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## Initial Impacts of COVID-19 on Sex Life and Relationship Quality in Steady Relationships in Britain: Findings from a Large, Quasi-representative Survey (Natsal-COVID)

Kirstin R Mitchell <sup>a</sup>, Michal Shimonovich<sup>a</sup>, Raquel Bosó Pérez <sup>a</sup>, Emily Dema <sup>b</sup>, Soazig Clifton <sup>b,c</sup>, Julie Riddell <sup>a</sup>, Andrew J Copas <sup>b</sup>, Clare Tanton <sup>d</sup>, Wendy Macdowall <sup>d</sup>, Chris Bonell <sup>d</sup>, Pam Sonnenberg <sup>b</sup>, Catherine H Mercer <sup>b\*</sup>, and Nigel Field <sup>b\*</sup>

<sup>a</sup>MRC/CSO Social and Public Health Sciences Unit, University of Glasgow; <sup>b</sup>Institute for Global Health, University College London; <sup>c</sup>NatCen Social Research; <sup>d</sup>Faculty of Public Health and Policy, London School of Hygiene and Tropical Medicine

### ABSTRACT

Intimate relationships are ubiquitous and exert a strong influence on health. Widespread disruption to them may impact wellbeing at a population level. We investigated the extent to which the first COVID-19 lockdown (March 2020) affected steady relationships in Britain. In total, 6,654 participants aged 18–59 years completed a web-panel survey (July–August 2020). Quasi-representativeness was achieved via quota sampling and weighting. We explored changes in sex life and relationship quality among participants in steady relationships ( $n = 4,271$ ) by age, gender, and cohabitation status, and examined factors associated with deterioration to a lower-quality relationship. A total of 64.2% of participants were in a steady relationship (of whom 88.9% were cohabiting). A total of 22.1% perceived no change in their sex-life quality, and 59.5% no change in their relationship quality. Among those perceiving change, sex-life quality was more commonly reported to decrease and relationship quality to improve. There was significant variation by age; less often by gender or cohabitation. Overall, 10.6% reported sexual difficulties that started/worsened during lockdown. In total, 6.9% reported deterioration to a “lower quality” relationship, more commonly those: aged 18–24 and aged 35–44; not living with partner (women only); and reporting depression/anxiety and decrease in sex-life quality. In conclusion, intimate relationship quality is yet another way in which COVID-19 has led to divergence in experience.

### KEYWORDS

COVID-19; steady relationship; sexual satisfaction; social support; relationship quality; sex life

### Introduction

On 23 March 2020, the UK Government announced a nationwide lockdown to control the spread of COVID-19. Orders to “stay at home” (except for essential journeys) continued until May (13th in England/Wales; 29th in Scotland); and the ban on indoor mixing of households remained in place until early July. In July/August, restrictions on social interaction across and within households eased temporarily in most places, but by Autumn 2020 the household mixing ban had been re-introduced alongside regional tiered restrictions, local lockdowns, and a return to full national lockdown by the beginning of 2021.

The restrictions caused widespread social and economic upheaval, disadvantaging many households in terms of health, healthcare access, income, and social support (Fancourt et al., 2020; Mikolai et al., 2020). The social restrictions in particular had significant implications for intimate relationships. At first, those in non-cohabiting relationships could not have any close physical contact with their partner. On 13th June regulations relaxed to allow contact with one other household, if it contained a single person. In contrast, those in cohabiting relationships spent much more time with their partner and other

household members than previously, with severely restricted opportunities for interacting with others. Some of those at the beginning and end of relationships had to make quick decisions about whether to move in together or move apart. These changes to intimate relationships were experienced in a context of anxiety about the pandemic and people’s livelihoods, as well as reported declines in mental health for many (Fancourt et al., 2020; Li & Wang, 2020; Niedzwiedz et al., 2021; Pierce et al., 2020). Additionally, there were concerns that lockdowns would amplify vulnerabilities within households (Bambra, Riordan, Ford, & Matthews, 2020), and might lead to an increase in domestic violence (EndViolenceAgainstWomen Coalition, 2020).

It is important to understand the impact of COVID-19 on steady relationships since most adults are in one. They exert a strong influence on health primarily through increased social support and by providing a buffer against stress (Pietromonaco & Collins, 2017). Sexual intimacy is also linked to greater happiness, satisfaction, wellbeing, and overall health (Muise et al., 2016). However, intimate relationships can involve conflict as well as support; and this can have a significant detrimental impact on mental and physical health (Campbell,

**CONTACT** Kirstin R Mitchell  [Kirstin.mitchell@glasgow.ac.uk](mailto:Kirstin.mitchell@glasgow.ac.uk)  University of Glasgow Berkeley Square, 99 Berkeley St, Glasgow G3 7HR, UK

\*Joint senior authors

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2002). Traumatic external stressors are known to spill over into intimate relationships, although the effects are not necessarily negative (Marshall & Kuijer, 2017). Studies of the impact of disasters on couple relationships (for instance, divorce rates) suggest that these vary by the scale of disaster and whether the stress it generates is acute or long term (Pietromonaco & Overall, 2020).

In the context of the COVID-19 pandemic the Vulnerability-Stress-Adaptation model (VSA; Karney & Bradbury, 1995) provides a helpful explanatory framework for understanding variation in impact on relational quality in steady relationships. It draws on a range of relational theories (e.g., attachment theory, behavioral theory, social-exchange theory) to explain how the dynamic between couples in steady relationships can be disrupted by external stressors, such as those caused by the pandemic. It posits that relationship quality rests on adaptive dyadic relationship processes, which in turn are influenced by external stressors (such as job loss or illness). The impact of these external stressors on the relationship are in turn shaped by preexisting contextual vulnerabilities (such as ethnicity, age, socio-economic status) and enduring individual vulnerabilities (such as mental health, attachment insecurities) that influence how individuals perceive and react to stressful events. Pietromonaco and Overall (2020) adapted the VSA model to theorize how COVID-19 might affect relationship quality (and in turn stability) by creating a range of different external stressors. We used this framework to interpret our empirical findings.

To contextualize our findings, we searched PubMed, Google Scholar, and medRxiv for research articles and preprints up to 12 May 2021 using the terms “coronavirus” or “COVID-19” and “intimate relationships,” “steady relationships,” “relationship quality,” “relationship support,” “sexual satisfaction,” “sex life,” and “sexual difficulties.” We found few studies that have examined the impact of COVID-19 on intimate relationships and, in particular, how mechanisms of relationship support may have been affected. To generate data quickly, the majority of studies relied on convenience sampling (e.g., via social media; Balzarini et al., 2020; Lehmillier et al., 2021; Vigl et al., 2021), with consequent limitations on representativeness and generalizability. Studies have generally found that about half of participants experience a disruption to their sex-life quality, typically declines in frequency and satisfaction (Hensel et al., 2020; Vigl et al., 2021; Wignall et al., 2021). There has been less attention to intimate relationship quality; one international probability study found associations between COVID-related stress and greater conflict, mitigated by partner responsiveness (Luetke et al., 2020) but did not consider other key aspects of relationship quality such as support. We did not find any other national surveys reporting on sex life quality, sexual function and relationship quality together, despite the fact that these are integral to each other (Byers, 2005; Mitchell et al., 2013).

