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Suicide-related calls to a national crisis chat hotline service during the COVID-19 pandemic and lockdown

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ABSTRACT

Background: A COVID-19 pandemic-related rise in suicide rates has been predicted due to social isolation, fear, uncertainty, economic turndown and grief. Detecting an increase in suicide rates is difficult in the absence of real-time data. Alternative data sources for such trends in psychopathology and suicidal behavior must be sought. **Methods:** Data from a national chat-based crisis hotline for the first half of 2019 (pre-COVID-19), were compared to data from the first half of 2020 (during COVID-19). Chat sessions were classified by content and demographics and the data compared between the two time periods.

Outcome: Total chats ($n = 6756$) were 48% higher during COVID-19 ($p < .05$). Suicide-related chat (SRC) number was also higher, although the proportion relative to all chats was slightly lower during COVID-19, compared to pre-COVID-19 ($p < .05$). SRCs increased during the COVID-19 lockdown. The number of severe SRCs resulting in urgent police intervention, increased during the lockdown (April–May 2020) compared with the same period in 2019 ($p = .04$). Issues of anxiety were higher in 2020 (19.4%) vs. 2019 (16.5%) ($p < .00001$) while issues of depression were lower (22.4% vs 33%, respectively) ($p < .00001$). The overall use of chats among adults aged >50 yrs increased during COVID-19 and likewise, the rate of SRCs in this age-group increased 30-fold in this period when compared to pre-COVID-19 ($p < .00001$). SRCs included more women than men ($p < .0001$) in both pre-COVID-19 and during the COVID-19 period, when the proportion of women increased from 62% in 2019 to 73% during COVID-19 ($p < .0001$).

Interpretation: The rise in total chats, SRCs and SRCs resulting in police action, commenced during lockdown and was ameliorated by end of the lockdown, indicating that distress created by the lockdown was more impactful than mourning deaths of loved ones, fear and uncertainty, because all these factors persisted beyond the end of the lockdown. Older populations were probably more distressed due to greater risk and less adaptability to isolation, social media and staying home. More calls by women may reflect women's better help-seeking capacity. The increase in SRCs indicates the potential for more suicides and the need for bolstering mental health services and reach-out to older people during pandemic lock-downs.

1. Introduction

The COVID-19 pandemic presents extreme public health challenges. Previous epidemics have been associated with increased suicide rates (Cheung et al., 2008) and negative effects on mental health (Brooks et al., 2020). A rise in suicide rates during or after the COVID-19 pandemic has been predicted for many reasons (Brown and Schuman,

2021; Gunnell et al., 2020) such as exacerbated fear, self-isolation, exposure to sickness and death, loneliness and physical distancing. Suicide risk might be increased due to stigma towards individuals with COVID-19. Individuals with psychiatric disorders may experience worsening symptoms due to stress and unavailable services (Brown and Schuman, 2021; Gunnell et al., 2020).

National data suicide rates are released only once a year and often

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after a delay of months or even years. It is critical to seek alternative data sources in order to determine if COVID-19 produces an increase in suicidal behavior (Zalsman et al., 2016).

Data from the National Forensic Institute indicate a 29% rise in suicide-related postmortem cases during April–July 2020 compared with same period in 2019 (Ministry of Health, unpublished data) but this is an underestimation of the real suicide rate because, for religious reasons, a minority of suicide decedents in Israel undergo an autopsy and there is a reluctance to make this diagnosis (Zalsman, 2019).

We assessed 2020 data from an online chat-format crisis hotline⁷ (“Sahar”) in Israel examining total chats and suicide-related chat sessions and comparing findings to the same time period one year earlier. Since this is a chat-based hotline, the chat sessions are documented, and the text can be evaluated. To the best of our knowledge, this is the first study investigating the impact of COVID-19 on suicide-related chat-based hotline usage.

