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# Perceived Changes in Sexuality during the COVID-19 Pandemic among Adults in the United States

Jessamyn Bowling<sup>1,\*</sup>, Erika Montanaro<sup>2</sup>, Sarai Guerrero-Ordonez<sup>1</sup>, Stuti Joshi<sup>1</sup> and Diana Gioia<sup>1</sup>

<sup>1</sup> Department of Public Health Sciences, University of North Carolina at Charlotte, Charlotte, NC 28223, USA; sordone2@uncc.edu (S.G.-O.); sjoshi28@uncc.edu (S.J.); dgioia@uncc.edu (D.G.)

<sup>2</sup> Department of Psychology, University of North Carolina at Charlotte, Charlotte, NC 28223, USA; emontana@uncc.edu

\* Correspondence: jessamyn.bowling@uncc.edu

**Abstract:** In the United States, the COVID-19 pandemic has decreased partnered sexual behavior and increased the use of enhancement (e.g., toys). This has been partly attributed to reduced social interactions and stress. However, individuals' perceptions of changes are missing in research. This study aims to examine how adults perceive changes in their sexuality during the pandemic. We conducted a nationwide survey of US adults from April–June 2020 ( $N = 326$ ). This qualitative study examines the open-ended responses using thematic analyses. The following themes emerged from the data: (1) changes in the purpose of sex; (2) changes in sexual identity; (3) decreases in sex drive and desire; (4) increases in sex drive and desire; (5) fluctuations in sex drive and desire; (6) increased sexual experimentation and reflection. The stress, changes in home responsibilities and living situations, and time spent with partners (more or less) has affected individuals by increasing or decreasing their sex drive and desire. Participants responded to changes with self-reflection and awareness, and incorporating new practices (e.g., technology, kink). The purpose of sex has shifted in order to gain intimacy or connect, or to pass time. These changes were perceived as both positive and negative, and more research is needed to determine the durability of these changes.

**Keywords:** COVID-19; pandemic; sex drive; purpose of sex; sexual identity



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## 1. Introduction

The global COVID-19 pandemic has significantly impacted society by reducing interactions as a result of social distancing and stay at home orders across the United States [1]. With 28 million cases in the United States [2], the pandemic has created new sources of stress (e.g., moral fatigue, unhealthy living situations, financial strain, and health concerns of self and others) [3,4]. These new stressors can, in turn, create changes in perceptions of the importance of sex and sex drive. For example, burgeoning work that focuses on the impact of COVID-19-related stress on sexual activity finds that the pandemic is indeed related to significant decreases in partnered sexual activity [5–8]. Conversely, reports suggest that a higher percentage of people are masturbating more and are using enhancements (e.g., toys) more often [7]. There is mixed quantitative evidence on the impact of the COVID-19 pandemic on individuals' sexual activity; however, the subjective experiences have largely been neglected in the previous literature. The current study seeks to explore the subjective experiences of individuals' sexuality during the first few months of the COVID-19 pandemic (April–June 2020).

We draw from the Circles of Sexuality, a strengths-based model that includes sexualization, sensuality, intimacy, sexual identity, and sexual health and reproduction [9,10]. This model includes positive domains of sexuality, while also allowing for sexuality-related concerns (including relationships, sexual identity struggles, intimacy concerns, and general life satisfaction [11]). The Circles of Sexuality guides our interpretation and discussion of the findings. Our focus is within the model's category of sensuality, or one's "awareness,

acceptance, and enjoyment of one's own and others' bodies" and sexual identity, or "how we perceive ourselves as sexual beings" [10]. Within this, we examine the importance of sex, sexual pleasure, sexual desire, and sex drive. Given the intersecting nature of the different aspects of sexuality, we briefly define these terms. First, individual perceptions on the importance of sex, or a subjective evaluation of the prioritization of sexual behaviors, have been connected to a broad range of sexual activity, desire, and satisfaction [12]. Sexual pleasure is defined as "physical and/or psychological satisfaction and enjoyment derived from solitary or shared erotic experiences, including thoughts, dreams and autoeroticism" [13]. Furthermore, sexual desire is highly subjective, encompassing any interest in the engagement of sexual activities [14]. Finally, sex drive is at times described synonymously with sexual desire [15], an increased motivation for sex [16], or as a biological need [17]. Additionally, sex drive and desire can also affect sexual satisfaction [18,19]. Sexual satisfaction has also been found to be a key factor in relationship satisfaction [18,20,21], demonstrating that all aspects of sexuality are important and interconnected.