We report data from the Natsal-COVID study Wave 1, a large-scale broadly representative national survey designed to investigate changes in sexual practices, partnerships, and sexual and reproductive health (SRH) service use in Britain during the pandemic. The Natsal-COVID study is the largest quasi-representative sexual behavior survey under COVID-19 in the UK, and one of the most comprehensive worldwide. It

adds best-available population-level evidence to surveillance and service-use data in understanding the full impact of COVID-19 on sexual and reproductive health. It is administered by the team running the British National Surveys of Sexual Attitudes and Lifestyles (Natsal), which have measured sexual behavior and SRH in Britain decennially since 1990. The Natsal-COVID study was established to capture trends under COVID when the fourth Natsal survey (which relies on random probability household-based sampling) had to be paused due to the pandemic.

In this paper, we focused on people in steady relationships and investigated the following research questions:

- (1) What effect did the first UK lockdown (Spring 2020) have on the quality of sex lives in steady relationships and how did this vary by age, gender, and cohabitation status?
- (2) What effect did the first UK lockdown have on relationship quality?
- (3) Which factors were associated with deteriorating relationship quality in the 4 months following the start of lockdown?

## Method

### Study Design and Participants

The Natsal-COVID study is a cross-sectional, quasi-representative web-panel survey of people aged 18–59 years living in Britain, run by survey research company Ipsos MORI, using their online panel (Dema et al., 2021). The survey was implemented between 29 July–10 August, approximately 4 months after the UK’s spring 2020 lockdown began (23 March 2020).

The target sample comprised a core sample of 6,000 people aged 18–59 years and boost of 500 young people 18–29 years (to ensure 2000 young people across the whole sample). The achieved sample was 6,654. Sample quotas were set on gender, age, region, and social grade to attain a sample quasi-representative of the British general population.

The median survey length was 10 minutes. The survey had in-built quality control procedures to ensure high-quality data and external quality control procedures relating to the quality of the overall panel (Dema et al., 2021). Panel members were directed to the survey if they indicated consent to “the collection of personal sexual and health, gender and ethnicity related data.” Further details of the survey design and methods, including sampling, weighting, and participants are reported elsewhere (Dema et al., 2021).

### Measures

The questionnaire is available at <https://www.natsal.ac.uk/natsal-covid-study>. The survey included questions on sexual difficulties and avoiding sex; five aspects of perceived change in quality of sex life since lockdown; six aspects of quality of relationship since lockdown; and perceived change in relationship quality compared to the months before lockdown

(supplementary Table 1). The questions on sexual difficulties and avoidance were adapted from the Natsal-SF measure (Mitchell et al., 2012). Although we view sexual difficulties and avoidance as key aspects of sex-life quality we report them separately because the questions were framed differently to the other items on sex-life quality. Items on sex-life quality were drawn from the Natsal-3 survey (available at <https://www.natsal.ac.uk/natsal-survey/natsal-3>). We did not find brief validated measures of relational quality covering all dimensions of intimate relationship quality of interest; thus, the measures we used were single items adapted from existing surveys that together cover key dimensions of interest (relationship happiness, support, connectedness, confiding in partner, arguments, worry that relationship will end). Nonetheless, post hoc exploratory factor analysis showed good reliability (Cronbach alpha > 0.8) for the question banks of six items on current relationship quality and change in relationship quality (online supplementary material 2) and we thus created a combined score.

We derived overall scores across the six items on relationship quality since lockdown and assigned participants to a "higher quality" or "lower quality" relationship group, depending on whether their score fell above or below an empirical (visually identified) threshold (supplementary material 2). Participants were also assigned to one of the three perceived change categories (deteriorated, no change, improved) depending on their overall reported change (online supplementary material 2).

### Statistical Analysis

Prior to analysis, the data were weighted (age, gender, ethnicity, social grade, and sexual identity) to the population of Great Britain. Weighting adjusted for imperfect quota fills on age, gender, ethnicity, and social grade, and additionally weighted on sexual identity. The denominator for this study was participants in steady relationships at the time of the survey, defined as being married, in a civil partnership, or in a steady relationship (supplementary Table 1). We used Stata (version 16.1) for complex survey analysis to incorporate weighting and stratification of the Natsal-COVID data.

We ran descriptive statistics to explore perceived change in sex life quality and relationship quality by age, gender, and cohabitation (Research Question (RQ) 1 and 2). We used logistic regression to determine the crude odds ratios (ORs) and age-adjusted odds ratios (aORs) of factors associated with deterioration to a lower-quality relationship (RQ3).

Natsal-COVID was inclusive in its approach to gender, including in response options and questionnaire routing; data presented for men and women include trans men and trans women respectively ( $n = 61$  "trans"). Data presented for "All" also includes 24 participants who defined their gender "in another way." The measures – and how they were derived and analyzed – are described in Supplementary Table 1.

Ethical approval was obtained from the University of Glasgow MVLS College (20019174) and LSHTM research ethics committees (22565).

## Results

### The Sample

Almost two-thirds (64.6%) of survey participants reported being in a steady relationship both at the time of survey and immediately before lockdown (unweighted  $n = 4,271$ ) and were the focus of this analysis. Of this group, 53.0% were women; 96.2% identified as heterosexual; 87.1% were white; 50.0% were educated to degree level; and 80.1% were employed. The majority reported living with their partner (88.9%; Table 1).

A total of 162 participants reported that their steady relationship dissolved (2.2% of the full sample). This was more commonly reported by those aged 18–24 who comprised 9.8% ( $n = 420$ ) of those in steady relationships before lockdown, but 36.4% ( $n = 59$ ) of those who broke up. These 162 participants are not included in the subsequent analysis, which focuses on those in steady relationships at the time of interview.

### Reported Changes in Sex Life Quality

All ever-sexually experienced participants in steady relationships were asked to compare their sex life since lockdown with the months before (January–March 2020). 22.1% of participants reported no change in any of the five aspects of sex life. Taking each aspect separately, most reported no change in: satisfaction (65.8% (95% CI 64.2%–67.4%)); distress about sex life (70.1% (68.5–71.6)); interest in sex (56.0% (54.3–57.6)); pleasure in sex (72.0% (70.2–73.7)); or frequency of sex (56.7% (55.0–58.4)).

Figure 1 shows the proportions reporting change (increases or decreases), by age and gender. For all aspects of sex life quality except sexual pleasure, it was more common to report a decrease than increase in quality. The only notable gender difference was for interest in sex; 28.2% (26.2–30.3) of all women reported a decrease compared with 18.9% (17.2–20.9) of all men ( $p < .0001$ ). Overall, change (both increase and decrease) was more commonly reported in younger age groups compared with older. In particular, young people (18–24) more commonly reported an increase in satisfaction, interest, and pleasure in sex, but they also more commonly reported an increase in distress about sex life and decrease in frequency of sex. On all these measures the proportion reporting change declined steadily with age. Among women only, decline in frequency of sex and sexual satisfaction and increased distress was more commonly reported in non-cohabiting relationships compared with cohabiting (Supplementary Table 3).

Participants in a steady relationship who reported at least one occasion of sex in the past year were asked about their experience of sexual difficulties and avoiding sex (Table 2). 9.1% (7.7–10.7) of women and 8.9% (7.4–10.6) of men reported experiencing sexual difficulties "very often or always" since the start of lockdown. The proportion did not differ by whether participants were living with their partner (9.1% (8.0–10.3)) of those in cohabiting relationships and 8.6% (6.0–12.0) in non-cohabiting relationships;  $p = .76$ , data not shown). We observed a similar pattern in the distribution of participants who reported avoiding sex because of sexual difficulties. One in 10 participants (10.6% (9.5–11.8)) said that sexual difficulties started or increased in frequency since lockdown. All

**Table 1.** Characteristics of men and women aged 18–59 years in steady relationships in the 4 months following the start of a national lockdown in Britain (March 23<sup>rd</sup>, 2020).

