk of infectivity due to asymptomatic carriers. Nonmonogamy plays a key role in transmission hubs. New dating possibilities and intimacy issues are highlighted. Sexual activity has a positive impact on the immune response, psychological health, and cognitive function and could mitigate psychosocial stressors. COVID-19 pandemic affects indirectly the sexual function with implications on overall health.

Conclusion: Increased awareness of health-care providers on sexual health implications related to the COVID-19 pandemic is needed. Telemedicine has an imperative role in allowing continued support at times of lockdown and preventing worsening of the sexual, mental, and physical health after the pandemic. This is a broad overview addressing sexual issues related to the COVID-19 pandemic. As this is an unprecedented global situation, little is known on sexuality related to pandemics. Original research is needed on the topic to increase the understanding of the impact the current pandemic may have on sexual health and function. **Pennanen-Iire C, Prereira-Lourenço M, Padoa A, et al. Sexual Health Implications of COVID-19 Pandemic. Sex Med Rev 2021;9:3–14.**

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INTRODUCTION

In December 2019, a novel coronavirus, the severe respiratory syndrome coronavirus-2 (SARS-CoV-2), was first found in Wuhan, China,^{1,2} and was officially named by the WHO on 11th February 2020, as COVID-19.³ 1 month later, COVID-19 spread to pandemic levels creating global socioeconomic instability. A disease pandemic can impact sexual and reproductive health and rights in various ways, at individual and societal levels.⁴ Guidelines for a safe sexual activity amid the COVID-19 pandemic have already been suggested by public institutions and professional societies.^{5–7} From the clinical experience of previous pandemics, little emerges on sexual dysfunctions.

Human Coronaviruses: Viral Characteristics, Terminology, and Transmission

Current science has described up to 7 types of human coronaviruses, from which 3 cause severe respiratory syndromes: Severe Acute Respiratory Syndrome (SARS) coronavirus (SARS-CoV), Middle East Respiratory Syndrome (MERS) coronavirus (MERS-CoV), and now, SARS-CoV-2.

Human coronaviruses, including SARS-CoV-2, can persist on inanimate surfaces such as metal, glass, or plastic for up to 9 days, but the infectivity can be efficiently reduced by surface disinfection procedures.^{8,9} A recent study showed that SARS-CoV-2 is more stable on plastic and stainless steel than on copper and cardboard and that a viable virus is detected up to 72 hours after contact with these surfaces.¹⁰ Therefore, viral transmission occurs by touching infected surfaces and passing to the mouth, nose, or eyes. Although COVID-19 is known to spread through the respiratory tract and by direct contact,¹¹ it may be possible for it to shed through additional routes, as SARS-CoV-2 has been found in fecal swabs and blood.¹² The mean incubation time has been estimated to be 5.2 days, varying in between 4 and 7.5 days,¹¹ supporting the need to quarantine the exposed individuals for 14 days.

Person-to-person transmission of SARS-CoV-2 occurs rapidly, mainly between individuals in close contact with patients, but also from asymptomatic carriers of all ages.¹³ Importantly, the severity of COVID-19 and disease mortality are largely determined by the immune response of the infected person.¹⁴ When intervention strategies such as travel restrictions, isolation, academic center closures, and social distancing are implemented, a 90% compliance rate has shown controlled spread within 14 weeks, while 70% compliance of measures is unlikely to control spread for any duration.¹⁵

Despite the rigorous, unprecedented prevention measures, COVID-19 escalated to pandemic levels, causing increasing global frustration, exhaustion, and possible long-term negative implications on mental and sexual health.

AIM

This article reviews the existing data concerning the novel coronavirus with respect to containment measures during times

of pandemic. Based on the existing knowledge of viral infectivity, we intend to revise safety recommendations for sexual activity, including the impact of the COVID-19 pandemic on intimacy and relationships. Furthermore, we aim to discuss the potential clinical impact of the current pandemic on sexual health, including both benefits of sex during the lockdown and implications for sexual behaviors and dysfunctions.