Due to the stressful and life-changing nature of COVID-19, individuals have been forced to make sense of new situations, such as social distancing protocols and recommended periods of self-isolation [22]. Isolation appears to be particularly problematic, as it has been linked to negative changes in sexual behaviors and interpersonal connections [23]. However, unforeseen benefits from social distancing and self-isolation protocols could occur. Researchers have explored how social distancing may foster new opportunities for self-reflection and sexual self-concept [24,25]. Indeed, one study focused on how free time during COVID-19 has allowed people to allocate more time to themselves and the exploration of new experiences [25]. Other studies have found isolation as an opportunity to foster more fulfilling and prosperous sex lives [26,27]. Finally, researchers have found that reduced social interactions and increased time at home has led to an increase in solo sexual activity [7].

Prior to the COVID-19 pandemic, past studies have found that vaginal sex was highest among men aged 25–39 and women 20–29, with rates declining progressively in older age groups [28]. COVID-19 has the potential to disrupt those trends due to increased isolation, social distancing, and stress. Indeed, the extant literature has found evidence of this relationship [5,7]. Multiple studies have linked stress hormones to a loss in libido, indicating that stress can make it harder for relaxation and orgasm [29,30]. Stress can also hinder relationship satisfaction, making intimacy and sexual behaviors less likely [31–33]. However, the early work in this domain as it relates to COVID-19 has produced mixed findings on the association between stress and sexual desire and activity. Some research from Italy, Iran, and Spain report little to no changes in individuals' (many in relationships) sexual activity and perceptions as they navigate the pandemic [23,34].

In line with our focus on individuals' sexual identity or sense of themselves, we examine the ways changes have influenced one's feelings of empowerment, capability, or strength. Empowerment is typically discussed in sexual health as related to gender empowerment, in which women and girls transition into the ability to act on their choices [35]. Women's empowerment has been linked to the use of contraception [36–39], a reduction in unintended pregnancy [40], and negotiation in sexual relationships [41,42], among other reproductive health outcomes. Among women, a focus on sexual pleasure has been linked to feelings of empowerment [43]. Given that the pandemic negatively impacted self-efficacy for many individuals [44], we examined general empowerment in relation to changes in sexual being.

Quarantine and social distancing may differentially affect those who are single, with those in relationships or residing with family potentially having more social interactions than those living alone. Furthermore, sexual behavior factors can differ for individuals with different relationship statuses (e.g., people with a steady partner, people living apart from their partners, and partners who are isolating together). However, sexual behaviors are not mutually exclusive to relationship status, meaning those in a long-term, monogamous relationship may still participate in masturbation and self-pleasure.

We focus on subjective understandings in order to better align research directions, and subsequent clinical approaches and interventions, with individuals' lived experiences and priorities. This study qualitatively examines the following research questions: (1) how has the COVID-19 pandemic affected perceived sexuality, importance and purpose of sex, sex drive, and sexual desire among adults in the United States? (1a) How have these changes related to individuals' sense of dis/empowerment, capability, strength/weakness?

## 2. Materials and Methods

We conducted a nationwide online survey via Qualtrics with open- and closed-ended questions ( $N = 326$ ). We sought to gather as many diverse perspectives as possible in a relatively short timeframe. The survey included questions based on perception changes in sexuality and risk, sexual behavior, body image, sexting and texting, sexual self-efficacy, and mental health. This analysis focuses on responses across questions that pertained to sexual being; see our prior publication [45] for more detail on changes in risk perceptions as a result of the pandemic. The target population included any individual over 18 years old in the United States. Participants were recruited through multiple methods, including social media postings, listerv announcements, and snowball recruitment techniques. Participants confirmed consent electronically and were entered into a draw for a USD 15 or USD 20 Amazon e-gift card upon completion of the survey. Five USD 15 e-gift cards and two USD 20 e-gift cards to Amazon were awarded through a random draw. The authors' institutional review board approved all protocols and procedures.