	Women <sup>§</sup>	Men	All*
Denominator (unweighted, weighted) †	% (95% CI) 2298, 2249	% (95% CI) 1965, 2038	% (95% CI) 4271, 4295
<b>Age (years)</b>			
18–24	7.8 (6.9–8.8)	7.80 (6.6–9.3)	7.9 (7.1–8.7)
25–34	28.5 (26.7–30.5)	26.1 (24.1–28.3)	27.4 (26.0–28.8)
35–44	26.3 (24.3–28.3)	26.7 (24.7–28.9)	26.5 (25.1–28.0)
45–59	37.4 (35.2–39.6)	39.3 (37.0–41.5)	38.2 (36.7–39.8)
<b>Sexual identity- self-reported</b>			
Heterosexual/straight	97.2 (96.7–97.6)	97.2 (96.8–97.7)	97.1 (96.7–97.4)
Gay or Lesbian	1.1 (0.8, 1.5)	1.8 (1.5–2.1)	1.4 (1.2–1.7)
Bisexual	1.5 (1.2, 1.7)	0.7 (0.5–0.9)	1.1 (1.0–1.3)
Other	0.3 (0.1–0.6)	0.3 (0.1–0.6)	0.3 (0.2–0.6)
<b>Ethnicity</b>			
White <sup>A</sup>	88.2 (86.4–89.7)	88.0 (86.0, 89.7)	88.1 (86.8–89.2)
Mixed/ multiple ethnic groups/ Other <sup>B</sup>	2.0 (1.5–2.8)	2.8 (1.9–4.0)	2.4 (1.9–3.1)
Asian/ Asian British <sup>C</sup>	7.6 (6.4–9.2)	6.9 (5.8–8.4)	7.3 (6.4–8.3)
Black/African/Caribbean/Black British <sup>D</sup>	2.1 (1.4–3.2)	2.3 (1.5–3.4)	2.2 (1.7–2.9)
<b>Level of education</b>			
No qualification	3.8 (3.0–4.7)	4.0 (3.1–5.1)	3.9 (3.3–4.6)
Below degree	45.8 (43.6–47.9)	46.0 (43.7–48.3)	45.9 (44.3–47.5)
Degree	50.5 (48.3–52.6)	50.0 (47.7–52.4)	50.2 (48.6–51.8)
<b>Employment status</b>			
Employed	73.1 (71.1–75.0)	87.8 (86.1–89.3)	80.1 (78.7–81.3)
Unemployed	8.7 (7.5–10.0)	7.5 (6.3–8.9)	8.1 (7.3–9.1)
Full-time parent or carer	13.3 (11.8–14.8)	1.2 (0.8–1.9)	7.5 (6.7–8.4)
Retired	2.5 (1.9–3.4)	2.0 (1.5–2.8)	2.3 (1.9–2.8)
Student	2.5 (2.0–3.1)	1.5 (1.0–2.2)	2.0 (1.6–2.5)
<b>Social grade</b>			
A Upper middle class/ B Middle class	24.5 (22.7–26.4)	27.3 (25.4–29.4)	25.8 (24.5–27.2)
C1 Lower middle class/C2 Skilled working class	53.3 (51.1–55.4)	54.4 (52.0–56.7)	53.8 (52.2–55.4)
D Working class/ E Lower level of subsistence	22.2 (20.5–24.1)	18.3 (16.5–20.2)	20.4 (19.1–21.7)
<b>General health status</b>			
Very good/good	74.4 (72.5–76.3)	78.5 (76.5–80.3)	76.3 (74.9–77.6)
Fair	21.1 (19.4–23.0)	17.4 (15.7–19.3)	19.4 (18.2–20.7)
Bad/ very bad	4.4 (3.6–5.5)	4.1 (3.3–5.1)	4.3 (3.7–5.0)
<b>Symptoms of anxiety (GAD-2)**</b>			
No	71.5 (69.5–73.4)	76.2 (74.1–78.2)	73.7 (72.2–75.0)
Yes	28.5 (26.6–30.5)	23.8 (21.8–25.9)	26.3 (25.0–27.8)
<b>Symptoms of depression (PHQ-2)**</b>			
No	75.0 (73.1–76.8)	74.3 (72.2–76.3)	74.6 (73.2–76.0)
Yes	25.0 (23.2–26.9)	25.7 (23.7–27.8)	25.4 (24.0–26.8)
<b>Cohabitation status since start of lockdown (March 23<sup>rd</sup>, 2020)</b>			
Living together	88.2 (86.8–89.5)	89.7 (88.2–91.0)	88.9 (87.9–89.8)
Not living together	11.8 (10.5–13.2)	10.3 (9.0–11.8)	11.1 (10.2–12.1)

CI = confidence intervals. PHQ-2 = Patient Health Questionnaire (2 item). GAD-2 = Generalized Anxiety Disorder (2 item).

§ 8 participants who identified “in another way” are included in data presented for all participants but excluded from “Men” and “Women”; Trans Men and Trans Women (n = 32) are included in data for Men and Women, respectively.

\*All percentages are weighted.

†Participants aged 18–59 years who were in a steady relationship since the start of lockdown.

\*\* Participants were classified as having symptoms of depression or anxiety if they scored three or more on the two item Patient Health Questionnaire (PHQ-2) (Kroenke K, Spitzer R, Williams J. The Patient Health Questionnaire-2: validity of a two-item depression screener. *Medical Care* 2003; 41(11): 1284–92) or Generalized Anxiety Disorder two item (GAD-2) scales (Plummer F, Manea L, Trepel D, McMillan D. Screening for anxiety disorders with the GAD-7)

A White includes all those who identify as White English, Welsh, Scottish, Northern Irish, British, Irish, Gypsy, or Irish Traveler, or from any other White background.

B Black includes those who identify as African, Caribbean, or from any other Black background.

C Asian includes those who identify as Indian, Pakistani, Bangladeshi, Chinese, or from any other Asian background

