

Psychological distress related to the COVID-19 epidemic in an Italian population of People Living with HIV: an online survey

Valentina Delle Donne (✉ valentina.delledonne@unicatt.it)

Catholic University of Sacred Heart, Rome

Nicoletta Ciccarelli

Catholic University, Milan

Valentina Massaroni

Catholic University of Sacred Heart, Rome

Francesca Lombardi

Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome

Silvia Lamonica

Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome

Alberto Borghetti

Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome

Massimiliano Fabbiani

University Hospital of Siena

Roberto Cauda

Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome

Simona Di Giambenedetto

Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome

Research Article

Keywords: COVID-19, pandemic, HIV, psychological impact, distress, mental health

Posted Date: October 30th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-98904/v1>

License:  This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Purpose: Our aim was to explore the psychological impact of the 2019 Coronavirus Disease (COVID-19) on People Living with HIV (PLWH), a population at increased risk of psychological distress.

Methods: PLWH participated to an online survey exploring demographic and clinical data, physical symptoms, contact history, knowledge and concerns, precautionary measures and additional information about COVID-19 during the first phase of the pandemic in Italy. The Impact of Event Scale-Revised (IES-R) (identifying COVID-19 pandemic as specific traumatic life event) and the Depression, Anxiety and Stress Scale (DASS-21) were also comprised.

Results: Out of 98 participants, 45% revealed from mild to severe psychological impact from COVID-19 according to IES-R. A lower percentage, instead, complained significant levels of depression (14%), anxiety (11%) or stress (6%) according to DASS-21. Aging, education, being unemployed, number of possible COVID-19 physical symptoms, concerns about risk of contracting COVID-19 and pandemic situation in Italy, and needing additional information to prevent COVID-19 infection were positively associated to a higher risk of negative psychological impact. Moreover, female gender, fewer years from HIV diagnosis and not being aware of own viremia were associated to a higher risk of negative psychological outcomes.

Conclusion: Almost half of our PLWH sample experienced significant levels of distress related to COVID-19 pandemic. Women and those with recent HIV diagnosis seem the more psychological fragile subgroup. Our findings could help to identify patients most in need of psychological interventions to improve wellbeing of PLWH.

Background

Outbreak of the Coronavirus Disease 2019 (COVID-19) is now affecting more than 200 countries and territories around the world, becoming a pandemic.

Italy has been the first-hit European country to face the outbreak of COVID-19 and one of the most affected areas. On March 9th 2020, the Italian Government settled several emergency containment measures that began to be loosened only from May 4th onwards, to deal with the spread of the pandemic.

Evidence accumulated during the initial phase of the COVID-19 outbreak confirms that the pandemic is having a great psychological impact on individuals especially in worst-hit countries (Fiorillo and Gorwood 2020; Kang et al. 2020; Talevi et al. 2020). Mental health outcomes seem to be related to many factors: widespread contagion, containment and prevention measures such as self-isolation, social distancing, lockdown, and socio-economic impact (Ayittey et al. 2020; Brooks et al. 2020; Duan and Zhu 2020; Rubin 2020).

A review (Talevi et al. 2020) about the mental health outcomes of COVID-19 pandemic identified a wide list of negative psychological responses in Chinese general population: anxiety, depression, stress, insomnia, indignation, worries about their own and family health, sensitivity to social risks, life dissatisfaction, phobias, avoidance, social functioning impairment, compulsive behaviour and physical symptoms (Cao et al. 2020; Li et al. 2020; Liu et al. 2020; Qiu et al. 2020; Wang C et al. 2020). Consistent predictors of psychological outcome were identified: female gender, aging, specific physical symptoms, poor self-rated health status, specific health information and certain precautionary measures, having relatives or acquaintances infected with COVID-19, and medical history of chronic illness (Qiu et al. 2020; Wang C et al. 2020; Wang Y et al. 2020; Zhang et al. 2020).

