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COVID-19 and the Changes in the Sexual Behavior of Men Who Have Sex With Men: Results of an Online Survey



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ABSTRACT

Background: Social distancing in the wake of the coronavirus disease 2019 (COVID-19) pandemic may affect the sexual behavior of men who have sex with men (MSM). In early March 2020, Israel imposed travel restrictions and limited social contacts to household members only. The effects of these restrictions on the sexual behavior and mental health of MSM are unknown.

Aim: To assess sexual behaviors and mental health of Israeli MSM during social distancing and to compare sexual behaviors before and during social distancing, due to the COVID-19 pandemic.

Methods: Data were collected through anonymous web-based questionnaires in a popular geospatial application used by MSM between March and April 2020 during the social-distancing period.

Outcomes: The dependent variable was casual sex, in violation of social-distancing regulations. Independent variables were demographic characteristics, sexual behaviors before and during social-distancing restrictions, and mental health.

Results: Of the 2,562 participants, 1,012 (39.5%) continued to meet new casual sex partners during this period. Being of a younger age, single, and with higher levels of mental distress predicted engagement in casual sex during the social-distancing period. MSM reduced their sexual risk and limited sexual repertoire—in particular, kissing with their sexual partners. Participants also spent more time in dating applications than in the pre-social-distancing period and increased their use of sex phone, webcams, and porn consumption. They perceived the threat of severe acute respiratory syndrome coronavirus to be greater than that of HIV: only 3.2% could imagine themselves having sex with a partner who is infected with SARS-CoV-2 compared with 30.1% in case of HIV, $P < .01$.

Clinical Implications: MSM reduced their risk behaviors during social distancing because of the threat of COVID-19. Casual sex during social distancing was associated with negative feelings of mental distress. Future public health response in the future waves of COVID-19 morbidity should strike a balance between containment measures and the need for social distancing with its possible mental and social burdens.

Strengths and Limitations: This is the first study in Israel and one of the few in the world to examine sexual behaviors among MSM during the COVID-19 social distancing period. It involved a relatively large sample, through convenience sampling, which limits causality. Findings should be interpreted cautiously, specifically because COVID-19-related behaviors and circumstances may change rapidly.

Conclusion: The negative feelings of distress due to social distancing should be considered as a potential barrier to adherence among vulnerable populations, such as MSM. Future public health response should strike a balance between containment measures and its possible mental, social, and financial burdens. **Shilo G, Mor Z. COVID-19 and the Changes in the Sexual Behavior of Men Who Have Sex With Men: Results of an Online Survey. J Sex Med 2020;17:1827–1834.**

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic, caused by the coronavirus that emerged in China in December 2019, has reached Israel at the end of February 2020. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is easily transmitted through aerosol and to a lesser extent through physical contact. Without available vaccines, the main responses

to the pandemic have been social distancing and maintaining respiratory hygiene, as recommended by the World Health Organization¹ and European Centre for Disease Prevention and Control² and adopted by many governments around the world. Social isolation, loss of income, and disruption of family ties have cut off individuals from their customary social networks.

The social and behavioral restrictions due to the COVID-19 pandemic may have also affected sexual behaviors—although research in this field is still limited. A recent study from China,³ involving 459 men and women, found a drop of 44% in the number of sexual partners and 37% in sexual frequency, during the period of COVID-19 lockdown. Younger age, being single, and high sexual drive were found to predict higher sexual frequency.³ The study also reported a decrease in risky sexual behaviors in this period. Another study, involving 1,051 men who have sex with men (MSM) in the United States,⁴ found that half of the sample reduced their number of sex partners during the COVID-19 social restrictions, and many experienced adverse effects on their well-being and difficulties in accessing HIV testing and treatment.