### 2.1. Participants

Over three-quarters (76.1%,  $n = 247$ ) of participants identified as women, while 22.5% ( $n = 73$ ) of participants identified as men and 1.5% ( $n = 5$ ) of participants identified as gender non-binary and agender. The average participant was 30.6 years old ( $SD = 11.22$ ), with ages ranging from 18 to 77. A majority of participants identified as heterosexual (70.8%;  $n = 230$ ), 3.7% ( $n = 12$ ) identified as gay, 1.8% ( $n = 6$ ) identified as lesbian, 12% ( $n = 39$ ) identified as bisexual, 0.3% ( $n = 1$ ) identified as pansexual, 2.5% ( $n = 8$ ) identified as queer, 0.9% ( $n = 3$ ) identified as asexual, 7.1% ( $n = 23$ ) identified as two or more labels, and 0.9% ( $n = 3$ ) identified as other. The most common relationship status among participants was being in a committed relationship with one person ( $n = 211$ , 64.5%), while dating was the least common relationship status ( $n = 3$ , 10.1%). One-fifth (20.2%,  $n = 66$ ) of participants were single or not dating.

### 2.2. Data Analysis

Participants' responses were coded by a team of trained coders using Dedoose software [45] using inductive thematic analysis [46]. This method allowed for similar ideas to be grouped together into themes. All qualitative responses were coded by two different trained coders to ensure reliability. An initial codebook was created based on a preliminary analysis of the responses. After coding 30 participants, the codebook was edited to add relevant codes. Using the "test" function on Dedoose software, interrater reliability was confirmed for each coder. Any code with less than a 0.8 Kappa was discussed with all coders and refined to include descriptions and inclusion criteria (e.g., "importance of sex/sex drive": meaning of sex, changing prioritization, attraction/desires). The complete codebook included 46 codes. This study focuses on participants open-ended responses to prompts exploring the importance of sex and sex drive, (e.g., "how has your sexual being changed in the last 3 months?" [sexual being was explained to participants in the question as: "by sexual being, we mean your perception of yourself sexually, your sexual behaviors, your ways of interacting/relating to others, your desires/attractions, among other things]; and "how have those changes influenced your sense of empowerment, or feeling capable and strong?"; see Appendix A for all five open-ended questions in the survey). Initial themes were generated based on patterns emerging from the data (such as increases or decreases) and the codebook. These themes were subsequently reorganized, partly in line

with the Circles of Sexuality model (e.g., “kink” and “enhancement” were combined into “exploration and enhancement”). We looked for empowerment and disempowerment within each theme.

### 3. Results

#### 3.1. Purpose of Sex

During COVID-19, some participants achieved realizations of the importance and meaning sex.

*It makes me realize that sex and companionship is important especially when it's not so easily accessible. (23, woman, heterosexual, Black/African American, dating casually, partner living separately but visit with them periodically even during social lockdown).*

*Sex feels more about connecting and is more of a comfort measure. I feel more connected to my partner because we have more time together than before—lounging in bed in the morning instead of rushing to the gym, taking walks at lunch, etc. Overall—I feel like we are still having the same amount of sex, but the general partnership is outweighing it . . . I feel more complete and settled. My sexuality is in all parts of me—not just A part of me. (43, woman, heterosexual, White, in a committed relationship with one person, partner living with me as usual/partner is living with me as part of lockdown but does not usually).*

Sexual purpose began to evolve and change, with reports of increased perceptions of sex as a mechanism for connections and companionship, or for passing time and relaxing.

*I've begun viewing it more as an activity to pass the time (23, woman, heterosexual, White, dating casually, do not have a partner nor living with an ex).*

COVID-19 also led to changes in the perception and engagement of sex and sexuality, such as viewing it as more of a time passing activity or comfort.