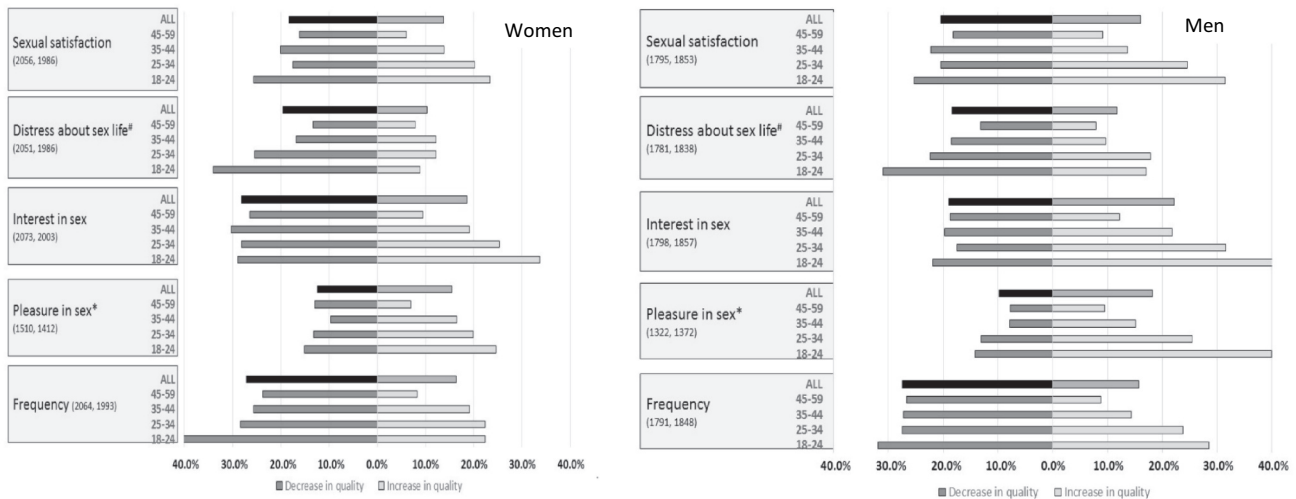
D Mixed ethnicity includes those who identify as White and Black African, White and Black Caribbean, White and Asian, or any other mixed or multiple ethnic background.

three measures of sexual difficulties showed a gradient with age, with those aged 18 to 34 more often reporting difficulties, avoidance, and new/increasing difficulties than those aged 35–59.

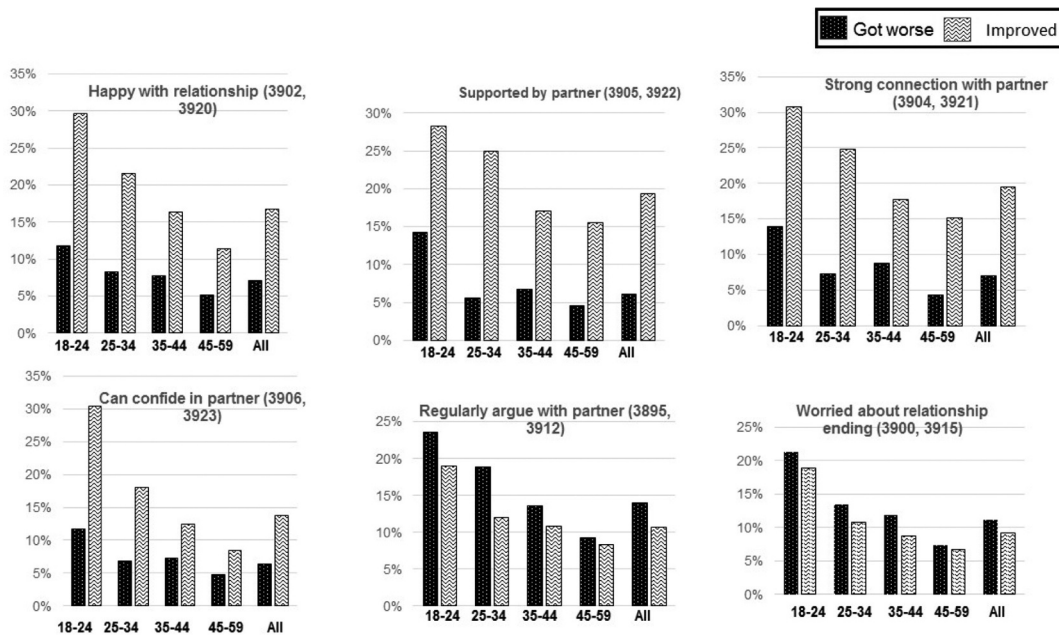
### Reported Changes in Relationship Quality

Those reporting that their relationship status did not change (n = 5,841) were asked to rate their relationship quality since lockdown and compare it with the months preceding lockdown

(January–March). In total, 59.5% reported no change at all in their relationship quality. On individual dimensions of quality, the proportion reporting no change ranged from 73.5% (72.0–75.0) for feeling a strong connection to partner, to 79.9% (78.5–81) for feeling able to confide in partner about virtually anything (data not shown). **Figure 2** shows only participants reporting change. Across four positive dimensions of relationship quality (happiness, support, connectedness, confiding in partner), it was more common to report improvement than deterioration. This was particularly



**Figure 1.** Increases and decreases in sexual aspects of relationships by age group for women and men compared to the months before lockdown (January to March 2020), among those who reported change.  $p < 0.05$  across all sexual aspects. Unweighted, weighted denominator for each sexual aspect reported. Data for participants reporting no change in sexual aspects not shown. #reverse coded such that decrease in quality = more distress and increase in quality = less distress \*Only includes participants who reported sex since lockdown.



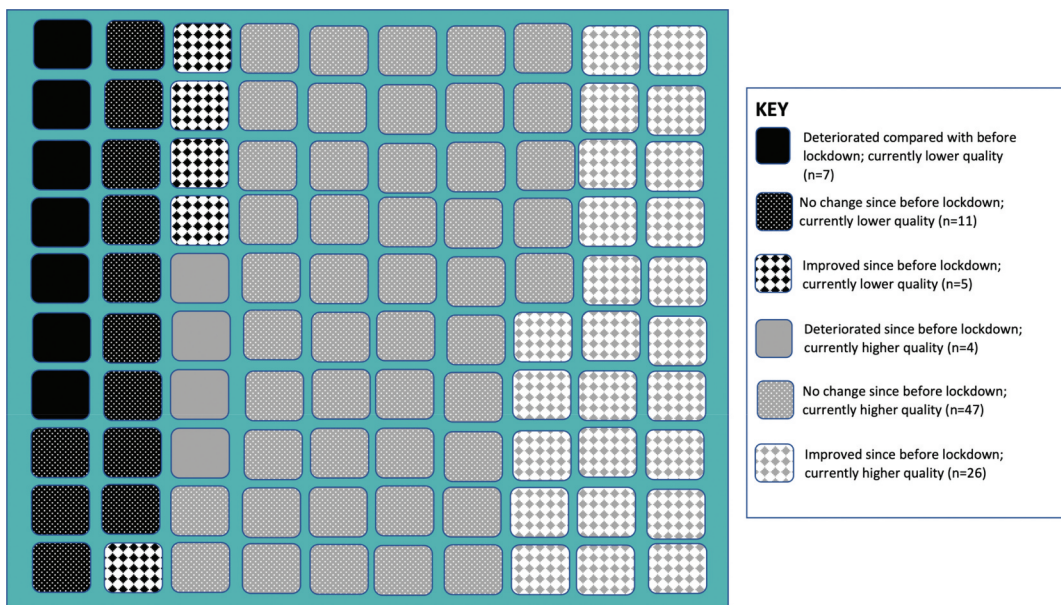
**Figure 2.** Positive and negative changes in six aspects of relationship quality by age group compared to the months before lockdown (January – March 2020).  $p < 0.05$  across all aspects of relationship quality. Unweighted, weighted denominator for each aspect of relationship quality reported. Data for participants reporting no change in aspects of relationship quality not shown.

the case for partner support (19.3% (18.0–20.7) more true since lockdown, compared to 6.1% (5.4–7.0) less true), and feeling connected to one’s partner (19.5% (18.2–20.9) more true since lockdown, versus 7.0% (6.2–7.9) less true). For the two negative dimensions (arguments and worry about the relationship ending), similar proportions reported improvement and deterioration.