In Italy, a relevant percentage of the population (38%) have experienced from mild to to-severe psychological distress symptoms during the early phase of the COVID-19 outbreak (Moccia et al. 2020), and evidence suggests a higher proportion compared to other European countries (Jacobi et al. 2014; Mazza et al. 2020; Wittchen et al. 2010). Furthermore, high rates of negative mental health outcomes, including post-traumatic stress symptoms and anxiety, were found (Rossi et al. 2020).

Among predictors of psychological distress, a history of medical issues seems to be central to identify groups at greater risk of distress and needing tailored psychological interventions (Talevi et al. 2020). Indeed, the Centers for Disease Control and Prevention highlighted people living with HIV (PLWH) as a population at increased risk for severe illness from COVID-19 compared to the general population (Coronavirus Disease 2019 [COVID-19] in People with HIV 2020). COVID-19 is assumed to function in tandem with a myriad of health challenges faced by PLWH including HIV itself, chronic non-communicable diseases, mental health burden, substance abuse, and other infections (Halkitis et al. 2020; Shiau et al. 2020). This situation is defined a “syndemic”, that is two or more epidemics interacting synergistically to produce an increased burden of disease in a population (Singer 2010). Therefore, due to the syndemic framework, the exposition to mental health issues (Brandt et al. 2016; Lynn et al. 2018) and to a chronic illness (Gebo 2008; Nachega et al. 2012), PLWH seem to be a group at greater risk of suffering from psychological distress during COVID-19 pandemic.

Currently, there are only few data about mental health of PLWH during COVID-19 epidemic reporting elevated levels of anxiety (Kuman Tunçel et al. 2020), and showing that COVID-19 and associated restrictive measures seem detrimental to the well-being and follow-up of PLWH (Siewe Fodjo et al. 2020). Our aim was to better explore the psychological impact of the COVID-19 outbreak on an Italian cohort of PLWH and to assess the possible risk and protective factors, in order to help to tailor specific psychological interventions.

Methods

Participants

This is a cross-sectional survey enrolling PLWH, followed at Infectious Diseases Institute of "Policlinico Gemelli Foundation" of Rome, between 9th-25th May 2020. This timeframe was chosen to assess participants' responses at the end of the first phase of COVID-19 outbreak, following the Italian Government Decree-Law of May 4th 2020 that began to loosen emergency containment measures. All subjects were volunteers. They did not receive any financial remuneration for participating.

Exclusion criteria were age <18 years and difficulties with the Italian language.

Procedure

Each participant completed a 105-item online survey adapted from Wang C et al. (2020), in which data on demographic, clinical and COVID-related variables were collected "since the Decree-law of March 9th 2020 to today" (see below).

Demographic and HIV-associated clinical variables

Data were collected on gender, age range, education, employment status, sexual orientation, time from HIV diagnosis, time from first combined Antiretroviral Treatment (cART), HIV-1 plasma viral load and adherence to cART in the last month [using a Likert scale from 1 (very bad) to 10 (excellently)].

Physical health status variables

We gathered information regarding Health Service utilization, including consultation with a doctor, admission to the hospital, being tested for COVID-19 infection and being quarantined by a health authority. Moreover, physical symptoms variables included fever, chills, headache, myalgia, cough, breathing difficulty, dizziness, coryza, sore throat, and the triad of fever, cough and difficult breathing. Moreover, it was collected a self-report judgment about own health-state choosing one of the following answer options: poor, passable, good, very good or excellent.

Contact history variables

It was asked if the respondents had contacts with individuals with suspected or confirmed COVID-19 infection or with infected materials.

Knowledge and concerns about COVID-19 variables

Regarding knowledge of COVID-19, we collected data about respondents' habit of keeping informed about pandemic trend (number of infections, hospitalizations and deaths), the main source of health information, the level of satisfaction on health information [using a Likert scale from 1 (not satisfied) to 10 (extremely satisfied)], the knowledge about routes of transmission and likelihood of surviving if infected with COVID-19, choosing one of the following answer options: no chance, unlikely, likely, very likely and highly likely. The COVID-19 epidemic concerns were investigated as follows: level of confidence in the own doctor's ability to diagnose COVID-19 [using a Likert scale from 1 (no trust) to 10 (full

confidence)], concern of COVID-19 situation in Italy, to contract COVID-19 and about other family members getting COVID-19 infection [using a Likert scale from 1 (no concern) to 10 (extremely concern)], and feeling too much unnecessary worried about the epidemic, choosing one of the following answer options: always, most of times, sometimes, occasionally and never.