2. Methods

“Sahar” (www.sahar.org.il) is a non-profit organization established in 2000 as an internet-based crisis hotline chat service (Mokkenstorm et al., 2017). It is provided anonymously and free of charge and staffed by 140 trained volunteers, supervised by mental health professionals. “Sahar” uses encrypted information technology for chat session management and has developed extensive reporting capacity based on its database. All chat sessions are recorded by the software and manually classified to identify suicide-related chats, as well as to specify the expressed key distress topics. Data is collected into one main data base and quantitative data is analyzed in real-time. Data for 2019 was collected retrospectively. When immediate risk is identified, the Sahar volunteer reports to the supervisor, who is a trained psychologist. The supervisor analyzes the content in real time and assesses the need to activate emergency protocols, including contacting the police and other emergency services. Additional meta-information (such as demographics) is added for each chat session when available. Chats are later analyzed using subgrouping for age using intervals that represent life-cycle groups: 10–17 years old (minors, school age, lack of stable education programs), 18–30 years old (young adults, post army service, students), 31–50 years old (midlife, first years of parenting) and 51+ years old (representing mature adults that rarely use chat hotline in our experience).

Data for January 1st to June 30th for 2019 and for 2020 were compared using a Chi square test. All p values are 2-tailed. The institutional review board exempted the study from the need for written informed consent due to anonymity of content.

3. Results

The total number of incoming chats between January 1st and June 30th 2020 was 9743. Of these, 6756 were answered by volunteers and developed into a full interactive chat. Unfortunately, not all incoming calls are answered immediately due to a shortage of volunteers. Thus, 2987 incoming calls were not connected, possibly as a result of long waiting-times or internet connection problems. The total number of chats was 48% higher [$\chi^2(1, N = 11315) = 4.55, p < .05$] in the first half of 2020 than in the same period in 2019 (Table 1).

Text content of the calls revealed that the overall proportion of calls whose contents related to depression, loneliness and/or anxiety did not differ between 2019 (59.4%) and 2020 (59%), [$\chi^2(1, N = 11315) = 0.19, p > .05$]. However, issues of depression were present in lower proportion of chats in 2020 (22.4%) compared to 2019 (33%), [$\chi^2(1, N = 11315) = 155.36, p < .00001$], while issues of loneliness were in comparable proportions of chats in 2020 (27.8%) and in 2019 (28.6%), [$\chi^2(1, N = 11315) = 0.95, p > .05$]. The proportion involving issues of anxiety, however, was higher in 2020 (19.4%) compared to 2019 (16.5%), [$\chi^2(1, N = 11315) = 15.92, p < .00001$].

Table 1

Characteristics of hotline total and suicide-related chats before and during COVID-19 pandemic.

	All chats		Non suicide-related chats		Suicide-related chats	
Year	2019	2020	2019	2020	2019	2020
Total number	4559	6756	3742	5649	817	1107
(% of total chats)			(82%)	(84%)	(18%)	(16%)
% of 2019		148%		151%		135%
			$\chi^2 = 4.45, p = .033$			
Chats by gender^a						
Female	2986 (65%)	4655 (69%)	2479 (66%)	3844 (68%)	507 (62%)	810 (73%)
Male	1573 (35%)	2101 (31%)	1263 (34%)	1805 (32%)	310 (38%)	295 (27%)
	$\chi^2 = 14.39, p = .00014$		$\chi^2 = 3.31, p = .07$		$\chi^2 = 27.35, p < .0001$	
Chats by age group^a						
10–17 yrs.	1235 (27%)	1598 (24%)	989 (26%)	1348 (24%)	246 (30%)	250 (23%)
18–30 yrs.	2484 (54%)	3388 (50%)	2080 (56%)	2802 (50%)	404 (49%)	586 (53%)
31–50 yrs.	816 (18%)	1493 (22%)	651 (17%)	1293 (23%)	165 (20%)	200 (18%)
51+ yrs.	23 (0.5%)	277 (4%)	21 (0.5%)	207 (4%)	2 (0.2%)	70 (6%)
	$\chi^2 = 178.98, p < .0001$		$\chi^2 = 143.56, p < .0001$		$\chi^2 = 58.97, p < .0001$	

^a Number of participants (percentage from chats in that year).