MSM are generally considered a social minority population, even in a relatively liberal country such as Israel. They may be at a higher risk of experiencing stigma⁵ and minority stressors, both of which are known to have a negative effect on their mental health.⁶ Moreover, MSM are more likely than heterosexuals to be singles,⁷ which heightens mental distress and increases the sense of loneliness. Social distancing due to COVID-19 has also limited the support that MSM can receive from their family, friends, and the wider gay community.⁸ MSM have disproportionately higher rates of HIV and other sexually transmitted infections.^{9,10} They have been living under the threat of HIV for nearly 40 years and have established various risk-reduction techniques to prevent HIV transmission, which complement mechanical barriers and medical advances.¹¹

Although the number of social venues and face-to-face opportunities for MSM for social mingling and sexual engagement has declined because of the COVID-19 social restrictions, dating applications have become a primary means of communication.¹² In Israel, the local MSM dating application (known as Atraf Dating) and the international application Grindr have included a message advising users to stay at home and avoid physical encounters. Although WHO guidelines have not included specific guidelines for sexual encounters, several health organizations (including The New York City Department of Health and Mental Hygiene and the Israeli Aids Task Force) have, by expressly addressing the risks involved in new casual sexual encounters in violation of COVID-19 restrictions.^{13,14}

The purpose of this study was to assess the impact of the threat of COVID-19 on the sexual practices, behaviors, and the well-being of MSM in Israel and to compare these among those who changed their sexual behaviors during the outbreak with those who did not. Because the MSM community typically exhibits high levels of stress in normal times, the impact of

COVID-19 may be critical. We hypothesized that the social distancing would reduce the number of casual sex encounters among the Israeli MSM and have a negative effect on their mental health. The outcomes of this study may help decision-makers in understanding the impact of an outbreak on vulnerable populations and in establishing support mechanisms for the MSM community in periods of social instability.

MATERIALS AND METHODS

Data for this cross-sectional study were collected through anonymous web-based questionnaires, which were distributed through a popular geospatial dating application used by MSM who seek dating in Israel (Atraf Dating) and other social networks (Facebook and WhatsApp groups) between late March and the month of April 2020. On March 19, 2020, the Israeli government declared a national state of emergency, and between March 25th and May 1st, movement restrictions were imposed (eg, not venturing more than 100 meters from home; maintaining social distancing of at least 2 meters with nonhousehold members; limiting outings; store closings), including periodic lockdowns.

Participants of this convenience sample were MSM older than 18 years. They were offered to provide their e-mail address to partake in a lottery for a US\$60 coupon. The purpose of the study was stated on page 1 of the questionnaire: To study the sexual practices of MSM during the COVID-19 pandemic and to study the emotional impacts of the pandemic. Participants were also asked to provide consent electronically before completing the questionnaires. The study was approved by the Institutional Ethical Review Board of Tel Aviv University (#1281-1).

The questionnaires included demographic characteristics, and participants were asked how they self-identify (heterosexual, gay, bisexual/multisexual); their level of education (elementary, high school, or higher academic education). Scores were dichotomized by the median to nonacademic and academic degree; monthly income (which was dichotomized in relation to the average monthly income in Israel); their COVID-19 status (current diagnosis and isolation and being in a close contact with confirmed cases); and sexual activity with other males before and after social-distancing restrictions (the number of male sexual partners during sexual isolation; sexual practices; alcohol and drug use during the sexual activity; preferred meeting venues for sexual partners; the frequency of using sex phone/webcam or porn for sexual satisfaction—both on a 5-point scale ranging from *never* = 1 to *very often* = 5). All questions were referred to sexual behaviors with other males.