*I am reading “Come as You Are” during my quarantine, which has increased my self-compassion around body and sex, and changed my understanding of sex. (24, woman, bisexual, White, in a committed relationship with one person, partner living separately but visit with them periodically even during social lockdown).*

We found evidence of empowerment within this theme of participants describing the contextualization of their sexuality within their larger self and increasing self-compassion.

#### 3.2. Sexual Identity/Being

For some participants, this time allowed for development and changes in sexual identities and attraction.

*My sexual being in the past 3 months has varied. Sometimes I do not have the desire to do engage in sexual activities for a long period of time (about a month, sometimes more). My desires vary as well which is why I may find myself thinking I could be pansexual vs. bisexual. (22, woman, bisexual, Black/African American, in a committed relationship with one person, partner living with me as usual).*

*I perceive myself less sexual because I don't get ready like I would if I was going out and about. (28, woman, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

Variations in desire, need for safety, and reduced perceived sexiness caused some participants to re-evaluate their identity. Specifically, one participant reported a new attraction to people based on their COVID-19 precautions.

*My sexual identity has expanded to include more people than I would be attracted to in the past—I am more attracted to people who seem to have healthy relationship habits and appear safe, as opposed to my previous attractions that were based on high risk and high*

*attraction. I feel attracted to people I think I will be safe with, as so much feels threatened and unsafe right now. Even though I have SO MUCH privilege as a white woman not working on the front-lines—the threat of death feels so much closer than it has ever felt in my life. My perception of attractive people has evolved. (26, woman, queer, White, dating casually, do not have a partner nor living with an ex).*

This last quote speaks to seeking to empower oneself in a largely threatening environment through attraction to others who are perceived as safe.

### 3.3. Sex Drive and Desire: Decreased

Reasons for changes in sex drive were unknown, related to environmental stress, changes in partner dynamics.

*I typically have a low sex drive/low interest in having sex and that has changed a bit in the last 3 months. I am less stressed by work (I don't like working from home but apparently it's "good" for me) and therefore feel more connected to my partner and more interested in sex as a result. This hasn't translated to actually having more sex or more masturbation, but I do feel less stressed about "needing to have sex" these days. I definitely miss being able to be physically present with and hug/touch friends, though, which I consider to be an important part of how I relate and interact with others. Only having my partner as a source of physical contact is strange and isn't entirely satisfying (27, woman, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

*[My sexual being] has changed due to spending more time with my partner as we quarantined together for 3 weeks. I have realized that my sex drive fluctuates drastically even when externally nothing much has changed. I also [realized] some of my physical limitations and challenges in expressing these limitations. (28, woman, heterosexual, queer, White, in a committed relationship with one person/other, partner living separately but visit with them periodically even during social lockdown/other).*

For other participants, the pandemic led to a lack of interest and effort in sex.

*I feel more empowered/strong because I don't feel needy about sex or worry about rejection because I don't desire it as much. (26, woman, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

Some participants reported being unable to engage in their typical sexual activity due to pandemic social lockdown, leading to increased desire.

*I haven't related to anyone physically in any way for the past 3 months. This is different than normal. (53, woman, heterosexual, Middle Eastern/North African, dating casually, partner living separately and I cannot visit with them during lockdown).*

Stress-induced decreases in sex drive were associated with physical issues in arousal.

*It makes sense that when I'm stressed out, I can't relax enough to get aroused as often as usual. (30, woman, bisexual, White, in a committed relationship with one person, partner living with me as usual).*

*As I further myself into stressed out mode, sex grows far distant, and when it's asked of me, my body physically rejects it. I twitch and squirm. (29, woman, bisexual, White, in a committed relationship with one person, partner living with me as usual).*

Distractions were reported as affecting sex drive as well, with reasons including changes in schedule, personal projects and work, as well as childcare.

