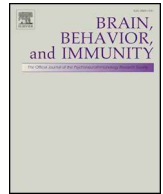




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## The distress of Iranian adults during the Covid-19 pandemic – More distressed than the Chinese and with different predictors



Dear Editors,

Although Covid-19 is expected to wreak havoc on mental health issues (Bao et al., 2020), there is little evidence of it, especially outside of China. Early evidence published in *Brain, Behavior, and Immunity* has explored the distress in adults population by their Covid-19 infection status in China (Zhang et al., 2020). Such research during the Covid-19 pandemic is critical to identify people to prioritize mental health assistance (Zandifar and Badrfam, 2020).

One of the countries most affected by Covid-19 is Iran. The Covid-19 crisis in Iran has been compounded by the decade-long US-led sanctions (Zhang and Jahanshahi, 2016). “All aspects of prevention, diagnosis, and treatment are directly and indirectly hampered, and the country (Iran) is falling short in combating the crisis. Lack of medical, pharmaceutical, and laboratory equipment such as protective gowns and necessary medication has been scaling up the burden of the epidemic and the number of casualties” (Takian et al., 2020). We provide the first empirical evidence on distress and its predictors of Iranian under the Covid-19 pandemic.

We surveyed Iranian adults on March 25–28, 2020, when the situation was dire; e.g. on March 27, about 300 people died due to methanol poisoning in a desperate hope to kill the virus by any alcohol in an Islamic state. On March 28, prisoners in several prisons were distressed enough that they clashed with guards, set prisons on fire, and somehow escaped.

Given the dire situation and the lockdown in Iran, we delivered the survey online across all 31 provinces in Iran. The survey, approval at Tsinghua University, received 1058 responses from all 31 Iranian provinces. The survey questions are summarized in Table 1. In particular, Covid-19 Peritraumatic Distress Index (CPDI) is an index designed to capture specific phobias and stress disorders specific to Covid-19. CPDI was originally developed in Chinese, and we had the index translated from its English version to Persian (see English and Persian versions in the appendix).

The mean (SD) score of CPDI was 34.54 (14.92), higher than the CPDI of 23.65 (15.45) reported in China from January 31 to February 10, 2020 (Qiu et al., 2020). The difference in the mean values between Iranian and Chinese samples is 10.9 ( $t = 22.7$ ;  $p < 0.0001$ ; 95% CI: 10.0–11.8). Based on the cut-off values of CPDI, respectively 47.0% and 14.1% of the Iranian adults experienced mild to moderate and severe psychological distress, compared to 29.3% and 5.1% respectively in China.

In Iran, females experienced more distress ( $\beta = -3.62$ ,  $p = 0.000$ ), similar to China. Participants' age ( $\beta = 0.81$ ,  $p = 0.170$ ) and education level ( $\beta = 0.37$ ,  $p = 0.286$ ) did not predict distress as in China (Zhang et al., 2020). Adults with more children ( $\beta = -1.07$ ,  $p = 0.048$ ) or exercised more ( $\beta = -2.14$ ,  $p = 0.000$ ) felt less distress. Adults who were unsure whether they had Covid-19 reported higher distress than

those who reported Covid-19 negative ( $\beta = -8.91$ ,  $p = 0.000$ ). There is no significant difference between those who were Covid-19 positive and the rest, possibly due to the small number (7) of positive Covid-19 cases in the sample. Adults who suspended working reported higher distress than those who telecommuted ( $\beta = -2.87$ ,  $p = 0.012$ ), at the office ( $\beta = -2.63$ ,  $p = 0.059$ ), or who were not working even before Covid-19 ( $\beta = -3.44$ ,  $p = 0.023$ ). The unemployed reported higher distress than the employed ( $\beta = -3.89$ ,  $p = 0.020$ ) and students ( $\beta = -5.29$ ,  $p = 0.020$ ).

Our findings suggest that the predictors of distress may vary across countries. While gender and exercise hours predicted distress in both Iran and China, age and education predicted distress in China but not in Iran. Moreover, Iranian adults who worked from home, at the office, or had not worked during and before Covid-19 all reported lower distress than those who suspended working. In comparison, in China, only individuals who went to workplace reported significantly lower distress than those who suspended working (Zhang et al., 2020).

The differences in the predictors of distress during the Covid-19 pandemic across Iran and China are understandable, as countries vary in their medical systems, the availability of personal protective equipment (PPE), cultures, labor and employment conditions, the policies of lockdown, the ease of working from home and maintaining a living in a pandemic, and the information in both mainstream and social media, to name just a few. The results therefore suggest we need to identify useful predictors of mental health in individual countries during the Covid-19 pandemic.