To assess their mental health, participants were asked to complete the Mental Health Inventory,¹⁵ which gauges mental distress (8 items, such as “*being a very nervous person*,” “*being anxious or worried*,” “*feeling depressed*”) and well-being (7 items, such as “*being a happy person*,” “*my daily life has been full of*

Table 1. Differences between participants who had casual sex during social distancing due to COVID-19 and those who abstained (N = 2,562)

Sample	Casual sex during social distancing (N = 1,012)		No casual sex during social distancing (N = 1,550)		P	OR (95% CI)
	N	%	N	%		
Single	826	81.6	1,058	68.3	<.001	1.89 (1.6–2.3)
Jewish	890	87.9	1,351	87.2	.1	0.83 (0.6–1.1)
Nonreligious	823	81.3	1,183	76.3	.2	1.16 (0.9–1.4)
Resides in central Israel	758	74.9	1,074	69.3	.1	1.18 (0.9–1.4)
Above-average income*	387	38.2	595	38.4	.5	0.94 (0.8–1.1)
Academic education	515	50.8	881	56.8	<.001	0.73 (0.6–0.9)
Being “out” (no) [†]	123	12.5	226	14.6	.04	0.78 (0.6–0.9)
	M	SD	M	SD	P	Cohen’s d
Age	36.0	11.0	37.8	11.5	<.001	0.16
Mental distress [‡]	23.8	7.1	21.2	7.2	<.001	0.36
Mental well-being [‡]	23.4	6.4	24.3	6.4	.04	0.14

CI = confidence interval for odds ratio; COVID-19 = coronavirus disease 2019; OR = odds ratio; SD = standard deviation.

*Average monthly income in Israel is ~€2,600 (~US\$3,000) per month.²⁴

[†]Participants were asked who knows of their sexual orientation (0–some/all acquaintances and the family knows; 1–no one knows).

[‡]The Mental Health Inventory score.

interesting things,” “feeling emotionally stable”). Items were rated on a 6-point scale ranging from 1 (strongly disagree) to 6 (strongly agree). Participants were asked to rate the degree to which these statements reflected their feelings and emotions in the past month because of the imposition of social-distancing restrictions. Scores for mental distress and well-being were then calculated as the sum of item measures for each of the scales: the higher the score, the greater the distress and well-being. The present study demonstrated a reliability of $\alpha = 0.92$ for the distress scale and $\alpha = 0.89$ for the well-being scale.

The sexual risk behavior was calculated as a sum of 3 practices: anal intercourse without a condom/pre exposure prophylaxis (PrEP), the use of drugs, and the use of alcohol before or during sex (no = 0; yes = 1), as in previous studies.^{16,17} The overall sexual risk ranged from 0 to 3: the higher the score, the higher the risk. The present study demonstrated a reliability of $\alpha = 0.80$ for the Sexual Risk Behavior scale.

Statistical Analyses

The dependent variable for this study was meeting a new casual-sex partner during the social-distancing period, in violation of social-distancing restrictions. This included single MSM who met a new partner, as well as those who were in a steady relationship and took up casual sex partner(s). Independent variables were compared by the chi-squared or the Student’s *t*-test for categorical and continuous variables, respectively. *P* values less than 5% were considered statistically significant. Variables whose *P* value was <2% in the univariate analyses were included in the multivariate analysis, to identify attributes associated with casual sex during the social-distancing period. The sexual behaviors of participants who engaged in casual sex during the COVID-19 restrictions were compared with their sexual behaviors before social-distancing restrictions were imposed, using paired Student’s *t*-test in cases where the variables were continuous and by the McNemar’s chi-squared test for categorical variables. The Pearson correlation

Table 2. Logistic regression predicting casual sex during social distancing due to the COVID-19 pandemic (N = 2,562)

Predictor	B	SE	OR	95% CI	P
Single	0.50	0.11	1.65	1.3–2.1	<.001
Jewish	–0.19	0.15	0.83	0.6–1.1	.2
Nonreligious	0.10	0.13	1.11	0.8–1.4	.4
Resides in central Israel	0.19	0.11	1.21	0.9–1.5	.08
Academic education	–0.19	0.09	0.82	0.7–1.01	.06
Being “out” (no)	–0.03	0.14	0.97	0.7–1.2	.8
Age	–0.01	0.01	0.99	0.98–0.99	.01
Mental distress*	0.36	0.01	1.5	1.3–1.8	<.001
Mental well-being*	0.06	0.07	1.06	0.9–1.2	.4

CI = confidence interval for odds ratio; COVID-19 = coronavirus disease 2019; OR = odds ratio.