*I have had little to no interest in sex. I work as a therapist, so I have been feeling emotionally exhausted, and this leaves me with little emotional energy to want to be sexual or physically affectionate with my partner. (26, woman, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

*Less time to think about sex, let alone engage in it. There is little privacy for intimacy in a house with 2 small children, the only time being at night or when they are otherwise supervised. One can supervise due to social distancing restrictions, and by the time we make it to the end of the day and the kids are in bed, we're both too exhausted and/or forced to jump back on computers to finish more work. (40, man, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

Some participants also reported the pandemic having an effect on their sex drive and sexual behavior, beyond social lockdown. Specifically, participants described stress from the pandemic, worries about medicine and the pandemic, and fear of transmission. Participants living with a partner as usual appeared to be more likely to report this theme.

*I have noticed that I am less interested in sex. This happens usually when I am having anxious episodes, which is often during the lockdown. I find it hard to orgasm or get aroused when my mind is stressed about the virus, unemployment. (26, woman, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

*I am worried my medicine and the current state of the world is affecting my sex drive. It worries me because I have a boyfriend and don't want him to feel like it's because I'm not attracted to him. (25, woman, heterosexual, White, in a committed relationship with one person, partner is living with me as part of lockdown but does not usually).*

*My sexual being has slowed down tremendously. It is mostly out of fear of getting the virus and passing on the virus to others. I feel like during a pandemic we all have a social responsibility to be as strategic as possible when it comes to lessening social interaction, which includes my sex life. Since I haven't been able to be sexual with others, I have been practicing more masturbation . . . If anything, it shows me that I am stronger and can be more independent when it comes to sexual pleasure. (22, man, gay, White, single, not dating, do not have a partner nor living with an ex).*

In relation to empowerment, we see conflicting evidence of decreased desire. Reduced sexual desire both increases empowerment in feeling independent and less reliant on sex; for those in a partnership, the drop in desire creates concerns about the impact on a partner and for some, the forced reduction in sources of physical affection without hugs from non-partner individuals was disempowering.

#### 3.4. Sex Drive and Desire: Increased

Some participants reported increased sexual desire and activity during the pandemic. This was seen both in participants who did not have outlets for their sexual desire and those who had partners.

*In the past 3 months, I would say I haven't interacted with anyone other than my family members. I remember of being out everyday before the lockdown, but now I haven't step [sic] out of the house in the past 2 months. Also, I am not able to meet my girlfriend in this period. So talking about sexual desires, yes they have increased and am urging to go out, meet other people, interact with them. (23, man, heterosexual, Asian, in a committed relationship with one person, partner living separately and I cannot visit with them during lockdown).*

*I've been having more sex, wanting it more and willing to try new things . . . I'm more willing to ask for what I want, the way I want it (34, woman, heterosexual, Black/African American, in a committed relationship with one person, partner living with me as usual).*

Perceptions of increased sexual openness were cited in different contexts, such as discussion and sexual interaction, although it is unclear if interaction relates to behaviors or just discussion.

*I've become more open discussing my sexual interests with friends and sexual partners. (22, woman, bisexual, White, dating casually, partner living separately but visit with them periodically even during social lockdown).*

*I feel more open to sexual interaction. (34, woman, bisexual, White, in a committed relationship with one person, partner living with me as usual).*

This openness speaks to increased capacities for negotiating desires.

### 3.5. Sex Drive and Desire: Fluctuations

A smaller subtheme emerged in which participants described fluctuations in their sex drive throughout the pandemic or differences across domains, such as decrease in libido but increased interest in new activities.

*When the quarantine first started masturbation was a great way for me to have a good time and take my mind off things. I even bought a prostate vibrator and lube and would spend more time doing it and learning how to have a better time. But since then my sex drive has plummeted and now I only masturbate (or fill out surveys about masturbating) to procrastinate writing my final paper. Its never instigated by any horniness anymore. (25, man, heterosexual, White, single, not dating, do not have a partner nor living with an ex).*

*My libido has been basically nonexistent this year, for reasons related to financial insecurity and mental health; through the first month of lockdown, that hadn't changed. For some reason though, in the past week I've felt some surprising stirrings and now I'm kinda ready to go at the drop of a hat. (37, man, heterosexual, White, in a committed relationship with one person, partner living separately but visit with them periodically even during social lockdown).*

*My libido has decreased, my attraction to my roommate has increased, my desire for other sexual partners has increased, my desire for power exchange has increased, I'm flipping between feeling both less secure in my body and more certain of being sexy—they both happen and it fluctuates. (31, woman, bisexual, pansexual, queer, White, in a committed relationship with more than one person, partner living with me as usual/partner living separately and I cannot visit with them during lockdown/partner living separately but visit with them periodically even during social lockdown).*

Participants described a change in their sex drive that appears to be without external causation.