The absolute number of **suicide-related** chats was 35% higher but was still lower as a proportion of all chats in 2020 (16%), compared with 2019 (18%), [$\chi^2(1, N = 11315) = 4.55, p < .05$].

Gender. Suicide-related chats involved more women than men [$\chi^2(1, N = 1922) = 27.55, p < .0001$] in both 2019 (women’s count was 1.6 higher than men in 2019) and 2020 (women’s count was 2.75 higher than men in 2020). Gender difference was not significant for non-suicide related chats [$\chi^2(1, N = 9391) = 1.7, p = .07$], although the trend effect was also towards more chats coming from women. Examining only suicide-related chats, the proportion involving women increased from 62% in 2019 to 73% in 2020, [$\chi^2(1, N = 1922) = 27.55, p < .0001$].

It should be noted, however, that 17% of all women’s chats, were suicide-related both in 2019 and in 2020 [$\chi^2(1, N = 7640) = 0.23, p > .05$]. Meanwhile in men, suicide-related chats comprised 20% of all chats in 2019 and only 14% in 2020 [$\chi^2(1, N = 3673) = 20.94, p < .00001$].

Age distribution differed between the two years for both suicide-related chats, [$\chi^2(3, N = 1923) = 58.97, p < .00001$], and non-suicide related chats [$\chi^2(3, N = 9391) = 143.56, p < .00001$]. The relative rate of chats of people aged 50 years and over manifested the biggest increase. Specifically, in 2019 only 0.2% of suicide-related chats involved adults aged 50 yrs and over, while in 2020, 6% were 50 yrs and over (a 30-fold increase).

Relative to 2019, there is a marked rise in suicide-related chats starting in March 2020 that then declined from April 20th to June 2020 (Fig. 1). These temporal changes correspond to the COVID-19 pandemic lockdown and COVID-19 infection rates, starting to rise at the end of March until reaching a maximum in April 19, then followed by a decline until the end of June. Fig. 2 shows the relationship of hotline suicide-related chat numbers to COVID-19 lockdown and re-opening events.

Fig. 3 shows the number of chats with severe suicide threats that resulted in urgent referral to the police, intervention and hospitalization. During 2020, the months of March (the starting of the epidemic in Israel) and May (after lockdown) have the highest numbers of chats with severe suicide threats (9 and 13, respectively). In 2019, the number of severe suicide threats during April–May was almost 3 times lower than in January–February (21 vs. 8, respectively). However, in 2020, this number remained similarly high in April–May (lockdown) as in

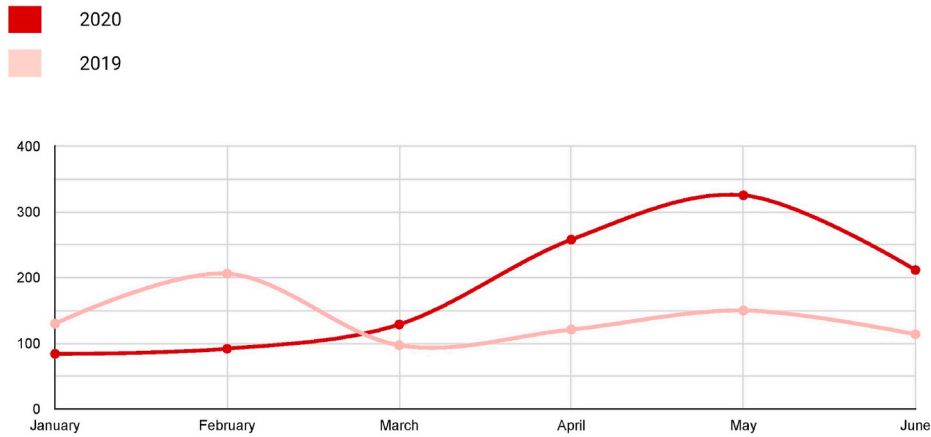


Fig. 1. Number of suicide-related chats before and during COVID-19 pandemic 2020 compared to 2019.