Precautionary measures variables

We investigated precautionary measures against COVID-19 put in place among: washing hands with soap and water, washing hands immediately after coughing, rubbing nose or sneezing, washing hands after touching contaminated objects, avoiding sharing of utensils during meals, covering mouth when coughing and sneezing, wearing mask regardless of the presence or absence of symptoms (choosing one of the following answer options: always, most of times, sometimes, occasionally and never), and average number of hours staying at home per day to avoid COVID-19 infection.

Additional health information variables

Further data were collected about the global trend of pandemic, more details on symptoms, additional advices on prevention, routes of transmission, treatment and the availability of medicines/vaccines, further regular updates on the state of pandemic and the number of people infected in their location and on the management of the outbreak in foreign countries, and more tips for moving from home safely during the outbreak.

Psychological impact of the COVID-19 outbreak and Mental health status measures

To measure Psychological Impact of the COVID-19 outbreak, the Impact of Event Scale-Revised (IES-R) was administered (Christianson and Marren 2012). The IES-R is a 22-items self-report measure designed to assess current subjective distress for a specific traumatic life event. Respondents are asked to identify a specific stressful life event and then indicate how much they were distressed or bothered during the past seven days by it. In our survey the stressful event to refer was the COVID-19 pandemic. The IES-R was constructed with three subscales: intrusions – (e.g., repeated thoughts about the trauma), avoidance – (e.g., effortful avoidance of situations that serve as reminders of the trauma) and physiological hyperarousal – (Gayle Beck et al. 2008). The IES-R total score provides an indication of the level of distress experienced and a higher score indicates a greater psychological impact (Creamer et al. 2003; Reynolds et al. 2008).

To measure Mental Health Status the “Depression, Anxiety and Stress Scale” (DASS-21) was administered (Henry and Crawford 2005; Norton 2007). The DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety, and stress. The first subscale (DASS-Depression) measures loss of self-esteem/incentives and depressed mood. The second subscale (DASS-Anxiety) measures fear and anticipation of negative events. The third subscale (DASS-Stress) measures persistent state of overarousal and low frustration tolerance. The higher the score, the more severe the emotional distress was (Oei et al. 2013).

Statistical analysis

Descriptive statistics were calculated for qualitative and quantitative variables. We performed binary logistic regression analyses to explore factors significantly associated with mild-to-severe psychological distress measured by IES-R as well as with mild-to-extremely severe levels of depression, anxiety, and stress measured by DASS-21. A two-tailed p value of less than 0.05 was considered statistically significant.

Due to high inter-correlations between the collected COVID-19 related variables, only univariate analyses were run for these factors.

All analyses were performed using the SPSS version 21.0 software package (SPSS Inc., Chicago, IL).

Results

Demographic and clinical characteristics

A total of 98 Italian PLWH on cART completed the survey. The majority of enrolled PLWH were male [75.5% (n=74)], aged 51 to 60 years [46% (n=45)], with upper secondary school's degree [41% (n=40)] and employed [62.2% (n=61)].

Sixty-four (65.3%) and fifty-nine (60%) of respondents showed a time >10 years from HIV diagnosis and from first cART, respectively. Overall, 74.5% (n=73) of patients reported HIV-RNA<50 copies/mL and mean adherence to cART was 9.48 (standard deviation, SD 1.10) on a 0-10 scale. Full demographic and clinical characteristics are summarized in *Table 1*.

Psychological impact and mental health evaluation

Overall, 45% (n=44) of PLWH revealed from mild to severe psychological impact of COVID-19 outbreak according to the IES-R. As regards the DASS-21, 14.3% (n=14), 11.2% (n=11) and 6.1% (n=6) of PLWH obtained a score suggesting the presence of mild to severe levels of depression, anxiety and stress, respectively; no patients obtained a score in the "extremely severe" range.

Complete descriptive statistics of IES-R and DASS-21 item scales are shown in *Table 2*.