*The Mental Health Inventory.

Table 3. Differences in sexual behaviors with casual partners before and during social-distancing period due to the COVID-19 pandemic (N = 1,012)

Sexual behaviors during social distancing	Before social distancing		During social distancing		P*	OR (95% CI)
	N	%	N	%		
Used drugs before or during sex	321	31.7	249	24.6	<.001	11.51 (8.3–16.0)
Used alcohol before or during sex	420	41.5	322	31.8	<.001	6.15 (4.6–8.2)
Kissing with the sexual partner	841	83.1	679	67.1	<.001	8.27 (5.7–12.0)
Having oral sex	869	85.8	822	81.2	<.001	13.06 (8.7–19.5)
Having anal sex	837	82.7	700	69.2	<.001	7.84 (5.5–11.2)
Used objects during sex (eg, dildo)	259	25.6	148	14.6	<.001	20.17 (12.9–31.3)
Been paid for sex	58	5.7	35	3.4	<.001	85.31 (36.9–196.8)
Paid for sex	65	6.4	36	3.6	<.001	171.78 (62.9–469.1)
Used condoms/PrEP	549	54.2	612	60.4	<.001	10.58 (7.9–14.2)
Where participants met casual sex partners						
Online dating application (Grindr/Atraf dating)	849	83.9	694	68.5	<.001	4.59 (3.2–6.5)
Online social media (eg, Facebook)	207	20.5	124	12.3	<.001	10.90 (7.2–16.5)
Public places/street	77	7.6	25	2.4	<.001	26.99 (11.5–63.6)
Through friends	133	13.1	54	5.3	<.001	37.70 (18.8–75.7)
Gay bars and clubs	197	19.5	- [†]	-	-	
	M	SD	M	SD	P	Cohen's d
Frequency [‡] of sex phone/webcam for sexual satisfaction	1.40	0.73	1.68	1.05	<.001	0.31
Frequency [‡] of porn consumption	2.79	0.99	3.27	1.21	<.001	0.43
Sexual risk behavior score	1.47	0.89	1.14	0.85	<.001	0.38

CI = confidence interval for odds ratio; COVID-19 = coronavirus disease 2019; OR = odds ratio; PrEP, pre exposure prophylaxis.

*McNemar chi-squared test, paired-sample t-test.

[†]Gay bars and clubs were closed by law during the social-distancing period.

[‡]Scores ranged from *never* = 1 to *Very often* = 5.

coefficient was used to assess correlations between continual sexual behavior variables and mental distress. Data analysis was performed using SPSS, version 25 (IBM, 2017, Armonk, NY).

RESULTS

Sample Characteristics

During the social restriction period, 2,562 (85.8%) participants of the 2,987 men who first responded completed the entire questionnaire. Their average age was of 37 years ($SD = 11.3$, range: 18–76). Most (N = 1,970, 76.9%) self-identified as gay, 21.5% (N = 551) self-identified as bisexuals, 1.6% (N = 41) self-identified as heterosexuals, although they had sex with men. Nearly a quarter (N = 642, 24.9%) were in a steady relationship at the time, while 61.4% (N = 394) of those reported at least one concomitant casual sex partner. Of all participants, 13 (0.5%) had tested COVID-19 positive; 10 (0.4%) shared household with someone who had tested positive, and 369 (14.4%) had been ordered to self-isolate because of exposure to a confirmed case.

Sexual Activity During COVID-19 Social Distancing and Lockdown

In defiance of social-distancing restrictions, 1,012 (39.5%) had met a new casual sex partner during that period. Most of these (N = 850, 84%) had had up to 3 sexual partners, while 21

(2.1%) met more than 10 sexual partners, and 24 (2.4%) reported taking part in in-house orgies.