METHODS

We carried out a literature search encompassing sexual health issues during pandemics. Relevant English literature was reviewed through Entrez-PubMed and Google Scholar. Besides, we collected opinion articles issued by professional sexual medicine societies and institutions. We reviewed the implications of the COVID-19 pandemic on sexual health and behavior concerning 2 main categories: effects on intimacy and relational dynamics and clinical effects. Within the first category, we focused on the infectivity and sexual activities, pregnancy, and relational patterns. Within the latter one, we analyzed 2 specific areas: benefits of sex and sexual dysfunctions.

RESULTS

Intimacy and Relational Dynamics Effects

Sexual Transmission and Safe Sex Practices During the Pandemic

When considering safe sex practices and COVID-19, several scenarios must be addressed. Based on the knowledge of previous coronaviruses, there is no evidence that COVID-19 is a sexually transmitted disease, and such a likelihood is very low.^{14,16} Nevertheless, we know that COVID-19 transmission occurs via inhalation of respiratory droplets and touching infected surfaces^{11,17} (skin-to-skin, touching infected inanimate objects), so kissing should be avoided with anyone symptomatic or with people outside one's household and proper hygiene should be the rule.^{10,17} Sex with a cohabiting partner is allowed unless one is symptomatic. In a scenario where the sexual partner is quarantined following infection or known exposure, sex should be avoided. The same applies if someone has typical symptoms of COVID-19. As there is evidence of oral-fecal transmission of the SARS-CoV-2,^{12,17} analingus should be avoided with anyone symptomatic or people outside one's household.

Social distancing has proven effective in controlling disease spreading.^{13,15,18} Accordingly, close contact between sexual partners may increase the risk of contagion because of possible asymptomatic carriers.^{19,20} Sexual behavior and network connectivity studies show that people with many partners play a key role either in global connectivity or as transmission hubs²¹; therefore sex with anyone outside one's household should be avoided. This applies both for nonmonogamous relationships and for monogamous ones where partners are not sharing the same home.

Pregnancy and Infectivity

During novel pandemic times, the need for contraception should be considered. MERS and SARS can cause adverse pregnancy outcomes including miscarriage, prematurity, fetal growth restriction, and maternal death.²² So far, COVID-19 has been reported in relation to fetal distress and preterm delivery.⁴ Intrauterine maternal-fetal transmission before delivery is a risk, although the fetus is unlikely to be exposed during pregnancy while the postpartum transmission is more likely.^{4,23} Small case series did not identify laboratory evidence of vertical transmission, and there are no reported cases of breastfeeding transmission.^{23–27} A possible explanation might be the absence of the ACE receptor at the fetal-maternal interface, as the virus has not been found in the amniotic fluid or maternal milk.^{28,29} Although the outcomes of mothers and newborns are globally favorable, there is a trend toward spontaneous prematurity, and the high rate of cesarean deliveries is worrying.³⁰

There is no evidence to support that pregnant women are more susceptible to COVID-19 than the general population, but pregnancy is a known risk factor for severe disease following other respiratory viruses.³¹ Recent data show that pregnant women have a clinical presentation similar to other nonpregnant adults.^{23–25} Clinicians and women wishing to conceive should consider the potential effects of COVID-19 in early pregnancy and potential teratogenicity until clear evidence becomes available on the topic.

Relational Impacts of COVID-19

Despite widespread interventions meant to manage the spread of COVID-19, people across the world continue to find ways to adapt and connect. Naturally, increased levels of stress can reduce this urge, but social distancing and stressful circumstances can also increase the need for emotional bonding. Online dating apps can facilitate connection while experiencing a stressful event that can encourage prosocial behavior and strengthen people's bonds.³² Regardless of whether one is uncoupled, dating, or in a long-term relationship, expressing intimacy through virtual and/or physically distant means is vital to sustaining positive coping and psychological well-being.