Change – both improvement and deterioration – was more frequently reported by younger participants than older. Notably, there was a sharp decline across age groups in the proportion reporting improvement on each of the four positive dimensions. Among those aged 18–24, 23.6% (19.0–28.8) reported an increase in arguments, and 21.3% (16.7–26.9) reported an increase in worry about the

relationship ending; for those aged 45–59, this was 9.3% (7.9–11.0) and 7.4% (6.0–8.9), respectively. There were no significant differences by gender overall, but we did find gendered differences by cohabitation. While there were no significant differences among men, women who were not living with their partner more commonly reported a significant decrease in partner support, feeling connected to partner, and relationship happiness – compared with women living with a partner ( $p < .0001$  for all; supplementary table 4).

Figure 3 shows the variation in experiences of steady relationships using a waffle diagram to show proportions reporting deterioration, no change, and improvement by perceived



**Figure 3.** Proportion of participants reporting higher and lower relationship quality since lockdown (current quality) and whether relationship had deteriorated, improved or not changed since start of a national lockdown in Britain (March 23<sup>rd</sup>, 2020).

current relationship quality. Around half of participants (47 in 100) reported being in a “higher quality” relationship since lockdown and no change in quality compared with the months before lockdown. The next most common group (26 in 100) also reported being in a “higher quality” relationship since lockdown and said that their relationship had actually improved compared with the months before lockdown. From a public health policy perspective however, the individuals most likely to require support are the 7 in 100 who reported deterioration to a “lower quality” relationship since lockdown.

### Factors Associated with Deterioration to a “Lower Quality” Relationship

In order to understand whose relationships were most affected by the COVID-19 pandemic, we did a regression analysis to investigate factors associated with reporting deterioration to a “lower quality” relationship since lockdown (6.9% of the sample). Table 3 presents crude and age-adjusted ORs for reporting deterioration to a “lower quality” relationship, by gender. Compared with 45–59 year olds, women and men in early mid-life (35–44) were more likely to be in this group (OR 1.63 (1.03–2.56) and 2.31 (1.45–3.66) for women and men, respectively). Women, but not men, in the youngest age group were also more likely to report deterioration (OR 2.38 (1.39–4.08)). Given these associations with age, we also present age-adjusted ORs (aORs) for all other independent variables, although this made little difference to the ORs, suggesting only limited confounding by age.

Among women only, lower educational level (aOR 1.32 (0.92–1.89)), and not living with a partner (aOR 2.01 (1.28–3.16)) were all associated with deterioration. Among men only, living in an urban area (compared with a rural area) was a risk factor (aOR 2.61 (1.15–5.90)). Increased alcohol consumption was significantly associated for men (aOR 1.79 (0.98–3.28)) but not women. Sexual identity, social grade, and current employment status were not associated for either gender.

Participants reporting poor general or mental health (and among men, a limiting disability, aOR 1.85 (1.20–2.85)) were also more likely to report deterioration in relationship quality compared with those in better health. Of note were the associations for reporting symptoms of anxiety (aOR 2.39 (1.68–3.39) women; aOR 2.84 (1.85–4.34) men) and reporting depression symptoms (aOR women 2.56 (1.79–3.64); aOR men 3.06 (2.02–4.63)).

Perceiving a decline in quality of sex life was strongly associated with deteriorating relationship quality. This included decrease in: frequency of sex (aOR 2.64 (1.45–4.80) women; 3.65 (1.33–10.0) men); interest in sex (aOR 2.84 (1.75–4.59) women; 2.10 (1.16–3.78) men) and pleasure in sex (aOR 4.19 (2.08–8.48) women; 10.5 (4.30–25.8) men). Reporting sexual difficulties very often/always was associated among men only (aOR 2.17 (1.00–4.71)).

### Discussion

This study of steady relationships during the first UK lockdown found that relationship quality was more stable than sex life quality, and where change was perceived, aspects of sex life quality were more commonly reported to deteriorate, whereas aspects of relationship quality were more commonly reported to improve. There were three exceptions to this pattern: finding pleasure in sex more commonly got better than worse; arguments more commonly deteriorated than improved; and worry about relationship ending also more commonly deteriorated than improved. Perceived change – both positive and negative – was more commonly reported by younger people, and age was much more important than gender or cohabitation as a determinant of change. One in 10 of all those in steady relationships reported that sexual difficulties started or increased in frequency over lockdown. Overall, 6.9% reported deterioration to a “lower quality” relationship. Being young

**Table 2.** Sexual difficulties and avoidance for women and men aged 18–59 years in steady relationships in the 4 months following the start of a national lockdown in Britain (March 23<sup>rd</sup>, 2020).

	Women <sup>§</sup>			Men			All**		
	% (95% CI)	p value	Denominator (unweighted, weighted)	% (95% CI)	p value	Denominator (unweighted, weighted)	% (95% CI)	p value	Denominator (unweighted, weighted)
<b>Sexual difficulties (very often or always)</b>									
18–24	13.8 (9.6–19.5)	0.015	226, 143	21.3 (14.0–31.0)	p < 0.00001	104, 122	17.1 (12.9–22.4)	p < 0.00001	332, 267
25–34	11.3 (8.9–14.3)		635, 499	13.3 (10.0–17.4)		396, 424	12.3 (10.2–14.7)		1033, 925
35–44	6.5 (4.3–9.9)		367, 404	4.9 (3.1–7.7)		392, 420	5.7 (4.2–7.7)		761, 826
45–59	7.7 (5.5–10.7)		417, 505	5.9 (4.2–8.2)		578, 554	6.7 (5.3–8.5)		996, 1060
ALL	9.1 (7.7–10.7)		1645, 1551	8.9 (7.5–10.6)		1470, 1519	9.0 (8.0–10.2)		3122, 3078
<b>Avoided sex due to difficulties (very often or always)</b>									
18–24	8.4 (5.3–13.0)	0.99	227, 143	20.5 (13.5–29.8)	p < 0.00001	105, 123	13.9 (10.1–18.8)	0.0011	334, 269
25–34	9.0 (6.9–11.6)		633, 497	9.4 (6.7–13.2)		395, 423	9.2 (7.4–11.3)		1030, 922
35–44	8.5 (5.9–12.1)		368, 405	4.6 (2.9–7.4)		390, 417	6.5 (4.9–8.7)		760, 825
45–59	8.8 (6.4–12.0)		416, 504	5.1 (3.5–7.4)		576, 552	6.8 (5.4–8.7)		993, 1057
ALL	8.7 (7.4–10.3)		1644, 1550	7.4 (6.1–9.0)		1466, 1515	8.1 (7.1–9.2)		3117, 3073
<b>Change in sexual difficulties † (got worse/only started since before lockdown)</b>									
18–24	20.0 (14.9–26.4)	0.00030	226, 143	20.1 (13.0, 29.7)	p < 0.00001	104, 122	19.9 (15.4–25.3)	p < 0.00001	332, 267
25–34	13.1 (10.4–16.2)		633, 498	14.0 (10.7, 18.1)		395, 423	13.6 (11.4–16.1)		1030, 923
35–44	9.6 (6.8–13.2)		367, 404	6.9 (4.7, 10.1)		391, 418	8.2 (6.4–10.5)		760, 825
45–59	7.8 (5.5–10.8)		419, 508	7.2 (5.3, 9.8)		579, 555	7.5 (6.0–9.4)		999, 1064
ALL	11.1 (9.6–12.8)		1645, 1552	10.1 (8.5, 11.9)		1469, 1519	10.6 (9.5–11.8)		3121, 3078

CI = confidence intervals.

