Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

Prevalence and predictors of PTSD during the COVID-19 pandemic: Findings from a Tunisian community sample

To the editor

Along with severe health problems, COVID-19 pandemic has triggered a wide range of mental health problems on the public. Known risk factors for PTSD, including high levels of mortality, perceptions of threat, experience with ill individuals, food and resource insecurity, were experienced by people previous infectious disease outbreaks such as Ebola (Jalloh et al., 2018), as well as during the COVID-19 pandemic. In previous experiences with serious infectious disease outbreaks, the prevalence in the general population of PTSD has been ranging from 4% to 41% (Torales et al., 2020).

This global concern was also reflected in a widespread media coverage that was intensive and alarming, leading to extensive public response. For example, the Tunisian media reported that more and more young and healthy people are becoming critically ill and dying due to COVID-19 and that several deaths occurred outside hospitals, leading to a "selective amplification" of death risks (Murdock et al. 2003). According to Young et al. (2013), "the more media coverage a disease receives, the more likely individuals are to perceive it as a threat, regardless of the actual risk involved". Repeated media exposure to the outbreak represents the major threat that emerged in the COVID-19 crisis (Garfin et al., 2020). Prior research suggested that repeated media exposure to community crisis can lead to heightened stress responses that can lead to far-reaching impact on physical and mental health in the general population (Garfin et al., 2020).

In this letter, we aimed to determine the prevalence of probable PTSD, and the relationship between the type and amount of media exposure and probable PTSD among Tunisian population during the COVID-19 pandemic. This study is the first community survey of psychological distress in the general population of Tunisia during the time of the COVID-19 pandemic.

An online cross-sectional survey was conducted using a non-probability snowball sampling technique. The data collection was initiated on April 9th, 2020 and closed on April 15th, 2020. All the participants had to be above 18 years of age, Tunisian origin living currently in Tunisia. A total of 603 responses were recorded (74.0% females, mean age = 29.2 ± 10.4 years). We assessed direct exposure, media exposure and resource deprivation as a result of the COVID-19. The Impact of Event Scale-Revised (IES-R) and the Multidimensional Scale of Perceived Social Support (MSPSS) were used in their Arabic validated versions to assess self-reported PTSD symptomatology and perceived social support, respectively.

We found that 33.0% (N = 199) of participants had scores more than 33 (threshold cut-off) on IES-R scale. The most frequent symptoms of trauma subscales appear to be "avoidance" (mean = 9.4). We compared the prevalence of PTSD in different participant groups. The diagnosis of probable PTSD was found to be significantly related to gender (OR = 25.95, $p < .001$), Personal psychiatric history OR = 7.48, $p = .008$), COVID-19 exposure (OR = 16.48, $p < .001$), daily time spent on news and events related to COVID-19 on media (OR = 17.02, $p < .001$), and COVID-19-related resource deprivation (OR = 10.09, $p < .001$). Younger participants reported significantly higher prevalence of probable PTSD ($r = -.141$, $p < .001$). To eliminate confounding factors and determine the variables independently associated with probable PTSD, we used a multivariate regression model. This analysis showed an association between the probable diagnosis of PTSD and gender (OR = 0.34; $p < .001$), hearing or discussing with another person the details of a person's illness or death due to COVID-19 (OR = 1.53; $p = .035$), being not able to communicate with loved ones (OR = 1.51; $p = .031$), difficulty obtaining personal supplies (OR = 2.63; $p = .003$), total time spent on news and events related to COVID-19 on media per day (OR = 0.63; $p = .017$), and being exposed to photos or narratives or other details about burial of COVID-19 Victims (OR = 1.65; $p = .011$).

The probable PTSD estimate in our sample was 33.0%, indicating that posttraumatic symptoms were common among the respondents. Estimates of probable PTSD prevalence tend to vary according to the assessment procedures, with self-report scales being known to be associated with higher estimates of psychopathology. This may partially explain the relatively elevated rate of probable PTSD found in our sample. Moreover, the recruitment period was marked by strict curfew measures in the whole country in an attempt to contain the pandemic. These measures leading to a widespread social isolation could also result in a high level of psychological distress.

We found that 27.7% of our respondents reported having heard or discussed with another person the details of a person's illness or death due to COVID-19, and 5.6% reported having someone close being a confirmed case of COVID-19. The severity of PTSD symptoms varied significantly depending on the degree of experienced exposure in our sample. This expected finding was consistent with previous findings in literature (Jalloh et al., 2018).