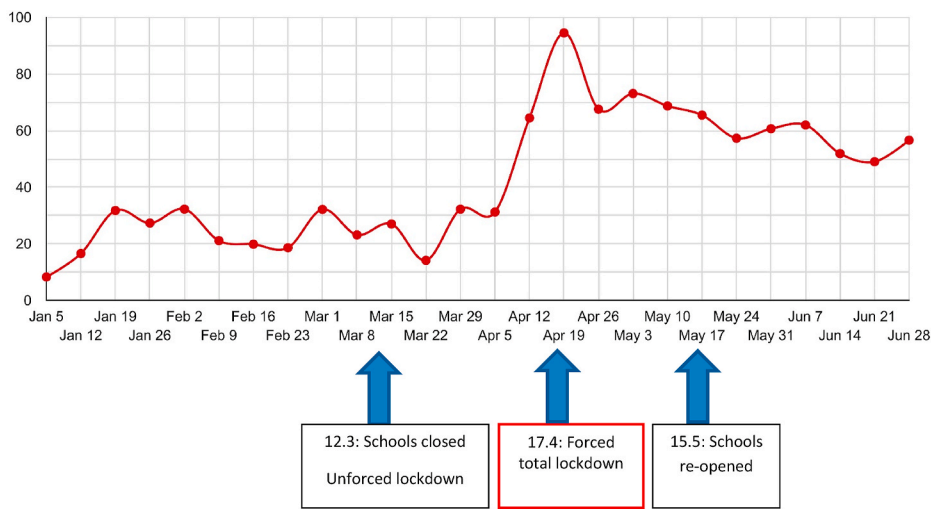


Fig. 2. Trends of hotline suicide-related chats in relation to COVID 19 lockdown and re-opening events.

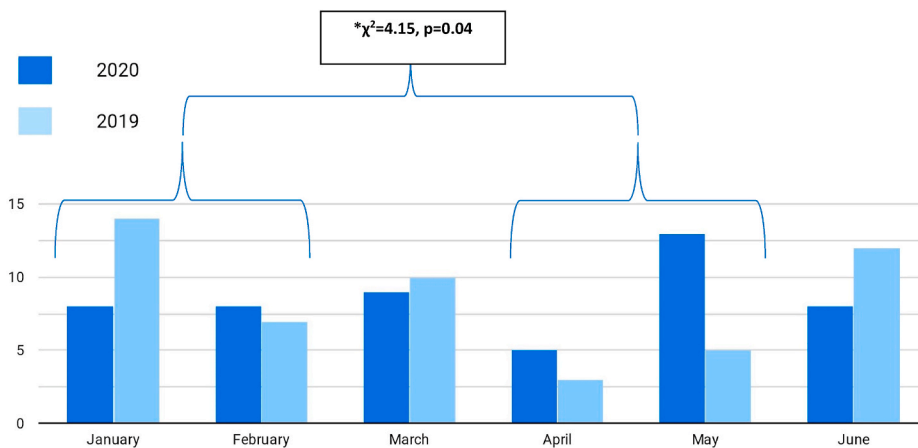


Fig. 3. Number of reports to police on life threatening suicide-related chats before and during COVID-19 pandemic 2020 compared to 2019.

January–February (before the pandemic reached Israel) (16 vs. 18, respectively) [$\chi^2(1, N = 63) = 4.15, p < .05$].

4. Discussion

In 2020, during the COVID-19 epidemic in Israel, the total number of

chats to the crisis hotline increased by 48% when compared to the first half of 2019 (pre-COVID-19). The proportion of suicide-related chats out of the total number of chats, was slightly lower in the COVID-19 period compared to pre-COVID-19, however they increased in March 2020 and declined in June 2020, corresponding to the time period of the COVID-19 pandemic lockdown. Severe suicide-related chats that resulted in

urgent intervention by police, increased during the lockdown (April–May 2020) when compared to the same period in 2019.