### 3.6. Increased Experimentation and Reflection

The pandemic led to increased interest in engaging in new experiences.

*In the last 3 months, I have been more sexually aroused and stimulated. I have a newer partner so it's been fun doing some new things. (23, woman, heterosexual, Black/African American, dating casually, partner living separately but visit with them periodically even during social lockdown).*

Participants in this theme often discussed their intentional reflection.

*I feel more of an empowerment of self-discovery since I did rely heavily on sexual thought/self-stimulation prior to the pandemic, but now I use several other tasks to please myself. (23, man, heterosexual, Asian, in a committed relationship with one person, partner living separately but visit with them periodically even during social lockdown).*

*I have so much time to explore my own thoughts, desires, philosophy related to sex. I have so much time to be present with myself in a way I never have before. I read "Pleasure Activism" by Adrienne Marie Brown, went to therapy up to two times a week, and got to*

*write out all my thoughts and feelings. I got high (using tinctures after I was convinced to stop smoking) and used that to do some deep reflection and enjoy sex with myself or my husband for a longer time. (28, woman, bisexual, pansexual, queer, White, other, partner living with me as usual).*

Changing circumstances led to opportunities for sex in new ways, such as daytime sex.

*I think my libido is a little higher, but mostly the same. I do feel like I'm really enjoying the chance to have daytime sex. Usually, because I work and am in grad school, I'm not home during the days so sex is relegated to night times and weekends. However, due to sexual trauma in my past, I sometimes don't like having sex when it's dark because I find it triggering. So I'm really enjoying the chance to have sex in the afternoon with my partner! (26, woman, heterosexual, bisexual, White, in a committed relationship with one person, partner living with me as usual).*

Similarly, changing circumstances created a need for the use of technology. This technology allowed participants to engage in different forms of pleasure, as well as sexual and dating interactions.

*I was in a long-distance relationship even before the pandemic, but expecting to see partner within the next month or so. unsure when we'll see each other again. Conversations definitely more sexual, more picture sending, etc. (22, woman, heterosexual, White, in a committed relationship with one person, partner living separately and I cannot visit with them during lockdown).*

*Have tried things I had not prior (virtual mutual masturbation). (33, man, heterosexual, Black/African American, dating casually, do not have a partner nor living with an ex).*

Technology was used to connect to partners, while for others, it was used solely for sexual interactions. Participants discussed using toys and devices in new ways.

*I love self pleasure. I finally found a toy that works for me and my body and have been exploring using that toy in new and interesting ways. (36, woman, asexual, Asian, single, not dating, do not have a partner nor living with an ex).*

*I purchased a male chastity device. I'm happy it's helped cut down on the temptation to masturbate. (51, man, other sexual identity, White, single, not dating, do not have a partner nor living with an ex).*

Kink practices changed, both in the use of devices as well as desiring more kinky sex, as described above with the chastity device and desire for more power exchange.

*My interest in BDSM and kinky sex has increased in the last 3 months. (35, man, heterosexual, White, in a committed relationship with one person, partner living with me as usual).*

The exploration and use of technology descriptions are tied to increased empowerment with new skills and pride in creativity.

#### 4. Discussion

We find evidence of identity shifts, changes in the purpose of sex, changes in sex drive and desire, and exploration and technology use. A recent model of sexual health impacts of COVID-19 includes changes in relationships, clinical focus (including sexual problems, psychopathology, and asepticism), and reframing technology use [47]. This fails to incorporate the positive aspects of empowerment, identity, and increases in sexual desire that participants report in this study.