Men who engaged in casual sex despite the social-distancing regulations were more commonly younger, singles, and less educated compared with participants who abstained from casual sex (Table 1). They also exhibited higher levels of mental distress and lower levels of well-being compared with those who abstained from casual sex.

Logistic regression analysis revealed that being of a younger age, single, and with higher levels of mental distress predicted engagement in casual sex during the social-distancing restrictions due to the COVID-19 pandemic (Table 2). Being single and having higher levels of mental distress were the strongest predictors of engaging in casual sex.

Study participants who engaged in casual sex during the social-distancing restriction period were asked to report their sexual activities before and during that period. Of those who had casual sex during the social-distancing period, 72.1% reported that the number of casual sex partners was lower than in the pre-social-distancing period. Participants also reported having reduced their sexually risky behaviors in comparison with the pre-social-distancing period (Table 3). Specifically, they were less likely to engage in kissing with their sexual partner or indulge in practices such as anal and oral sex,

Table 4. Differences in sexual behaviors between men who had casual sex before and during the social-distancing period and those who had casual sex before social-distancing but abstained during the COVID-19 pandemic

Regular sexual behaviors (before social distancing)	Had casual sex before and during social distancing (N = 1,012)		Had casual sex before but stopped during social distancing (N = 1,295)		P	OR (95% CI)
	N	%	N	%		
Used drugs before or during sex	321	31.7	241	18.6	<.001	2.21 (1.8–2.7)
Used alcohol before or during sex	420	41.5	429	33.1	<.001	1.61 (1.3–1.9)
Kissing with the sexual partner	841	83.1	1,077	83.2	.4	0.25 (0.6–1.3)
Having oral sex	869	85.8	1,137	87.8	.003	1.91 (1.3–2.8)
Having anal sex	837	82.7	996	76.9	<.001	2.78 (2.1–3.7)
Used objects during sex (eg, dildo)	259	25.6	273	21.1	.002	1.39 (1.1–1.7)
Been paid for sex	58	5.7	34	2.6	<.001	2.37 (1.5–3.7)
Paid for sex	65	6.4	57	4.4	.009	1.63 (1.1–2.4)
Used condoms/PrEP	549	54.2	963	74.4	<.001	0.56 (0.4–0.7)
Where participants met casual sex partners						
Online dating applications (Grindr/Atraf dating)	849	83.9	1,126	86.9	.1	0.82 (0.7–1.1)
Online social media (eg, Facebook)	207	20.5	250	19.3	.4	1.09 (0.9–1.3)
Public places/street	77	7.6	96	7.4	.8	1.04 (0.8–1.4)
Through friends	133	13.1	126	9.7	.007	1.43 (1.1–1.9)
Gay bars and clubs	197	19.5	241	18.6	.5	1.08 (0.9–1.3)
	M	SD	M	SD	P	Cohen's d
Frequency* of sex phone/webcam for sexual satisfaction	1.40	.73	1.55	.82	<.001	0.19
Frequency* of porn consumption	2.79	.99	2.96	1.00	<.001	0.17
Sexual risk behavior score	1.47	.89	1.26	.83	<.001	0.25

CI = confidence interval for odds ratio; COVID-19 = coronavirus disease 2019; OR = odds ratio; PrEP, pre exposure prophylaxis. *Scores ranged from *never* = 1 to *very often* = 5.

consume illicit drugs or alcohol during sex, or paying or being paid for sex. During the social-distancing period, they were more likely to use condoms or PrEP in casual sexual intercourse than in pre-pandemic times. Since the imposition of social-distancing rules, participants met sexual partners mainly through online dating applications and social media and increased their use of sex phone, webcams, and porn in relation to the pre-COVID-19 outbreak.

While 90% (2,310) of all participants used MSM dating applications during the social-distancing period, over a third (N = 966, 37.7%) reported that they spent more time in dating applications in search of sexual partners than in the pre-restriction period. Interestingly, 23.1% (N = 591) reported that their sexual desire diminished under the social-distancing regime compared with the pre-pandemic period.