There was a shift of topic from depression to anxiety in chat content. An increase was recorded in use of chats and more suicide-related chats involved adults aged 50 yrs and over. Suicide-related chats involved more women compared to men in both pre-COVID-19 and during COVID-19.

It is known that suicide rates decline during wars and natural disasters and rise again afterward, often when a post-conflict economic crisis emerges (Batty et al., 2018). There are not enough data on the effects of pandemics, but SARS has shown an increase in distress during lockdown and isolation followed by depression, anxiety and loneliness (Cheung et al., 2008). Brooks et al. (2020) published a systematic review examining the psychological impact of quarantine and found that most studies reported negative psychological effects. These effects included post-traumatic stress symptoms, confusion, anger and other long-lasting effects. No data are available as yet on suicidal behavior during COVID-19 quarantines and lockdowns.

Our data demonstrates that lockdowns increase the rates of depression and anxiety as expressed in the contents of chats and result in more suicidal ideation and suicide attempts as reflected by the temporal rise during the lockdown in Israel as well as in the increase in life-threatening chats that required urgent police intervention.

In both investigated years more women than men used the chat services. In general, females are better at seeking help compared with males (Mokkenstorm et al., 2017) and this finding demonstrates yet again the importance of improving men's help-seeking ability since their suicide rates are higher than those of females (Hawton and van Heeringen, 2009). Public education and smart use of media can assist in improving help-seeking behaviors in males (Batty et al., 2018; Hawton and van Heeringen, 2009; Zalsman et al., 2016).

Usually, adolescents and young adults are the ones comfortable using chat-hotlines (Mokkenstorm et al., 2017). The higher proportion of adults over 50 years involved in suicide-related chats may also reflect the severe economic stress and unemployment and the more severe impact of quarantine restrictions on older people at higher risk (Brooks et al., 2020; Cheung et al., 2008).

The main limitation of this study is that the rates of suicide related-chat sessions do not necessarily predict suicide rates. However, in the absence of real-time information on suicide rates during the COVID-19 pandemic, policy makers need to base their prevention and treatment planning on assumptions and more limited data sources like the one used in the current study. Another limitation is that the study includes a single chat-helpline and the sample is relatively small. Nevertheless, this is the only chat-related hotline in Israel. Additional limitations relate to the 2019 data that we collected retrospectively and some of which is missing. Also, a larger number of missed calls are recorded during 2020, due to the increase in total number of calls and this may slightly skew the percentage of suicide-related calls. Another limitation is that, as mentioned earlier, chats are usually used by a younger population which may mean that the data are more pertinent for younger segments of the population.

We are aware that chat hotlines are more common and popular in some countries and cultures than in others and that global generalization is not always possible. We however, believe that these findings should serve as a “red flag” warning of the serious impact of lockdowns on the global mental health.

Main implications: In a situation where up-to-date data on suicide are not available, the increase in suicide-related chats experienced during lockdown may point to a general trend of increased psychological distress, anxiety and suicidal ideation in the population during the COVID-19 pandemic. This should serve as a warning for policy makers, that the stress of lockdowns and isolation has created a rise in suicidal ideation and consequently a risk of more suicides during and after the

lockdown or home-quarantine. People aged >50 yrs who usually do not use chat help lines and males, emerge as populations that need special attention.

5. Research in context panel

5.1. Evidence before this study

Some recent reviews predicted a rise in suicide rates during or after the COVID-19 pandemic. Since national data on current suicide rates are usually delayed by months or even years, it is critical for clinicians and policy makers to seek alternative data sources for such trends.

5.2. Implications of all the available evidence

The change in number and content of chats and of suicide-related chats during lockdown may give a clue to the general trend of suicidal behavior in the population during the pandemic and quarantine. Our findings should serve as a warning sign for the policy makers who should take into consideration the stress created and the potential rise in anxiety, suicidal ideation and attempts during quarantine. Males who avoid help seeking are in greater risk.

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Declaration of competing interest

All authors declare no conflict of interest regarding data included in this paper.

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