§ 718 “preferred not to say” to questions about sexual difficulties and 467 were not applicable as only participants who reported having one or more partners in the last year were asked about sexual difficulties

\*8 participants who identified “in another way” are included in data presented for all participants, but excluded from “Men” and “Women”; Trans Men and, Trans Women (n = 32) are included in data for Men and Women, respectively.

† All percentages are weighted.

‡ Only participants who responded to questions about sexual difficulties were asked about change in sexual difficulties.



(women) or in early mid-life were key risk factors and strong associations were found with poor mental and physical health, as well as a perceived decline in sexual aspects of the relationship. For women, not living with a partner was a key factor.

Our finding that perceived decrease in sex life quality was associated with deteriorating relationship quality is consistent with other COVID-19 studies (Luetke et al., 2020), and is unsurprising given extant literature demonstrating their close connection (Birnbaum et al., 2006), particularly among women (McCabe & Connaughton, 2017). Given this, our finding of a net gain in relationship quality but net loss in sex life quality requires explanation. The largest gains in relationship quality were for supportiveness and connectedness, suggesting that elevated external stressors led some couples to bolster their social support resources in response to the crisis (Marshall & Kuijer, 2017). At the same time, elevated stress, ongoing conflict (Luetke et al., 2020), and over-familiarity (Sims & Meana, 2010) may have adversely affected desire, arousal, and function (Bodenmann et al., 2006), leading some to de-prioritize sex whilst coping with additional challenges caused by the pandemic. Our finding that women were more likely than men to report a decrease in sexual desire has been found elsewhere (Wignall et al., 2021), and is consistent with female desire being more influenced by contextual factors (Bauermeister, 2000). With respect to sexual difficulties, the fact that 10.6% of participants reported that their sexual difficulties began or worsened during lockdown is of concern given scant availability of affordable treatment in most countries, even before the pandemic.

With respect to relationship quality, our data are consistent with the UK COVID social study which also reported a net gain for relationships (18% reported that their relationship with their partner/spouse got worse; 27% said it got better), with change (both positive and negative) more commonly reported by younger people (Fancourt et al., 2020). Our finding of a strong association between low-quality relationships and relationship deterioration on the one hand, and poor mental and general health on the other, is consistent with findings from other COVID-19 studies (Luetke et al., 2020) and is important given that lockdown itself caused psychological distress, particularly among women and young people (Niedzwiedz et al., 2021). Two studies, in the UK and Austria found conversely that good relationship quality was associated with higher scores on wellbeing, quality of life, and physical health as well as lower depression and anxiety (Pieh et al., 2020, 2021)

Our finding of variation in experiences of steady relationships, with a majority reporting no change or improvement, requires explanation given that, like some other disasters in the past, COVID-19 presents uncertainty for all and a range of stressful experiences for some (including bereavement, illness and job loss). In their adaption of the vulnerability-stress-adaptation model (Karney & Bradbury, 1995) Pietromonaco and Overall (2020) argued that variation in experience will occur for three reasons: firstly, couples vary in the number and severity of stresses they face; secondly these pandemic-related stresses occur in contexts which vary greatly in terms of vulnerabilities (e.g., whether couples have financial resources or not); and thirdly, those who have enduring vulnerabilities are less able

to adapt their relationship processes to mutually support each other. As a brief and broad study, we were unable to measure individual circumstances in detail, but we did identify mental health as an important enduring vulnerability. We also identified some of the key contextual vulnerabilities. For women, these included lower educational status and living apart from one's partner; for men these were living in an urban area and increased alcohol consumption. That cohabitation was important for women but not men is noteworthy, and might relate to gender differences in need for physically present support and concern about relationship commitment. Pietromonaco and Overall (2020) highlighted mechanisms by which external stressors have negative effects. One mechanism is the "spillover" of individual stress to impact on dyadic interactions (Neff & Karney, 2017). Another potential mechanism is the creation of contexts – including feelings of fatigue, distraction or being overwhelmed, depletion of self-regulatory resources – in which mutual support is more difficult, and blame, criticism and arguments are more likely (Pietromonaco & Overall, 2020).

The importance of life-stage in shaping the experience of steady relationships during the early stages of the pandemic is striking. Of note were the strong age gradients for perceiving more distress about sex; worsened arguments; increase in worry about the relationships ending; and sexual difficulties. Young people were also disproportionately affected by relationship breakdown. On the other hand, young people more commonly reported improvement in both sex life and relationship quality. These trends may be partially explained by pre-COVID age-related patterns in relationship status; younger people are less likely to be in established relationships and therefore more susceptible to change. Mean relationship duration is significantly shorter than for older adults (Mercer et al., 2017), and relationship breakup is more common (Rhoades et al., 2011). Acting on this preexisting instability, COVID-19 appears to have widened inequalities in experiences of steady relationships among young people, with higher proportions of those who gained and lost, than in older age groups. This finding adds to the growing weight of evidence showing that the social consequences of COVID-19 restrictions have been profound in young people (Douglas et al., 2020). What is not yet clear is the degree of future regression to the mean; i.e., the extent to which those experiencing most significant change in relationship or sex life quality will return to an average level over time.

The Natsal-COVID study is the largest quasi-representative sexual behavior survey under COVID in the UK, and one of the most comprehensive worldwide. It adds best-available population-level evidence to surveillance and service-use data in understanding the full impact of COVID-19 on sexual health. However, there are limitations in the study design, timing, and interpretation. The web-panel survey was the only feasible option in the context of the pandemic; these are less representative and produce consistently different estimates of sexual behavior compared with probability surveys (Erens et al., 2014). Several measures reported in this study relied on comparison with the months before lockdown which may be affected by recall errors, including recasting of the past, in the light of present experiences. For these reasons we focused on patterns and associations rather than prevalence, and the prevalence estimates we do provide should be interpreted

**Table 3.** Factors associated with reporting deterioration to a "lower quality" relationship among women and men over lockdown (compared with months before lockdown began (January – March 2020)).