##### 4.1. Changes in Sex Drive and Desire

Overall, the current study highlights changes in sex drive and the purpose of sex for many participants. Participants appeared to describe changes in both sexual desire

and sexual drive, as evidenced by the quote “low sex drive/low interest in sex”. We found many participants reporting decreases in sex drive, which may be expected due to widespread anxiety and depression in the pandemic [48–51]. Participants often described how decreases in desire and drive was a rational consequence within contexts of stress or anxiety. These findings are similar to previous research in Italy during the same period of the pandemic [34]. Although we did not assess sexual satisfaction, we might expect that this type of framing may help mitigate reductions in satisfaction. Conversely, studies have found increases in sexual desire and masturbation along with rises in depression and anxiety [50,52–55]. Participants may be participating in sexual activity as a coping mechanism to mitigate stress [56,57], and this may have important implications for sexual and mental health prevention and care services. Important moderators of these relationships include partner status (cohabitating or not) [51], sexual satisfaction and contentment [58], and gender [55]. Beyond these influencing factors, our participants’ perceived changes in their sexual being included the importance of sex and sexuality, safety precautions with COVID-19 (including whether participants could physically engage with partners or see them at all), and sexual self-knowledge.

#### *4.2. Changes in Sexual Practices*

Beyond anxiety and depression, participants reported shifts in their time with parental responsibilities and being with partners. A study carried out by Hensel et al. [5] found that parents with children aged 6–12 years reported a decrease in sexual behaviors. Participants reported exhaustion and limited time with taking care of children and being responsible for managing their education as reasons for this decline in sexual behaviors. Broadly, this speaks to the interconnectedness within our society between childcare and caregiver well-being [59], which includes sexual health. Stay-at-home orders have all but abolished a work–life balance for many parents, which will likely have long-term impacts on parental well-being. On the other hand, more time at home can lead to increased interactions with a partner, facilitating more connection and intimacy, or potentially, a lack of novelty and/or decreased attraction. As domains of sexuality often impact one another [10], we must also acknowledge the linkages and boundaries of the context of sexuality, such as the amount of leisure time or caregiving responsibilities. Although some participants discussed an increased sexual desire or interest in sex, this has not translated into increased sexual activity for all. The pandemic and social distancing has reduced some individuals’ abilities to interact with partners or meet new people.

With the uncertainty of the end of the pandemic and inability to socialize in typical ways [23], people are experiencing increased interest in new experiences [25]. The increased time alone without novel experiences may play a significant role in participants’ embrace of sexual enhancements and a re-defining of sexual activity. For example, commonly cited sexual behaviors that have been newly adopted by participants during the pandemic included reading books about sex and the utilization of toys and technology for sexual pleasure. However, for some participants, and consistent with the research conducted early in the pandemic, even with enhancements, participants reported decreases in their sexual behavior during the pandemic [7,60]. Some participants did describe satisfaction and excitement with employing new technologies, such as more virtual sex with partners, as discussed in previous research related to the pandemic [47]. While technology has the capacity to satisfy many human needs, including virtual dating, sexting, and flirting experiences, it is not a panacea for the complex and nuanced impact the pandemic is having on human sexuality.

#### *4.3. Changes in the Purpose of Sex*

Another theme highlighted in the current study is the purpose of sex shifting for participants. Indeed, many participants discussed an explicit change in the way they view sex in their lives. Given the overlapping nature of the domains of sexuality [10], this element of sensuality may have implications for intimacy or sexual identity. This shift in

perspectives is not uncommon and can be most often found in aging populations [61–63]. For example, in Sandberg’s [61,62] work with older Swedish men, the author details the renegotiation of the importance of penetrative sex to instead focus on intimacy in order to achieve sexual pleasure. However, there is some qualitative evidence that this relationship may not be as strong for older women [64,65]. Conceptions of sexuality and sexual pleasure are complex and evolve over time and across circumstances. For instance, early work exploring the impact of COVID-19 on sexual behavior and relationships suggests that sexual behaviors have decreased during the pandemic [66], but the desire for sexual intimacy has remained [27,67]. Future work may seek to examine how individuals have navigated fluctuations in their sex drive, interest in sex, and purpose of sex across the pandemic.

