**The Spread of COVID-19 in the Italian Population: Anxiety, Depression, and Post-traumatic Stress Symptoms**

# The spread of COVID-19 in the Italian population: anxiety, depression, and posttraumatic stress symptoms

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**Keywords**: posttraumatic stress symptoms; COVID-19; anxiety symptoms; depressive symptoms; logistic regression analysis; Italian population

The first case of COVID-19 in Italy emerged at the end of January 2020[1]. Following a series of increasingly severe restrictions, a new decree on 9 March 2020 imposed home lockdown on the entire nation[2]. The COVID-19 outbreak, similarly to previous epidemics, can trigger psychological disorders such as anxiety, depression, and posttraumatic stress disorder (PTSD) in exposed individuals in the short as well as in the long term[3].

The present study aimed to investigate the prevalence of posttraumatic stress symptoms (PTSS) in the general Italian population and to explore the variables such as sociodemographic features, COVID-19-related aspects, quality of life, and health-related aspects that could predict the likelihood of PTSS occurrence. Moreover, anxiety and depressive symptoms, often observed in people exposed to highly stressful events, were evaluated.

Data were collected using an anonymous online survey from March 19, 2020 to April 5, 2020. A snowball sampling strategy was employed, wherein the participants were initially recruited via online advertisements and were encouraged to pass the survey link to others. Responses of 1321 participants were included in the final dataset. Participants were asked to provide sociodemographic information, and complete: 1) COVID-19-related questions; 2) quality of life and health-related visual analogue scales (VAS); 3) State-Trait Anxiety Inventory-Form Y1 (STAI Y1), 4) Beck Depression Inventory (BDI-II), and 5) PTSD Checklist for DSM-5 (PCL-5), in order to assess PTSS.

This study was approved by the University of Turin ethics committee and was conducted in accordance with the Declaration of Helsinki. All participants provided written informed consent.

The total sample had a mean age of 35.1 (SD 14) years; 69% (922) of participants were females and 71% (933) were from Northern Italy. Most of the participants had a degree or postgraduate qualification (53%, 140) and were employed (54%, 713).

Considering the COVID-19-related question responses, 12% (154) of the participants reported having contact(s) with COVID-19 positive individuals, whereas 16% (210) of the participants referred knowing of others who died due to COVID-19.

Twenty percent (265) of the participants presented evidence of significant PTSS, whereas 69% (914) and 31% (273) of the participants reported clinically relevant anxiety and depressive symptoms, respectively. Notably, these measures were found to be strongly associated with each other (BDI and PCL-5: $r = 0.673$, $p < 0.001$; STAI and PCL-5: $r = 0.682$, $p < 0.001$).

A hierarchical logistic regression analysis was conducted using the enter method to examine whether the sociodemographic variables (first step), COVID-19-related aspects (second step), and quality of life and health-related variables (third step) predict the likelihood of PTSS occurrence. Adjusted odds ratios (OR) and 95% confidence intervals (CI) were calculated as predictors of logistic regression.

The final model was statistically significant, with $\chi^2$ (10) = 181.926, $p < 0.001$. It explained 20% (Nagelkerke $R^2$) of the variance and accurately classified 81.4% of the cases. Among the predictors, gender, education level, contact with individual(s) positive for COVID-19, life satisfaction, health evaluation, and health concern were statistically significant.

The present results reveal that one out of five participants (20%) reported significant PTSS, indicating that they are experiencing the COVID-19 outbreak as a psychological trauma[4]. These findings highlight the dramatic impact of the COVID-19 outbreak and the possible effects of both infection fear and isolation measures taken by the government to contain it. Furthermore, substantially high percentages of participants reported clinically relevant anxiety and depressive symptoms (69% and 31%, respectively).

Investigating PTSS predictive factors, our results showed that women, less educated people, those who had contact with individual(s) positive for COVID-19, those experiencing poor quality of life, and people with high health concern scores have an increased likelihood of exhibiting significant PTSS. Since we know that significant PTSS can result in PTSD, and PTSD symptoms tend to strengthen beyond the short-term period[5], it is essential to develop timely and extensive screening programs to identify people at high risk of developing PTSD in the long term.

The present study has certain limitations. First, our sample comprised a high female count and well-educated participants. Second, future studies will be required to verify the trajectory of anxiety/depressive symptoms and PTSS over time, by means of a longitudinal design.

Despite these limitations, our results provide preliminary evidence of the immediate psychological impact of this pandemic, suggesting not only the occurrence of anxiety, and depressive symptoms but also PTSS, with the female population and less educated people being at a higher risk. This should advise health care providers to implement prompt psychological interventions, starting from a screening program.

The results of this study suggest that, in the near future, Italy and other countries highly affected by the COVID-19 outbreak will have to face not only medical, sociopolitical, and economic effects of this pandemic, but also deal with an extensive mental health challenge.

**Acknowledgements**

The authors would like to thank the participants involved in the study.

**Declaration of Conflicting Interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**Funding**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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