	Women <sup>†*</sup>			Men		
	% (95% CI)	OR (95% CI) <sup>‡</sup>	aOR (95% CI) <sup>‡</sup>	% (95% CI)	OR (95% CI)	aOR (95% CI) <sup>‡</sup>
<b>All</b>	7.5 (6.4–8.7)	..	..	7.0 (5.8–8.4)	..	..
<b>Age (years)</b>		<b>p = 0.012</b>	..		<b>p &lt; 0.00001</b>	..
45–59	5.7 (4.1–7.7)	1.00	..	8.3 (4.1–15.9)	1.61 (0.71–3.62)	..
35–44	8.9 (6.7–11.7)	1.63 (1.03–2.56)	..	4.5 (2.8–7.1)	0.84 (0.46–1.52)	..
25–34	7.3 (5.5–9.7)	1.32 (0.84–2.07)	..	11.5 (8.6–15.1)	2.31 (1.45–3.66)	..
18–24	12.5 (8.6–17.8)	2.38 (1.39–4.08)	..	5.3 (3.9–7.3)	1.00	..
<b>Sexual identity- self-reported</b>		<b>p = 0.078</b>	<b>p = 0.083</b>		<b>p = 0.36</b>	<b>p = 0.43</b>
Heterosexual	7.5 (6.4–8.7)	1.00	1.00	6.8 (5.6–8.3)	1.00	1.00
Gay or lesbian	4.6 (1.3–15.0)	0.60 (0.16–2.22)	0.58 (0.16–2.14)	9.7 (5.1–17.9)	1.48 (0.71–3.06)	1.45 (0.70–3.02)
Bisexual	9.0 (5.1–15.5)	1.23 (0.65–2.33)	1.02 (0.53–1.96)	12.3 (5.8–24.1)	1.91 (0.82–4.46)	1.80 (0.77–4.19)
Other	..	..	..	..	..	..
<b>Education</b>		<b>p = 0.042</b>	<b>p = 0.022</b>		<b>p = 0.81</b>	<b>p = 0.71</b>
Degree	6.5 (5.1–8.2)	1.00	1.00	6.6 (5.0–8.7)	1.00	1.00
No qualification	14.9 (8.1–25.8)	2.50 (1.20–5.22)	2.71 (1.30–5.67)	8.1 (3.4–18.0)	1.25 (0.48–3.26)	1.33 (0.50–3.52)
Below degree	7.9 (6.4–9.9)	1.24 (0.87–1.75)	1.32 (0.92–1.89)	7.3 (5.6–9.5)	1.12 (0.75–1.69)	1.17 (0.76–1.81)
<b>Ethnicity</b>		<b>p = 0.70</b>	<b>p = 0.74</b>		<b>p = 0.28</b>	<b>p = 0.28</b>
White <sup>A</sup>	7.5 (6.3–8.8)	1.00	1.00	6.6 (5.4–8.0)	1.00	1.00
Mixed/multiple ethnic groups/ other <sup>B</sup>	11.3 (4.1–27.4)	1.58 (0.53–4.75)	1.24 (0.35–4.38)	8.1 (1.2–38.7)	1.26 (0.173–9.09)	1.20 (0.16–8.87)
Asian/ <sup>C</sup> Asian British	4.7 (1.8–11.6)	0.61 (0.22–1.65)	0.57 (0.21–1.55)	10.5 (5.8–18.3)	1.67 (0.84–3.31)	1.61 (0.81–3.22)
Black/ <sup>D</sup> African/ Caribbean/ Black British	..	..	..	..	..	..
<b>Social grade</b>		<b>p = 0.089</b>	<b>p = 0.072</b>		<b>p = 0.16</b>	<b>p = 0.16</b>
A Upper middle class/ B Middle class	6.4 (4.6–8.9)	1.00	1.00	5.3 (3.7–7.6)	1.00	1.00
C1 Lower middle class/ C2 Skilled working class	6.9 (5.5–8.7)	1.08 (0.71–1.66)	1.11 (0.72–1.69)	8.1 (6.3–10.2)	1.57 (0.98–2.51)	1.58 (0.99–2.54)
D Working class/ E Lower level of subsistence	9.9 (7.4–13.1)	1.60 (1.00–2.56)	1.65 (1.03–2.65)	6.3 (4.0–9.9)	1.21 (0.65–2.25)	1.27 (0.67–2.40)
<b>Rurality</b>		<b>p = 0.51</b>	<b>p = 0.56</b>		<b>p = 0.016</b>	<b>p = 0.020</b>
Rural	6.4 (4.1–9.8)	1.00	1.00	2.9 (1.3–6.1)	1.00	1.00
Urban	7.5 (6.2–9.0)	1.18 (0.72–1.95)	1.16 (0.70–1.92)	7.5 (6.1–9.2)	2.73 (1.21–6.19)	2.61 (1.15–5.90)
<b>Employment status</b>		<b>p = 0.81</b>	<b>p = 0.96</b>		<b>p = 0.75</b>	<b>p = 0.72</b>
Employed	7.8 (6.5–9.27)	1.00	1.00	7.1 (5.8–8.6)	1.00	1.00
Unemployed	6.5 (3.6–11.5)	0.82 (0.43–1.58)	0.85 (0.44–1.64)	5.1 (2.3–10.9)	0.71 (0.30–1.65)	0.74 (0.31–1.73)
Full time parent	7.4 (4.7–11.5)	0.94 (0.56–1.60)	1.02 (0.60–1.74)	..	..	..
Retired	0	..	..	7.3 (2.3–20.7)	1.04 (0.31–3.49)	1.23 (0.36–4.27)
Student	10.3 (4.8–20.5)	1.36 (0.59–3.12)	1.08 (0.47–2.50)	..	..	..
<b>Cohabitation status</b>		<b>p = 0.00030</b>	<b>p = 0.0025</b>		<b>p = 0.96</b>	<b>p = 0.92</b>
Living together	6.7 (5.6–8.0)	1.00	1.00	6.8 (5.7–8.5)	1.00	1.00
Not living together	13.8 (9.8–19.2)	2.23 (1.44–3.44)	2.01 (1.28–3.16)	7.1 (3.7–13.1)	1.02 (0.50–2.07)	0.97 (0.48, 1.95)
<b>Who have you mainly been living with since lockdown started?*</b>		<b>p = 0.029</b>	<b>p = 0.043</b>		<b>p = 0.23</b>	<b>p = 0.23</b>
Partner only	5.0 (3.7–6.6)	1.00	1.00	5.5 (3.9–7.7)	1.00	1.00
Children only	16.2 (8.0–30.1)	3.71 (1.57–8.75)	3.65 (1.54–8.65)	..	..	..
Adults only (incl partner and other adults)	6.4 (3.3–12.1)	1.30 (0.60–2.81)	1.36 (0.63–2.96)	8.1 (4.4–14.5)	1.53 (0.73–3.22)	1.61 (0.78–3.36)
Children and adults (incl partners)	5.6 (2.0–14.2)	1.13 (0.38–3.33)	1.14 (0.39–3.37)	5.6 (2.1–14.5)	1.03 (0.34–3.11)	1.03 (0.34–3.08)
<b>Alcohol consumption since lockdown</b>		<b>p = 0.48</b>	<b>p = 0.56</b>		<b>p = 0.0095</b>	<b>p = 0.014</b>
Decreased	7.7 (5.2–11.2)	1.00	1.00	6.4 (4.0–9.9)	1.00	1.00
Increased	8.8 (6.4–12.0)	1.17 (0.68–2.00)	1.19 (0.69–2.05)	10.9 (7.8–15.0)	1.79 (0.98–3.28)	1.78 (0.97–3.25)
Stayed the same	7.5 (6.4–8.8)	0.91 (0.56–1.45)	0.95 (0.59–1.54)	5.7 (4.4–7.4)	0.89 (0.51–1.55)	0.90 (0.51–1.57)
<b>General health status</b>		<b>p = 0.16</b>	<b>p = 0.061</b>		<b>p = 0.057</b>	<b>p = .035</b>
Very good/ good	6.8 (5.6–8.3)	1.00	1.00	6.2 (4.9–7.7)	1.00	1.00

(Continued)

Table 3. (Continued).