It is important to note that while the focus of this review has explored sexual health implications, there are also indications that during times of pandemic, there is the potential for several other relational impacts. For instance, across the globe, online pornography use has increased dramatically, with a recently documented 24% rise in viewing (<https://www.pornhub.com/insights/corona-virus>). This may be due to increased home confinement and social distancing measures but could also be that individuals are using pornography to cope with stress, anxiety, and uncertainty, or as a way to cope with fears related to death.³³ Increased pornography use may be one of many relationship stressors, especially in couples who have conflict around pornography use, or when one partner already struggles with

compulsive sexual behavior. Furthermore, those who struggle with compulsive sexual behavior may find themselves increasingly vulnerable because of decreased access to coping strategies and increased stress or anxiety at home.

Accordingly, the heightened stress and the diminished quantity or quality of social networks may negatively influence relationships during and after the pandemic, exacerbating already existing conflictual relationships³⁴ and reducing the capacity and motivation of interpersonal interactions.³⁵ Additional considerations ought to be made related to the role of home confinement on couple conflict, divorce, and intimate partner violence, but these are beyond the scope of this article.

Clinical Effects

Benefits of Sex During the Pandemic

In pandemic times, management interventions including prolonged periods of quarantine, social distancing, and home confinement have all-pervasive effects on social and economic life. During the current COVID-19 emergency, health-care systems and medical research are devoting all their resources to improving the treatment of severe morbidity and preventing mortality from COVID-19. The tremendous effect lockdown and social isolation may have on mental and physical health has not been addressed yet: Collateral effects such as decreased levels of physical and cognitive activity, sedentary lifestyle, emotional distress, anxiety, and poor health-care access are all expected to take their toll. The results will become evident in the future once societies start to emerge from the current state of emergency. Nevertheless, it is possible to point out the increase of social awareness and solidarity, namely telephone befriending services to keep the community together, help for the elderly initiatives, among many others. Regrettably, little attention is devoted to the importance of maintaining sexual health, despite its documented powerful effect on overall health and quality of life.

Physical Benefits of Sex

It has long been understood that poor health can affect sexuality. Diabetes, chronic pain, depression, heart disease, and cancer are all examples of conditions that can impair most areas of sexual function. Yet there are indications that sexual activity is an integral contributor to quality of life and overall physical health.³⁶

The benefit of sexual activity on cardiovascular health has been investigated in a study showing that women who endorsed emotionally satisfying sexual activity had fewer cardiovascular events in 5 years. In a similar study on men, the frequency of sexual activity and cardiovascular events were inversely related.³⁷ Besides, sexual activity is a form of mild to moderate exercise, equivalent to 3–5 metabolic equivalents (climbing 2 sets of stairs or walking briskly). During sexual activity, the rise in blood pressure rarely exceeds 170 mmHg, and heart rate seldom

goes over 130 bpm, peaking for about 15 seconds during orgasm.³⁸

Physical intimacy and sexual activity, as well as leisure and mental activities, protect against mild cognitive impairment (MCI),^{39,40} whereas poor social network and divorce status increases the risk for MCI.⁴¹ Regarding aging, researchers found that sexually active adults aged 50–90 years had better memory and were less likely to feel depressed and lonely.⁴² MCI is a preclinical stage for Alzheimer's disease, during which memory complaints exist with minimal impact on daily life, yet neuroimaging-proven atrophic changes in brain structures are already present.^{43,44}

Furthermore, sexually active individuals may have a more efficient immune system. Studies have explored the role of salivary immunoglobulin A (SIgA), a major mucosal defense that acts by directly attacking microorganisms and by first barrier macrophage recruitment, thus diminishing infections. In a study on 112 college students, those who had sex more than once or twice per week had significantly higher levels of SIgA than less sexually active ones.⁴⁵ Interestingly, the presence of maintained sexual activity with a partner, but not by masturbation, can also influence immunity, reflected by SIgA levels, during a high-score depressive episode.⁴⁶

While there are clear indications that sexual activity and a satisfying sexual life improve overall physical health and quality of life, during a pandemic, this can be overlooked. Moreover, there are clear indications that maintaining sexual activity can bolster immunity, cognitive, and cardiovascular function.