Demographic and clinical factor associated to psychological impact and mental health evaluation

We explored factors associated to significant levels of distress measured by IES-R, and of depression, anxiety and stress measured by DASS-21 (detailed in *Online Resource 1*).

In multivariate logistic regression analyses, female gender (OR 2.99; 95% confidence intervals [CI] 0.99/8.98; p= 0.051) emerged as a risk factor for distress (IES-R), while ages 41 to 50 (OR 0.08; 95% CI 0.01/0.51; p= 0.007) and 51 to 60 (OR 0.20; 95% CI 0.04/0.95; p= 0.044) compared to be older than 60 years, a secondary (OR 0.17; 95%CI 0.03/0.99; p= 0.049), upper (OR 0.12; 95%CI 0.02/0.65; p= 0.014) and

bachelors (OR 0.14; 95%CI 0.02/0.82; $p= 0.030$) school degree compared to postgraduate degree, and being employed (OR 0.23; 95% CI 0.07/0.75; $p= 0.016$) or retired (OR 0.12; 95% CI 0.01/0.79; $p= 0.028$) compared to being unemployed resulted as protective factors.

Furthermore, a time between 5 and 10 years from HIV diagnosis was a significant risk factor for mild-to-severe levels of depression (DASS-21) (OR 10.02; 95% CI 2.39/41.95; $p= 0.002$) compared to a time >10 years, and not be aware of own viremia emerged as risk factor for mild-to-severe levels of anxiety (DASS-21) (OR 6.15; 95% CI 1.23/30.61; $p= 0.027$).

Contact history variables and physical health status

A detailed description of contact history and physical health status is reported in *Table 3*.

Only 4.1% ($n=4$) of participants had contacts with individuals with suspected or confirmed COVID-19 infection and 7.1% ($n=7$) with infected materials.

Seventy-six (77.5%) participants reported good or very good health status and only 2 (2%) had been under quarantine by a health authority. The most frequent physical symptom was headache (33.7%).

Contact History variables seemed not significantly correlated to IES-R and DASS-21 scores. Instead, when exploring Physical Health Status items, the number of possible COVID-19 physical symptoms was positively associated to the risk of mild-to-severe levels of psychological distress measured by IES-R (OR 1.42; 95% CI 1.07/1.88; $p= 0.014$), and of mild-to-severe levels of depression (OR 1.40; 95% CI 1.03/1.90; $p= 0.032$), anxiety (OR 1.50; 95% CI 1.08/2.09; $p= 0.016$) and stress (OR 1.56; 95%CI 1.03/2.34; $p= 0.032$) measured by DASS-21.

A complete analysis of associations between Contact History variables or physical health status and psychological impact as well as mental health status scales is reported in *Online Resource 2*.

Knowledge and concerns about COVID-19 variables

A detailed description of Knowledge and Concerns about COVID-19 is reported in *Table 4*. About 94% ($n=92$) of the respondents usually kept themselves informed about COVID-19 outbreak. The most common source of health information was from television (59.2%, $n=58$) and the mean satisfaction with the amount of available health information was 6.48 (SD 2.08) on a 0-10 scale.

The majority of participants knew routes of transmission of COVID-19: 87% ($n=85$) agreed with route of transmission through droplets and 85% ($n=83$) through contaminated objects. About 61% ($n= 60$) of subjects considered very likely surviving if infected with COVID-19.

Regarding COVID-19 epidemic concerns, mean concerns of situation in Italy was 6.39 (SD 2.47), and 37% ($n=36$) of respondents sometimes felt too much unnecessary worry about the epidemic.

Keeping themselves informed about COVID-19 outbreaks was associated to a lower risk of mild-to-severe levels of depression measured by DASS-21 (OR 0.13; 95% CI 0.02/0.75; $p= 0.023$), while greater concern to contract COVID-19 emerged as risk factor for mild-to-severe

levels of psychological distress measured by IES-R (OR 1.23; 95%CI 1.04/1.45; $p= 0.012$), and for mild-to-severe levels of depression (OR 1.35; 95% CI 1.03/1.78; $p= 0.028$) and stress (OR 2.04; 95% CI 1.13/3.70; $p= 0.017$) measured by DASS-21.