We provide the first empirical evidence of the distress of Iranian adults during the Covid-19 pandemic. The results suggest adults in Iran are experiencing more distress than adults in China, with level of distress predicted by different factors, suggesting future research needs to examine mental health and the predictors in individual countries to effectively identify those who are more susceptible mentally during the Covid-19 pandemic.

### CRedit authorship contribution statement

**Asghar Afshar Jahanshahi:** Investigation, Resources, Conceptualization, Writing - review & editing. **Maryam Mokhtari Dinani:** Investigation. **Abbas Nazarian Madavani:** Investigation. **Jizhen Li:** Writing - review & editing, Funding acquisition. **Stephen X. Zhang:** Conceptualization, Investigation, Methodology, Formal analysis, Visualization, Writing - original draft, Writing - review & editing, Supervision.

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**Table 1**

Descriptions of the participants and OLS regression results on CPDI (Covid-19 Peritraumatic Distress Index) ( $n = 1058$ ).

Variable	Description	Regression parameters				
		Count (%)	Coef.	P	Lower 95% C.I.	Upper 95% C.I.
<b>Covid-19 Peritraumatic Distress Index (CPDI)</b>			58.99	0.000	29.14	88.83
Normal range (4–27)	412 (38.9%)					
Mildly to moderately distressed (28–51)	497 (47.0%)					
Severely distressed (52–100)	149 (14.1%)					
<b>Gender</b>						
Female	569 (53.8%)	reference group				
Male	489 (46.2%)	−3.62	0.000	−5.61	−1.63	
<b>Age</b>						
18–25 years old	137 (12.9%)					
26–35 years old	364 (34.4%)					
36–45 years old	358 (33.8%)					
46–55 years old	161 (15.2%)	0.81	0.170	−0.35	1.98	
56–65 years old	33 (3.1%)					
Over 65 years old	5 (0.05%)					
<b>Education level</b>						
Junior high school or less	24 (2.3%)					
Senior high school	30 (2.8%)					
High school diploma	122 (11.5%)					
2-year college degree	97 (9.2%)	0.37	0.286	−0.31	1.05	
Bachelor degree	411 (38.8%)					
Master degree	258 (24.4%)					
PhD	116 (11.0%)					
<b>Number of children</b>						
0	422 (39.9%)					
1	250 (23.6%)					
2	305 (28.8%)	−1.07	0.048	−2.14	−0.01	
3	61 (5.8%)					
4 or more	20 (1.9%)					
<b>Infected by Covid-19</b>						
Unsure	182 (17.2%)	reference group				
No	869 (82.1%)	−8.91	0.000	−11.26	−6.57	
Yes	7 (0.07%)	−9.43	0.090	−20.34	1.48	
<b>Exercise hours per day in the past week</b>						
0 h	666 (62.9%)					
1 h	320 (30.2%)					
2 h	46 (4.3%)	−2.14	0.000	−3.23	−1.06	
3 h	12 (1.1%)					
4 h	4 (0.04%)					
5 h or more	10 (0.09%)					
<b>Work situation</b>						
Stopped working due to Covid-19	281 (26.6%)	reference group				
Worked at office	179 (16.9%)	−2.63	0.059	−5.36	0.10	
Worked from home	408 (38.6%)	−2.87	0.012	−5.11	−0.63	
No work before and during outbreak	190 (18.0%)	−3.44	0.023	−6.42	−0.47	
<b>Employment status</b>						
Unemployed	140 (13.2%)	reference group				
Employed	757 (71.5%)	−3.89	0.020	−7.17	−0.60	
Student	111 (10.5%)	−5.29	0.020	−9.74	−0.85	
Retired	50 (4.7%)	−5.19	0.071	−10.83	0.45	

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Asghar Afshar Jahanshahi<sup>a</sup>, Maryam Mokhtari Dinani<sup>b</sup>,  
 Abbas Nazarian Madavani<sup>c</sup>, Jizhen Li<sup>d</sup>, Stephen X. Zhang<sup>e,\*</sup>  
<sup>a</sup> *CENTRUM Católica Graduate Business School, Pontificia Universidad Católica del Perú (PUCP), Peru*  
<sup>b</sup> *Faculty of Sport Sciences, Alzahra University, Iran*  
<sup>c</sup> *Faculty of Sport Sciences, Shahid Rajaee Teacher Training University, Iran*  
<sup>d</sup> *Research Center for Competitive Dynamics and Innovation Strategy, School of Economics and Management, Tsinghua University, China*  
<sup>e</sup> *Faculty of Professions, University of Adelaide, Australia*  
 E-mail address: [stephen.x.zhang@gmail.com](mailto:stephen.x.zhang@gmail.com) (S.X. Zhang).

**Appendix A. Supplementary data**

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.bbi.2020.04.081>.

\* Corresponding author at: 9-28 Nexus10 Tower, 10 Pulteney St, Adelaide SA 5000, Australia.