Psychological Benefits of Sex

The WHO defines health as “a state of complete physical, mental, and social well-being” and not merely “the absence of disease or infirmity.” During pandemic periods, mental health is an essential issue to pay attention to.^{47–49} According to the literature, the most prevalent symptoms of those who have been quarantined are depressed mood, irritability, fear, nervousness, and guilt.^{50,51} Studies have also demonstrated a positive association between duration of quarantine and worse mental health, more specific symptoms of posttraumatic stress,^{52,53} avoidance behaviors, and anger.⁵¹

The mechanism through which sexual activity impacts mental health remains speculative. It could be through social interaction, physical activity, or other unique pathways. In older adults, frequent dopamine release during intercourse has been shown to improve cognition, especially in the memory and task-executing domains.⁵⁴ Assumptions that combine biological and behavioral factors have been suggested to underlie this effect.^{42,54} Within biological factors, studies have suggested deregulation of neurotransmitter levels and/or of the hypothalamic-pituitary-adrenal axis, changes in endogenous levels of sex hormones, and an important role of endorphins, oxytocin, and prolactin.⁵⁵ The behavioral model claims that those who suffer from depression

have a negative vision of themselves and the world, presenting multiple cognitive distortions, low self-esteem, and lack of self-confidence.⁵⁵ The latter emotional states significantly affect sexual function.

Sexual health is essential for the global health and well-being of individuals, couples, and families.⁵⁶ In pandemic times, sexual activity with a partner or through masturbation can provide psychological and emotional benefits. Studies correlate sex with increased satisfaction with one's mental health; increased levels of trust, intimacy, and love in relationships; improved ability to perceive, identify, and express emotions; and lessened use of immature psychological defense mechanisms.⁵⁷

Impact of the Pandemic on Sexual Dysfunction

Amid the pandemic, safety measures such as social distancing, home confinement, and quarantine are necessary to prevent spread. Despite this, there are invariable relationship and sexual health challenges to navigate during these times. Recognizing these challenges is vital to address possible preventative measures as well as to pay attention to implications for treatment. Individuals already experiencing sexual dysfunction may experience changes in treatment, symptoms, and distress related to their sexual problems. For some, the increased stress and anxiety caused by the global pandemic may be the precipitating factor that leads to the advent of sexual problems. In the current section, we analyze the potential impact of the current COVID-19 pandemic on specific sexual dysfunctions: sexual desire and desire discrepancies, erectile dysfunction (ED), orgasmic and ejaculatory disorders, and genito-pelvic pain penetration disorders.

Sexual Desire and Desire Discrepancies

Concerns around low sexual desire are highly prevalent across populations, ranging from 10% to 40%^{58,59} and are one of the most widespread sexual problems adults face. Sexual desire discrepancy (when partners report significantly different desires for sexual intimacy) remains one of the most common reasons for couples to seek therapy services because of the negative impact on a relationship and sexual satisfaction: Distress related to sexual desire discrepancies has been shown to cause more conflict in relationships.^{60–62} What we know about sexual desire, in general, is that it is multifaceted and quite individualized. Owing to the impact, the biopsychosocial context has on levels of desire, and there are a myriad of reasons for fluctuations in the desire that may have social and clinical implications later on, within the context of a global health pandemic.

While very little to nothing is written about the role of global crises on sexual desire, one might postulate that situations of heightened stress, anxiety, and depressed mood could alter one's desire for intimacy by either extinguishing it or increasing the need/desire for sexual touch and connection. For some people, increased anxiety around death and mortality has been shown to be linked to an increase of desire and sexual interest, but not for

all. The difference has been attributed to individual comfort with physical intimacy, body image, and self-esteem, suggesting that some people use sexual intimacy to cope during times of stress.⁶³ According to the “Dual Control Model of Sexual Response”, individual differences in sexual excitation and sexual inhibition may account for such different reactions. From this lens, people who tend to be sexually inhibited would have a more difficult time becoming aroused in stressful situations, whereas times of anxiety and stress may amplify sexual arousal in people who are usually easily excitable.⁶⁴

Erectile Dysfunction

ED is the most common male sexual health concern, effecting between 13% and 28% of men aged 40–80 years,^{65,66} with prevalence increasing with age.⁵⁸ While no data exist regarding the relationship between COVID-19 and the additional risk of developing ED, men at greatest risk for having serious complications secondary to COVID-19 are also those traditionally at risk for ED: older adult, diabetic, men with cardiovascular disease, overweight/obesity, and with multiple comorbidities.^{67–69} Therefore, it is important to consider the role of added stress, anxiety, and physical health implications for men with ED amid the COVID-19 pandemic.