Moreover, wider concern about COVID-19 situation in Italy was associated to a higher risk of mild-to-severe psychological distress measured by IES-R (OR 1.29; 95% CI 1.07/1.55; $p= 0.007$).

A complete analysis of associations between psychological impact and mental health status scales with knowledge and concerns about COVID-19 variables is reported in *Online Resource 3*.

Precautionary measures variables

Table 5 details precautionary measures adopted by participants.

The two most frequently adopted precautionary measures were always washing hands with soap and water (84%, $n=82$), and always washing hands after touching contaminated objects (80%, $n=79$).

Precautionary measures variables seemed not significantly correlated to psychological distress levels measure by IES-R and depression, anxiety and stress levels measured by DASS-21.

A complete analysis of associations between Precautionary measures variables and psychological outcomes is reported in *Online Resource 4*.

Additional health information variables

Table 6 describes Additional health information variables reported by participants. Requiring further information on prevention of COVID-19 infection was associated to a higher risk for mild-to-severe levels of anxiety (OR 5.06; 95% CI 1.25/20.51; $p= 0.023$) measured by DASS-21.

A complete analysis of associations between additional health information variables and psychological outcomes are reported in *Online Resource 5*.

Discussion

We found that, during the first 2 months after the beginning of COVID-19 outbreak in Italy, almost half of our cohort of PLWH suffered from mild to severe psychological distress according to the IES-R scale, that measures emotional states referring to a specific event. This proportion is higher compared to that one observed in the general population (Moccia et al. 2020; Rossi et al. 2020), confirming that PLWH might be a more fragile population needing a particular care.

Similarly to a previous Chinese survey (Wang C et al. 2020), a lower percentage of our sample complained elevated levels of depression, anxiety and stress as measured by the DASS-21, probably because this scale investigates emotional states that do not refer to a specific event and, consequently, it could be less sensitive in case of pandemic-related distress.

According to previous evidence (Ho et al. 2019; Mazza et al. 2020; Moccia et al. 2020; Talevi et al. 2020; Kuman TunÇel et al. 2020; Wang C et al. 2020; Wang Y et al. 2020; Wittchen et al. 2010), we identified many factors associated with a higher risk of distress: female gender, higher number of possible COVID-19 physical symptoms, aging, higher education, being unemployed, higher concerns about risk of contracting COVID-19 or regarding epidemic evolution in Italy, and greater need of additional health information about COVID-19 prevention. These factors were associated to a higher risk of depression, anxiety and stress during the first phase of epidemic. At the opposite, PLWH usually keeping themselves informed about COVID-19 outbreaks showed a lower risk of depression. Furthermore, fewer years from HIV diagnosis were associated with a higher risk of depression, maybe due to an increased mental health burden during the first years after HIV diagnosis (Spizzichino 2008), and not being aware of own viremia emerged as a risk factor for higher levels of anxiety. In other words, those who perceive their own health as poor might feel more vulnerable when facing a new disease (Hatch et al, 2018). Taken together our findings suggested that patients (especially women) with recent HIV diagnosis and worse physical and psychological health might be at greater risk of distress from COVID-19 compared to the general population.

We acknowledge that our study has some limitations. First of all, this is a cross-sectional observation and future longitudinal studies are needed to confirm and check the progress of our findings. Secondly, further investigations including a healthy control group would be useful to check for any differences in psychological impact or mental health status between PLWH and the general population. Moreover, reliability of self-administered questionnaires may be partially biased because of probable socially desirable responses. Furthermore, we used an online survey leaving unexplored the population who does not use network devices, and due to requirements on anonymity and confidentiality, we were not allowed to collect some personal information from the respondents. Therefore, since all of our patients were over 30 years old, further investigations including younger subjects are needed; however, an older sample is more representative of the current Italian HIV-infected population.