Respondents who felt deprived of important resources including communication with loved ones and access to personal supplies were more likely to report symptoms of PTSD. In Tunisia as in different parts of the world, COVID-19 crisis have resulted in panic buying of essential consumer items (including semolina, flour and cleaning products), leading to exhaustion of resources. Prior research has demonstrated that lack of necessities as well as financial loss are consistent predictors of PTSD (Hall et al., 2019).

More than a third (34.8%) of our participants spent more than two hours per day on news and events related to COVID-19 on media. Indeed, our respondents were surveyed during a period of COVID-19 proliferation in Tunisia, and when the majority of the general public was staying at home for lockdown. Thus, they gained more time to gather information about the pandemic situation through the internet and media. Furthermore, despite a relatively low number of confirmed cases, Tunisian government officials and health authorities

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communicated frightening messages about COVID-19 to increase public awareness to stay at home. Consistent with prior research, we found that increased media use was significantly and strongly associated with probable PTSD. Another interesting result is the fact that being exposed to photos or narratives or other details about burial of COVID-19 victims on media remained associated with the probable diagnosis of PTSD in the logistic regression model; while exposition to other types of information or events found on the media were no longer significant. It is well known that both the type and amount of media exposure affect psychological responses to a community-wide trauma (Garfin et al., 2020). In order to explain these results, it is important to underline certain Islamic cultural and religious particularities of Tunisian society. In Islam, the funeral follows specific rites (Siala, 1996). The dead must be washed respectfully prior to burial, with clean and scented water. Then, the body must be shrouded, using large white cloths covering the whole body. Cremation of a body is strictly prohibited. The prayer should be performed by all members of the community, and is performed in congregation to request pardon for the deceased and all dead Muslims, and to wrap them all in Allah's Mercy. Attendance at funerals is considered a communal duty that should be carried out by a sufficient number of people for anyone who dies. All these rites have changed in the pandemic context. COVID-19 victims are not allowed to be brought home or to the mosque for the funeral prayers, and not allowed to be washed and shrouded out of fear that it will spread the virus. Cemeteries have limited the number of family members allowed to take part of the burial to fewer than three persons. These restrictions may cause distress to victims' families, but also to the general public. Moreover, local media played a part in aggravating the COVID-19 fears of general public. Some Tunisian media reports exposed details about burial procedure of COVID-19 victims (specifying for example that grave slots for COVID-19 victims must be three meters deep). Others showed how many victims of Covid-19 are dying in hospital isolation without any family or friends, and exposed information about several countries that would have allowed for mandatory cremations should death continue to spike from the disease. As a result, Tunisian residents in different regions prevented municipal authorities from burying COVID-19 victims in their cemeteries. Security forces were most of the time obligated to use tear gas to disperse residents in the vicinity of the cemeteries to allow for health and municipal authorities to continue the process of burying the COVID-19 victim.

These findings need to be interpreted with considering the following limitations. The retrospective design of the study does not allow for any conclusion about causation. Given the time-sensitivity of the COVID-19 outbreak, we adopted the snowball sampling strategy, and the study population may not reflect the actual pattern of the general population.

Our findings need further investigation to be confirmed and understood, but based on these results, we can suggest that females, people who reported exposure to confirmed COVID-19 case, those who felt deprived of important resources, and those exposed to 2 or more hours per day of media coverage of COVID-19 are more likely to develop probable PTSD after the pandemic. Thus, more attention needs to be paid to these vulnerable groups.

Otherwise, our results support evidence highlighting the importance of considering both frequency and content of media exposure. WHO (2020) recommended minimizing watching, reading or listening to news about COVID-19 as it causes people to feel anxious or distressed, as well as seeking information updates only from trusted sources and at specific times during the day, once or twice. Trusted sources, such as the Centers for Disease Control and Prevention or WHO, that provide up-to-date information regarding community-level threats and recommendations are potentially required during crisis (Lachlan et al, 2016; Garfin et al., 2020). Health care providers also constitute a trusted and reliable source of accurate information and recommendations for patients and other community members (Garfin et al., 2020). Given that 86.9% of the respondents used social media networks as their most common news pathway about COVID-19, social media may be an effective tool for government, health authorities and non-profit agencies to disseminate information to general public during a public health crisis. Strategic Social media use (e.g., specialized methods of demarcation) can be advantageous in mitigating emergencies throughout the crisis lifecycle, by helping agencies and first responders to communicate quick and accurate information to affected individuals (Lachlan et al, 2016).

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Declaration of Competing Interests

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2020.113131.

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