There is the potential that COVID-19 may add to the collective risk of developing ED or exacerbate pre-existing ED in men who contract COVID-19. Little is known about the risks of long-term pulmonary complications, namely the risk of pulmonary fibrosis, although this likelihood exists, and there are previous examples of viral respiratory infections complicated with fibrosis.^{70–72} Chronic lung diseases, namely interstitial lung diseases and chronic obstructive pulmonary diseases are associated with ED.^{73–75}

Conditions derived from the coronavirus pandemic, such as pressure related to economic and job instability, loss of external social interaction, and potential distance from one’s sexual partner(s), are all factors that contribute to increasing levels of anxiety and depression⁴⁹ and may influence erectile function. These psychosocial changes can both cause and exacerbate ED, even in younger men,⁷⁶ through a mechanism of psychogenic ED, mediated by hyperstimulation of the sympathetic nervous system.⁶⁷ Depressive symptoms are commonly associated with the incidence and severity of ED,⁷⁷ with a bidirectional relationship, wherein ED causes or worsens depression as well.⁷⁸ Anxiety is usually involved in the etiology of ED in the early stages of sexual life, while positive sexual experiences are protective.⁷⁸ Anxiety can lead to some failures in initial attempts at sexual intercourse, leading to greater anxiety in later attempts and perpetuating this vicious cycle.⁷⁹ Owing to the relational impact of ED, its multifaceted nature should be kept in mind, regardless of the pandemic implications.

When addressing treatment of ED, it is important to note that regardless of the ED nature, physiologic or psychogenic, the

treatment methods are largely shifting to telemedicine to adjust to ongoing needs amid the pandemic. As with many other diseases that are less “critical” in nature, there is a chance that ED may be prioritized less or seen as nonessential from the perspective of men with ED, as well as their primary health-care providers. Ongoing global economic instability may lead men to have difficulties obtaining their medications. In addition to the direct effects of interrupting their ED medication, it must be kept in mind that the decompensation of cardiovascular and mental illnesses can aggravate ED.⁸⁰

Orgasmic and Ejaculatory Disorders

The etiology of orgasmic and ejaculatory dysfunction often includes stress, anxiety, and preoccupation.^{81,82} In both men and women, significant time spent in quarantine can increase psychological distress, including low mood, anxiety, depression, irritability, and fear,⁴⁹ which can complicate sexual dysfunction presentation in general and orgasmic disorders, in particular, orgasm dysfunctions, premature ejaculation (PE), or anorgasmia. Decreased motivation to seek treatment for sexual problems may further exacerbate potential relational distress and conflict. Important considerations include access to ongoing sexual therapy treatment, comorbid sexual health problems, and potential side effects of medications prescribed to treat the aforementioned psychiatric symptoms.^{81,83,84}

Genito-Pelvic Pain Penetration Disorders

The DSM-5 diagnosis of Genito-Pelvic Pain/Penetration Disorders (GPPPD) merges the previous DSM-IV-TR diagnoses of dyspareunia and vaginismus.⁸⁵ GPPPD has been shown to be very common: prevalence studies of vulvodynia, a common cause for dyspareunia, have indicated lifetime estimates ranging from 10% to 28% in reproductive-aged women.⁸⁶ The prevalence of vaginismus in sexual clinical settings ranges from 5% to 17%.⁸⁷

Home confinement and quarantine may have a significant impact on women with GPPPD, both on a psychological and on a practical level. Studies on the psychological effects of quarantine in the general population have shown a high prevalence of depression,⁵³ low mood,⁵⁰ acute stress disorder,⁸⁸ and post-traumatic stress symptoms,⁵¹ during and after a quarantine. Pre-existing psychiatric conditions,⁴⁸ younger age (16–24 years), and female gender⁸⁹ are associated with worse psychological impact.⁴⁹ This information may imply that women suffering from GPPPD, a condition typically presenting in young adulthood and associated with clinical and subclinical depression and anxiety, may be at significant risk for worsening or exacerbation of their mood disorder.^{86,90} In women with GPPPD, anxiety and depression have been also associated with greater pain intensity and sexual dysfunction,^{86,91,92} so that a highly stressful situation such as home confinement may potentially result in worsening of sexual function. A recent study has shown women who experienced more severe and frequent