	Women <sup>†</sup>		Men	
Fair	9.6 (7.1-12.7)	1.44 (0.99-2.11)	1.57 (1.07-2.32)	452, 449
Bad/Very bad	8.5 (4.1-16.6)	1.26 (0.57-2.79)	1.48 (0.66-3.30)	90, 93
<b>Limiting long-term illness/disability</b>		<b>p = 0.063</b>	<b>p = 0.029</b>	
No	6.7 (5.5-8.2)	1.00	1.00	1376, 1365
Yes	9.1 (7.1-11.5)	1.39 (0.98-1.95)	1.48 (1.04-2.09)	745, 718
<b>Symptoms of depression (PHQ-2)<sup>§</sup></b>		<b>p &lt; 0.00001</b>	<b>p &lt; 0.00001</b>	
No	5.5 (4.4-6.8)	1.00	1.00	1575, 1586
Yes	13.4 (10.6-16.8)	2.67 (1.88-3.78)	2.56 (1.79-3.64)	549, 499
<b>Symptoms of anxiety (GAD-2)<sup>§</sup></b>		<b>p &lt; 0.00001</b>	<b>p &lt; 0.00001</b>	
No	5.5 (4.4-6.8)	1.00	1.00	1478, 1512
Yes	12.7 (10.2-15.8)	2.52 (1.79-3.54)	2.39 (1.68-3.39)	655, 580
<b>Sexual difficulties</b>		<b>p = 0.058</b>	<b>p = 0.085</b>	
Never/not always/sometimes	6.6 (5.4-8.1)	1.00	1.00	1409, 1342
Very often/always	11.4 (6.8-18.7)	1.82 (0.98-3.36)	1.72 (0.93-3.19)	138, 127
<b>Frequency of sex</b>		<b>p &lt; 0.00001</b>	<b>p &lt; 0.00001</b>	
Increased	5.7 (3.4-9.2)	1.00	1.00	325, 297
Stayed the same	5.6 (4.4-7.2)	0.99 (0.55-1.79)	1.08 (0.58-2.00)	1071, 1079
Decreased a lot/a little	13.4 (10.6-16.8)	2.58 (1.43-4.66)	2.64 (1.45-4.80)	538, 498
<b>Pleasure during sex</b>		<b>p &lt; 0.00001</b>	<b>p &lt; 0.00001</b>	
Increased	5.7 (3.3-9.7)	1.00	1.00	216, 195
Stayed the same	4.9 (3.7-6.5)	0.86 (0.45-1.64)	0.94 (0.49-1.81)	1023, 976
Decreased a lot/a little	19.2 (13.7-26.2)	3.94 (1.95-7.95)	4.19 (2.08-8.48)	182, 167
<b>Interest in having sex</b>		<b>p &lt; 0.00001</b>	<b>p &lt; 0.00001</b>	
Increased	6.8 (4.6-10.0)	1.00	1.00	373, 334
Stayed the same	3.4 (2.5-4.8)	0.48 (0.28, 0.83)	0.54 (0.31-0.93)	1014, 1022
Decreased a lot/a little	16.3 (13.3-19.9)	2.65 (1.64-4.30)	2.84 (1.75-4.59)	558, 531

CI = confidence intervals. OR = odds ratio. aOR = adjusted odds ratio. PHQ-2 = Patient Health Questionnaire (2 item). GAD-2 = Generalized anxiety disorder (2 item).  
 † Age-adjusted ORs, adjusting for age as a continuous variable  
 \* Unweighted denominator <30. Results not shown due to small denominator.  
 \*\* Unweighted denominator <50. Results should be interpreted with caution due to small denominator  
 ‡ Excludes those who reported living alone, preferred not to say, other combinations  
 § Participants were classified as having symptoms of depression or anxiety if they scored three or more on the two item Patient Health Questionnaire (PHQ-2) (Kroenke K, Spitzer R, Williams J. The Patient Health Questionnaire-2: validity of a two-item depression screener. *Med Care* 2003; 41(11):1284-92) or generalized anxiety disorder two item (GAD-2) scales (Plummer F, Manea L, Trepel D, McMillan D. Screening for anxiety disorders with the GAD-7) † 8 participants who identified "in another way" are included in data presented for all participants but excluded from "Men" and "Women," Trans Men and Trans Women (n = 32) are included in data for Men and Women, respectively.  
 \*All percentages are weighted.  
 A White includes all those who identify as White English, Welsh, Scottish, Northern Irish, British, Irish, Gypsy or Irish Traveler, or from any other White background.  
 B Black includes those who identify as African, Caribbean, or from any other Black background.  
 C Asian includes those who identify as Indian, Pakistani, Bangladeshi, Chinese, or from any other Asian background.  
 D Mixed ethnicity includes those who identify as White and Black African, White and Black Caribbean, White and Asian, or any other mixed or multiple ethnic background.

cautiously. The focus of this analysis on steady relationships meant that 162 participants (2.2% of the full sample) whose steady relationship dissolved, were not included. This potential “survivor bias” means that our data may underestimate the true public health burden on relationships, particularly for young people. Those who were single or in casual relationships also experienced changes to their sexual behavior and sex life quality and we report on this elsewhere (Mercer et al., 2021; Sonnenberg et al., 2021). We did not measure intimate partner violence, and this is an important missing piece of the picture. Due to small numbers in sub-groups, we were unable to fully investigate inequalities in experience due to sexual identity, gender identity, and ethnicity.

Social support within intimate relationships plays an important role in preventing and mitigating health issues (Pietromonaco & Overall, 2020). Where these are absent or break down, the burden often falls to statutory services. Relationship breakdown itself has significant economic and social cost (Relationships Foundation, 2015). Our finding that 6.9% of steady relationships deteriorated in lockdown provides population context to data on divorce rates, domestic crime reporting and calls to helplines, and should be factored in as part of the health and social cost of physical restrictions to limit the spread of Sars-CoV-2. Pandemic recovery planning should seek to understand the longer-term ramifications and anticipate that additional resources will be required. Such resources would be best directed toward young people, those facing additional stressors (such as financial pressures) and those in poorer mental and physical health. Couples in difficulty need access to affordable practical and emotional support. Social welfare policies which lessen external pressures are important in helping build couple resilience to a crisis event such as COVID-19. Future pandemic control policies should explicitly acknowledge the unequal relational costs of social restrictions and should fully consider the relational consequences (Long et al., 2022).

In conclusion, the impact of COVID-19 on steady relationships followed a similar pattern to other social and economic areas of life; no change for some, improvement for some and deterioration for others. Thus, relationship and sex life quality should be considered as yet another dimension on which COVID-19 has widened the gap between those who gain and those who lose, with vulnerability due to poor health and life-stage a key part of this divide.

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## Data Availability Statement

The data are available from the UK Data Archive (<https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=8865>)%26#x00A0;DOI:%26#x00A0;10.5255/UKDA-SN-8865%26#x2013;1













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No potential conflict of interest was reported by the authors.

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## ORCID

Kirstin R Mitchell  <http://orcid.org/0000-0002-4409-6601>  
 Raquel Bosó Pérez  <http://orcid.org/0000-0001-7342-4566>  
 Emily Dema  <http://orcid.org/0000-0002-7254-2023>  
 Soazig Clifton  <http://orcid.org/0000-0002-4171-0805>  
 Julie Riddell  <http://orcid.org/0000-0002-8084-4566>  
 Andrew J Copas  <http://orcid.org/0000-0001-8968-5963>  
 Clare Tanton  <http://orcid.org/0000-0002-4612-1858>  
 Wendy Macdowall  <http://orcid.org/0000-0001-5868-8336>  
 Chris Bonell  <http://orcid.org/0000-0002-6253-6498>  
 Pam Sonnenberg  <http://orcid.org/0000-0002-1067-1583>  
 Catherine H Mercer  <http://orcid.org/0000-0002-4220-5034>  
 Nigel Field  <http://orcid.org/0000-0002-2825-6652>

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