Similarly, sexual pleasure without a partner has shifted for some individuals during the pandemic. Previous studies found that masturbation is used as both a complement to partnered sexual activities as well as to compensate for a lack of partner or unsatisfying sexual activities [55,58]. Participants described changes in their reasons for masturbation as well as new approaches and enhancements.

#### *4.4. Changes in Sexual Identity*

Sexual minority (e.g., lesbian, gay, bisexual, queer) individuals are especially vulnerable in the effects of the pandemic, in part due to minority stress, structural discrimination and healthcare access, and social support [68–70]. Though our study was predominantly heterosexual, some participants also discussed a deepening and changing understanding of their sexual identity. Specifically, participants discussed a broadening of attraction through self-reflection. Combined with other sexual identities, such as polyamorous and kink practitioner, we find evidence of individuals’ relational sexuality being limited during the pandemic. This may point to a need for future research to examine how widespread and/or lasting some of these shifts may be.

#### *4.5. Empowerment/Disempowerment*

We find evidence of empowerment across all themes, while disempowerment was evident only in relation to reductions in sex drive and desire. Empowerment was primarily described in relation to an increased knowledge of self or abilities, rather than any particular change in power dynamics outside of the participant. Future research may be needed to assess the relationship between sex drive or desire and empowerment in societal shifts such as the pandemic. Participants described anxiety, which could have come from the societal shifts among other fears such as viral transmission, or changes in feeling of empowerment from societal shifts may have affected anxiety levels.

#### *4.6. Strengths and Limitations*

Limitations of the data are shown through the narrow distribution of demographic characteristics. We also were not able to collect data about which state participants resided. State resources, COVID-19 cases, and deaths varied, and this may have significantly impacted individuals’ sexual experiences. Furthermore, it should be noted that the data were collected during the spring of 2020, when the pandemic was relatively new. New guidelines, discoveries, and comprehension of the biological components of COVID-19 are arising daily. Increased time understanding and living through the pandemic may cause other changes in perceptions. As this study examined individuals’ perceptions through the use of qualitative data, we were not able to analyze relationships among the concepts that we included. Future work should analyze how individuals’ sex drives have changed with prolonged time living during the COVID-19 pandemic. Additionally, findings from a larger, more diverse sample size may give insight on how sex drives differ based on populations and relationship status. Finally, the results may be limited to respondents who feel comfortable responding to a survey seeking to understand changes in sexual desire. Sexuality continues to be a taboo topic in many groups across the United States and

our results are only generalizable to those we are most at ease sharing their attitudes and behaviors related to sex.

## 5. Conclusions

In relation to the pandemic, we find evidence of changes across multiple domains of sexuality, including sex drive and desire, the purpose of sex, sexual identity, and sexual practices. These changes are both positive and negative, though decreases in sexual drive and desire was a predominant theme. Although dominant discourses related to health and the pandemic are often focused on negative health outcomes, this may not reflect the ways the pandemic has positively impacted the sexual and mental health of individuals. Future research may be needed to examine the prevalence and strength of changes across these domains. Sexual health is fundamental to our overall well-being and the results of the current study suggest that sexuality is interwoven throughout all aspects of people's lives. As the world begins to heal after the collective trauma of the COVID-19 pandemic, mental and physical healthcare services must incorporate how sexuality has been impacted to facilitate holistic healing for individuals.

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## Appendix A

**Table A1.** Open-ended questions used in the survey.

We refer below to “sexual being”. We mean your perception of yourself sexually, your sexual behaviors, your ways of interacting/relating to others, your desires/attractions, among other things. How has your sexual being changed in the last 3 months?
How have those changes influenced your larger sense of self, or how you see yourself?
How have those changes influenced your sense of empowerment, or feeling capable and strong?
Thinking about your current circumstances, what would “risky” sex be for you?
Have you had any changes in engaging in “risky” sex over the last 3 months?

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