Men who engaged in casual sex during the social-distancing period were compared with men who used to have casual sex before social distancing, but opted to stop meeting new sexual partners after the COVID-19 outbreak, on their sexual behaviors

before the COVID-19 pandemic (Table 4). MSM who continued to engage in casual sex despite the social restriction regulations were also more likely to engage in higher sexually risky behaviors before the outbreak of COVID-19 to perform more anal sex, to use toys in sexual encounters, and to pay or being paid for sex frequently before the COVID-19 pandemic than men who abstained from casual sex during the social-distancing period.

Among all participants, a significant correlation was found between mental distress and the use of sex phones or webcams ($r = 0.11$; $P < .01$) and porn ($r = 0.10$; $P < .01$) during the social-distancing period.

Participants were asked if they were willing to have sex with someone who is known to have HIV or with someone diagnosed with COVID-19 (Table 5). Only a very small percentage of participants (N = 83, 3.2%) were prepared to have sex with a partner diagnosed with COVID-19, while significantly more (N = 722, 30.1%) were potentially prepared to have sex with a partner diagnosed with HIV.

Table 5. Comparison between men who would consider having sex with a partner diagnosed with COVID-19 and those who would consider having sex with a partner diagnosed with HIV

Sample	Agree to have sex with a person diagnosed with COVID-19		Agree to have sex with a person diagnosed with HIV		P*	OR (95% CI)
	N	%	N	%		
Entire sample (N = 2,562)	83	3.2	772	30.1	<.001	2.71 (1.8–4.2)
Participants who had casual sex during the social-distancing period (N = 1,012)	46	4.5	338	33.4	<.001	2.27 (1.3–4.1)
Participants who abstained from casual sex during the social-distancing period (N = 1,550)	37	2.4	433	27.9	<.001	3.12 (1.6–6.0)

CI = confidence interval for odds ratio; COVID-19 = coronavirus disease 2019; OR = odds ratio.

*McNemar chi-squared test.

DISCUSSION

In this study—one of the first studies to assess changes in sexual behaviors among MSM during social-distancing restrictions due to the COVID-19 pandemic—39.6% (N = 1,012) reported having met a new sex partner in defiance of distancing regulation. Some of them were among the 28.6% of participants who reported having steady relationships despite the potential risk of transmitting SARS-CoV-2 from the new casual partner to their committed steady partner. These findings are in line with the few other studies that have examined sexual practices among heterosexuals and MSM during the COVID-19 pandemic.^{3,4} However, participants in this study who had casual sex during the social-distancing period sought to reduce the risk of contagion by limiting their sexual repertoire in relation to their pre-social-distancing sexual behaviors—in particular, by avoiding kissing their partner. They also reduced their use of drugs or alcohol and used condoms or PrEP more often. It seems that those who violated social-distancing restrictions sought to minimize physical contact with their sexual partners, and modified their sexual behaviors, in a bid to reduce their exposure to the virus.

Although HIV is a life-long condition and its health outcomes in younger patients without medical treatment are usually worse than those of COVID-19, significantly more participants could imagine having sex with a partner who was diagnosed with HIV than with someone diagnosed with SARS-CoV-2. Perhaps the uncertainty surrounding COVID-19 in the absence of an effective vaccine or medical treatment, coupled with the distressing news about it on the media, intimidated MSM more than the threat of HIV. Indeed, one as yet unpublished study has found that people in Israel perceived the threat of COVID-19 to be higher than that of a terrorist attack or street crime.¹⁸ Accordingly, the MSM in this study responded by reducing their sexual risk. One might ask whether COVID-19 has succeeded in restraining risky sexual behaviors among MSM more effectively than 4 decades of continual interventions to prevent

HIV. It appears that the familiar risk of HIV has been superseded by a new threat that is perceived to be more dangerous. MSM have independently developed several risk-reduction techniques to protect themselves from HIV, such as “serosorting” and “strategic positioning.”¹¹ It is possible that MSM who continued having casual sex have used that experience and adopted risk-reduction techniques against SARS-CoV-2, to assume control of their health by weighing the risks of being infected against their sexual needs. For example, they decreased—but not entirely eliminated—the number of their sexual partners and limited their SARS-CoV-2 exposure by reducing the frequency with which they kissed their sexual partner(s). Not surprisingly, as a result of these responses to the external threat of COVID-19, the MSM in this study (as in others¹⁹) also reduced their risk of catching HIV or other sexually transmitted diseases by limiting their sexual repertoire and using condoms more often.