Table 1. Recommendations regarding sexual health during the COVID-19 pandemic

Sexual partners
Solitary sexual activity
Masturbation is allowed: It is safe and may have significant psychological benefits (relief of tension and anxiety). ⁷⁶
Cohabiting partner
Sex with an asymptomatic cohabiting partner is safe ⁷⁶
Sex should be avoided with a quarantined partner following infection or exposure. ⁷⁶
Sex should be avoided with the symptomatic partner ⁷⁶
If the partner is at risk for severe disease due to background morbidity, sexual activity should be allowed only if both partners are staying at home ⁷⁶
Partner outside household
Sexual contact with anyone outside one's household should be avoided ⁷⁶
Noncohabiting couples may stay intimate through erotic phone conversations, sexting, and video
Multiple and new partners
Sex with multiple partners and casual sex is firmly discouraged ^{5,21}
Video dates, sexting, or chat rooms are a feasible and safe alternative ⁶⁵
Sexual practices
Kissing and oral sex
Kissing is allowed between healthy, unexposed cohabiting partners. ⁶
Kissing should be avoided with anyone symptomatic or with people outside one's household. ⁶
Vaginal intercourse
Vaginal intercourse is allowed, as there is no evidence that COVID-19 is transmitted through vaginal secretions and ejaculate. ⁶
Anal intercourse
Anal intercourse is allowed, provided fecal-oral transmission is carefully avoided. ^{12,17}
Analingus, or "rimming", should be avoided as the fecal-oral transmission of the virus has been documented. ⁷⁶
Virtual sexual activity
Video dates, sexting, chat rooms, and erotic phone conversations are a safe alternative to sexual contact. ⁶
Sexual dysfunction
General considerations:
Call for increased awareness that stress, anxiety, and depressed mood resulting from direct and collateral effects of the pandemic may negatively impact all types of sexual dysfunction.
Treatment of sexual dysfunction should be higher prioritized than other nonurgent medical issues.
Counselling sessions and medical consultations should shift even more to different online platforms and telemedicine.
Guidelines & recommendations should be available for free because the financial loss can make it difficult to pay for weekly psychological and sexual treatment sessions. ⁴⁹
Call for awareness that only motivated couples may find home confinement an occasion to comply with sexual therapy exercises, as the daily schedule is flexible.
Sexual desire and desire discrepancies
Anxiety around infirmity and mortality may be linked to either increased or decreased sexual interest in different individuals. ^{63,64}
Stress and extended proximity to one's partner may exacerbate differences in desire.
Erectile dysfunction (ED)
Men at greatest risk for having serious complications secondary to COVID-19 are also those traditionally at risk for ED (older age/ comorbidities). ⁶⁷⁻⁶⁹
Psychosocial changes such as economic pressure or job instability can both cause and exacerbate ED ⁷⁶
Economic instability may lead men to have difficulties obtaining their medications ⁸⁰
Orgasmic and ejaculatory disorders
Low mood, anxiety, depression, irritability, and fear may worsen orgasmic disorders ^{81,82}
Genito-pelvic pain penetration disorders (GPPPD)
PTSD, a common antecedent to GPPPD, may undergo symptom reactivation following fear of infirmity and confinement during the pandemic ^{95,96}
Home confinement may amplify and exacerbate the interpersonal responses that maintain GPPPD.
Lack of privacy can prevent compliance with home exercises. ¹⁰⁵

pain during intercourse reported increased loneliness and depressive symptoms.⁹³ Social isolation measures required to control the pandemic may potentiate such feelings of loneliness

and further increase the distress of patients with GPPPD. Couple dynamics play a central role in the adaptive coping of women with GPPPD and their partners.⁹⁴ The attachment style

of partners, dyadic sexual communication, partner responses to pain, affection, and ambivalence over emotional expression have all been shown to impact pain and dysfunction.⁹⁴