Conclusions

This study shows that almost half of an Italian cohort of PLWH experienced from mild to severe adverse psychological impact related to COVID-19 pandemic. Especially, women and those with more recent HIV diagnosis seem to be at greater risk of negative psychological outcomes. In conclusion, our results describe a first picture of the psychological impact of COVID-19 on an Italian sample of PLWH, and could help to identify patients most in need of support and highlight the importance to tailor specific psychological interventions to improve their psychological wellbeing.

Declarations

Funding

No funding was received for this study.

Conflict of Interest

AB fee for advisory board by ViiV Healthcare, personal fee by Janssen Cilag. **MF** received speakers' honoraria and support for travel to meetings from Bristol-Myers Squibb (BMS), Gilead, Janssen-Cilag, Merck Sharp & Dohme (MSD), ViiV Healthcare, and fees for attending advisory boards from BMS, Gilead and Janssen-Cilag. **SDG** received speakers' honoraria and support for travel to meetings from Gilead, Janssen-Cilag (JC), Merck Sharp & Dohme (MSD) and ViiV Healthcare. All other authors: none to declare.

Author contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Delle Donne Valentina, Massaroni Valentina and Ciccarelli Nicoletta. The first draft of the manuscript was written by Delle Donne Valentina and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics Approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The Study was approved by the Ethics Committee of the Catholic University of Sacred Heart, Rome, Italy. Informed consent was obtained from all individual participants included in the study.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated for this study are available on request to the corresponding author.

Code availability

Not applicable.

References

Ayittey, F.K., Ayittey, M.K., Chiwero, N.B., Kamasah, J.S., Dzuovor, C. (2020). Economic impacts of Wuhan 2019-nCoV on China and the world. *J Med Virol*, 92, 473-475.

- Brandt, C., Zvolensky, M.J., Woods, S.P., Gonzalez, A., Safren, S.A., O'Cleirigh, C.M. (2016). Anxiety symptoms and disorders among adults living with HIV and AIDS: A critical review and integrative synthesis of the empirical literature. *Clin Psychol Rev*, 51, 164-184.
- Brooks, S.K., Webster, R.K., Smith, L.E., Woodland, L., Wessely, S., Greenberg, N. et al. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*, 395(10227), 912–920.
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J. et al. (2020). The psychological impact of the CoViD-19 epidemic on college students in China. *Psychiatry Res*, 287, 112934.
- Centers for Disease Control and Prevention (CDC). Coronavirus Disease 2019 (COVID-19) in People with HIV. Available at <https://www.cdc.gov/coronavirus/2019-ncov/specific-groups/hiv.html>. Accessed Mar 23, 2020.
- Chenneville, T., Gabbidon, K., Hanson, P., Holyfield, C. (2020). The Impact of COVID-19 on HIV Treatment and Research: A Call to Action. *Int J Environ Res Public Health*, 17(12), 4548.
- Christianson, S., Marren, J. (2012). The Impact of Event Scale - Revised (IES-R). *Medsurg Nurs*, 21(5), 321–322.
- Creamer, M., Bell, R., Failla, S. (2003). Psychometric properties of the Impact of Event Scale-Revised. *Behav Res Ther*, 41, 1489–1496.
- Duan, L., Zhu, G. (2020). Psychological interventions for people affected by the CoViD-19 epidemic. *Lancet Psychiatry*, 7, 300-302.
- Fiorillo, A., Gorwood, P. (2020). The consequences of the COVID-19 pandemic on mental health and implications for clinical practice. *Eur Psychiatry*, 63(1), e32.
- Gayle Beck, J., Grant, D.M., Read, J.P., Clapp, J.D., Coffey, S.F., Miller, L.M. et al. (2008). The Impact of Event Scale – Revised: Psychometric properties in a sample of motor vehicle accident survivors. *J Anxiety Disord*, 22(2), 187-198.
- Gebo, K.A. Epidemiology of HIV and response to antiretroviral therapy in the middle aged and elderly. (2008). *J Aging Health*, 4, 615-627.
- Halkitis, P.N., Moeller, R.W., Siconolfi, D.E., Storholm, E.D., Solomon, T.M., Bub, K.L. (2013). Measurement model exploring a syndemic in emerging adult gay and bisexual men. *AIDS Behav*, 17(2), 662–673.
- Hatch, R., Young, D., Barber, V., Griffiths, J., Harrison, D.A., Watkinson, P. (2018). Anxiety, depression and post-traumatic stress disorder after critical illness: AUK-wide prospective cohort study. *Crit Care*, 22, 310.