MSM who engaged in casual sex during the social-distancing period because of the COVID-19 pandemic were younger, more likely to be single, and demonstrated riskier sexual behaviors before the pandemic compared with those who complied with social-distancing regulations. They also exhibited lower levels of well-being and higher levels of distress. The association between higher levels of mental distress, being single, and having casual sex during the social-distancing period highlights the burden of loneliness, especially during imposed isolation due to the COVID-19 pandemic. These findings echo concerns about the vulnerability of sexual minorities to depression and negative mental health outcomes^{6,17}—particularly in times of social distancing, when essential support, intimacy, and shared experience with their family and friends are no longer available.⁸ Loneliness is a prime indicator for low levels of well-being and a risk factor for mental disorders, such as depression, anxiety, adjustment disorder, stress, and insomnia.²⁰ These negative feelings may have driven some MSM to engage in casual sex, despite regulations, while putting themselves and their household members at risk of possible SARS-CoV-2 infection. As MSM are

generally more likely than heterosexuals to be singles,⁷ they are more likely to report feeling lonely and susceptible to emotional distress,⁶ while lacking the mental resources needed to comply with social distancing. As one of the study participants put it in private comment with the authors, as he was trying to explain why he had sex during the restrictions period: “Social isolation” he wrote, “defeated the fear of COVID-19.”

As expected,²¹ men increased their use of remote sexual satisfaction options, such as sex phone, webcam sex, or porn consumption, in relation to the pre-social-distancing period. These behaviors were also correlated with higher levels of mental distress, suggesting that pornography during social distancing due to COVID-19 served not only as a means of self-satisfaction but also used as a coping mechanism to reduce the stress of uncertainty and insecurity.^{21,22} Although remote devices of sexual satisfaction could ease the sense of loneliness, porn consumption and the use of webcams or sex phones were not found to be predictors of abstaining from casual sex during the social-distancing period. Interestingly, while dating applications and web-based social venues were the main means of meeting other MSM during the social-distancing period, only 40% used them to find sexual partners. This suggests that these applications are part of the social landscape of the gay and MSM communities, and MSM use these platforms for chats and social gatherings, as well. As such, it is a useful means within the gay community to communicate health messages.

This study has several limitations. Although the sample for this study is large, especially for a small country such as Israel, the use of convenience sampling limits causality. In addition, findings should be interpreted cautiously, especially because COVID-19-related behaviors and circumstances can change rapidly. Further studies on the impact of COVID-19 on MSM population are needed to clarify this study finding.

CONCLUSIONS

This study demonstrated that social distancing due to the COVID-19 pandemic has changed sexual behaviors among MSM. Participants—including those who continued to engage in casual sex—reduced the number of their sexual partners and limited their sexual repertoire. Having casual sex in defiance of social-distancing regulations was associated with mental distress. Negative feelings of loneliness due to social isolation is thought to be one of the serious consequences of COVID-19, specifically among vulnerable populations,²³ and should be considered as a potential barrier to adherence to regulations among other vulnerable populations, such as MSM. Future public health responses in future waves of COVID morbidity should weigh the benefits of containment measures against the mental, social, and financial burdens that they may entail.

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STATEMENT OF AUTHORSHIP

All authors: Writing - Original Draft, Formal Analysis, Conceptualization, Methodology, Investigation, Resources, Writing - Review & Editing, Funding Acquisition, Project Administration.

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