Posttraumatic stress disorder (PTSD), especially after sexual abuse, has been documented as a common antecedent to GPPPD^{95,96} and may cause increased vulnerability of patients with GPPPD to acute stressful events. The effect of the pandemic, social isolation, and quarantine on pre-existing PTSD has not been studied yet. Nevertheless, the literature has shown that conditions involving fear of infirmity or death, loss of control over one's life, and disruption of one's sense of safety may potentially provoke PTSD symptom reactivation.^{97,98} Based on these findings, we may assume that the risk of posttraumatic symptoms worsening during the pandemic and home confinement is significant.

As GPPPD has long been conceptualized as a biopsychosocial phenomenon, its treatment should ideally be based on an individualized, multidisciplinary approach, involving medical doctors, physiotherapists, sex therapists, and/or psychologists.^{99–102} Cognitive-behavioral therapy for GPPPD involves home exercises, such as the use of vaginal accommodators (dilators)¹⁰³: Women usually carry out the exercises in their own privacy and sometimes, often at later stages, with the aid of their partner. During home confinement, when both partners and sometimes additional family members are at home all the time, negotiating personal privacy can become a challenge, and interruption of the exercises may be inevitable. Physiotherapy modalities may be an alternative to solitary exercises using accommodators.¹⁰⁴ However, the accessibility of medical and physiotherapy treatment for nonemergencies becomes scarce at the pandemic time. The lack of client-medical caregiver interaction may have physical effects in some cases, but deleterious psychological effects may occur as well: The client-caregiver relationship is an integral part of the social context of someone suffering from a chronic illness, and halting this relationship can negatively affect treatment compliance and health outcomes.^{86,105} A last important factor to consider during quarantine is financial loss, with people unable to work and having to interrupt their professional activities with no advanced planning.⁴⁹ In this situation, it can be impossible for some women and couples to pay for weekly psychological and sexual treatment sessions, as in many countries, the public health-care systems do not include these therapies in their health packages.

DISCUSSIONS AND RECOMMENDATIONS

Based on current published and revised studies referring to sexual health and behaviors in correlation to coronavirus pandemics, we wish to call for key questions about sexual behavior during the COVID-19 pandemic, with respect to the effects of quarantine, social distancing, and home confinement on sexual health. [Table 1](#) summarizes our main results-based discussions and conclusions.

Intimacy and Relational Dynamics Effects

When revising the knowledge of COVID-19 and infectivity, sexual activities, dating, and relational dynamics, our summary and recommendations are in line with the statements issued by the public institutions and professional societies on the safety of sexual activity and disease transmission prevention ([Table 1](#)).^{5–7} Since the onset of COVID-19, new dating possibilities must be adapted and intimacy issues highlighted. While sexual activity should be encouraged between cohabiting partners during the pandemic, sex with multiple partners and casual sex is firmly discouraged, so is sex with a quarantined partner. Very recent studies found the presence of SARS-CoV-2 in the semen fluid,¹⁰⁶ but not in the vaginal secretions.¹⁰⁷ The samples studied were small, but the results may have implications on the sexual transmission and oral sex; therefore, additional original research is needed on this topic. Video dates, sexting, or chat rooms are a feasible and safe alternative, as in-person dating should be postponed. Masturbation remains the safest sexual activity option to avoid COVID-19 transmission while undertaking proper hygiene practices when using sex toys.

Considering the immunity aspects within such a provocative infection, individuals with medical conditions which can lead to more severe COVID-19 (lung disease, heart disease, diabetes, cancer, or a weakened immune system) should avoid sexual contact as a preventive measure. In addition, early pregnancy should be considered for possible risk and even potential teratogenicity when infected with SARS-CoV-2, until clear evidence becomes available on the topic.

Clinical Effects

Sexual activity has a positive impact on the immunity, mental state, and cognitive outcome, and therefore, it should be encouraged between cohabiting partners during the pandemic. We discuss the pandemic impact on sexuality with an emphasis on the benefits of sex, sexual desire, ED, genito-pelvic pain penetration disorders, and couple dynamics.

Benefits of Sex

The psychosocial and economic implications of the current pandemic and the profound impact they have on collective, dyadic, and individual adjustment are expected to have deleterious collateral effects on general health. Changes in the level of physical activity and diet, social isolation, exacerbation, or reactivation of pre-existing depression and anxiety, the impact of stress on the immune system, should all be considered significant secondary health hazards. Based on the information outlined previously, which summarizes the facilitative effect of healthy sexual activity on physical and mental health, we suggest maintenance of sexual activity should not be discouraged but rather globally recommended by professional health-care societies at this time, as it may emerge in psychological and emotional benefits.

Sexual Dysfunctions

In addition to changes in psychological health, measures of social distancing, isolation, and quarantine also present unique challenges in navigating sexual desire discrepancies (Table 1). For some, these differences may manifest for the first time where one partner is looking to have more sex and the other is distracted, preoccupied, or otherwise disengaged. For others, stress and extended proximity to one's partner exacerbate differences in desire.

Home confinement, combined with the psychological stress of living in a pandemic, may amplify the already existing sexual dysfunction, such as sexual desire discrepancies, ED, PE, or GPPPD (Table 1). When faced with sexual dysfunction, being confined at home with one's romantic/sexual partner may heighten sexual anxieties and fear of performance failure, affecting sexual satisfaction and overarching relationship conflict (Table 1). Accordingly, quarantine situations may exacerbate the already complex interpersonal responses that maintain and worsen sexual issues (Table 1).

However, in the context of a healthy relationship, it also holds opportunity for couples to engage in sexual intimacy at their own pace, to better comply with home exercises, such as sensate focus or other behavioral techniques, as the daily schedule is flexible and lack of time is less of an issue. Free from many of life's external pressures, couples may feel more able to confront and better cope with ED, PE, anorgasmia, or GPPPD (Table 1). Additional consideration ought to be made for individuals who are not cohabitating with their sexual partner(s) or are not in committed sexual relationships. While home confinement and social distancing further complicate physical and sexual engagement in practical ways, it also creates an opportunity for these partners to engage in creative ways of increasing intimacy and eroticism, such as through virtual sex.

In conclusion, the current COVID-19 pandemic and its effect on everyday life have significant implications regarding the ability of women and men with sexual dysfunction to successfully cope with their condition. Increased emotional distress, mood disorder, PTSD exacerbations, and worsening couple dynamics may be expected. Despite the accessibility of telemedicine and online psychotherapy options, treatment plan interruption and possibly regression of symptoms may be observed, as postponement of most elective, nonurgent medical treatments and putting "on hold" topics that are not a direct, immediate threat to one's health and safety are expected. In some cases, the schedule flexibility which is a side product of lockdown and confinement may provide an occasion to devote time to increased intimacy and communication, leading to better compliance with couple therapy and sex therapy behavioral exercises. Access to materials with recommendations and knowledge for self-therapeutic exercises to engage in safe sexual activities should be available to the public (Table 1).

CONCLUSIONS

Increased awareness of health-care providers on the sexual health implications of the pandemic is needed. Internet-based

platforms and telemedicine for psychotherapy and sexual therapy are powerful tools, allowing continued support at times of lockdown and preventing disturbances of sexual, mental, and physical health after a pandemic. The shift of paradigm with the increase of telehealth work models has brought people who would not have local access or would hesitate in looking for a clinician in person closer.

As the COVID-19 pandemic continues throughout the world, there are innumerable implications on sexual and relational health. Containment measures of quarantine, social distancing, and home confinement have the potential to complicate existing problems related to sexual functioning and introduce new sexual challenges to individuals and couples alike. Extra care and consideration are needed when navigating dating and sexual relationships, but more than ever, adults are in need of social community and positive sexual engagement. Original research assessing the impact of this unprecedented situation on different sexual health aspects is needed, to improve awareness and to minimize the negative impact the current pandemic may have on people's sexual lives globally.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.sxmr.2020.10.004>.