- Henry, J.D., Crawford, J.R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *Br J Clin Psychol*,44, 227-239.
- Ho, C.S.H., Tan, E., Ho, R., Chiu, M.Y.L. (2019). Relationship of anxiety and depression with respiratory symptoms: Comparison between depressed and non-depressed smokers in Singapore. *Int J Environ Res Public Health*, 16(1), 163.
- Jacobi, F., Höfler, M., Siegert, J., Mack, S., Gerschler, A., Scholl, L. et al. (2014). Twelve-month prevalence, comorbidity and correlates of mental disorders in Germany: The Mental Health Module of the German Health Interview and Examination Survey for Adults (DEGS1-MH). *Int J Methods Psychiatr Res*, 23, 304–319.
- Kang, L., Ma, S., Chen, M., Yang, J., Wang, Y., Li, R. et al. (2020). Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: a cross-sectional study. *Brain Behav Immun*, 87, 11-17.
- Kuman TunÇel, Ö., PullukÇu, H., Erdem, H.A., Kurtaran, B., TaŞbakan, S.E., TaŞbakan, M. (2020). COVID-19 related anxiety in people living with HIV: An online cross-sectional study. *Turk J Med Sci*, Epub ahead of print. PMID: 32777899.
- Li, S., Wang, Y., Xue, J., Zhao, N., Zhu, T. (2020). The Impact of CoViD-19 epidemic declaration on psychological consequences: a study on active weibo users. *Int J Environ Res Public Health*, 17(6), 2032.
- Liu, N., Zhang, F., Wei, C., Jia, Y., Shang, Z., Sun, L. et al. (2020). Prevalence and predictors of PTSS during COVID- 19 outbreak in China hardest-hit areas: gender differences matter. *Psychiatry Res*, 16(287), 112921.
- Lynn, C., Bradley-Klug, K., Dedrick, R., Chenneville, T.A., Walsh, A.S.J., Rodriguez, C. (2018). Mental health screening in integrated care settings: Identifying rates of depression, anxiety, and posttraumatic stress among youth with HIV. *AIDS Care*, 17(3), 1-7.
- Mazza, C., Ricci, E., Biondi, S., Colasanti, M., Ferracuti, S., Napoli, C. et al. (2020). A Nationwide Survey of Psychological Distress among Italian People during the COVID-19 Pandemic: Immediate Psychological Responses and Associated Factors. *Int J Environ Res Public Health*, 17(9), 3165.
- Moccia, L., Janiri, D., Pepe, M., Dattoli, L., Molinaro, M., De Martin, V. et al. (2020). Affective temperament, attachment style, and the psychological impact of the COVID-19 outbreak: an early report on the Italian general population. *Brain Behav Immun*, 87, 75-79.
- Nachega, J.B., Hsu, A.J., Uthman, O.A., Spinewine, A., Pham, P.A. (2012). Antiretroviral therapy adherence and drug-drug interactions in the aging HIV population. *AIDS*, 26, S39-S53.
- Norton, P.J. (2007). Depression Anxiety and Stress Scales (DASS-21): psychometric analysis across four racial groups. *Anxiety Stress Coping*, 20, 253–265.

- Oei, T., Sawang, S., Wah Goh, Y., Mukhtar, F. (2013). Using the Depression Anxiety Stress Scale 21 (DASS-21) across cultures. *Int J Psycho*, 6, 1018-1029.
- Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., Xu, Y. (2020). A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implication and policy recommendations. *Gen Psychiatr*, 33, e100213.
- Reynolds, D.L., Garay, J.R., Deamond, S.L., Moran, M.K., Gold, W., Styra, R. (2008). Understanding, compliance and psychological impact of the SARS quarantine experience. *Epidemiol Infect*, 136, 997-1007.
- Rossi, R., Socci, V., Talevi, D., Mensi, S., Niolu, C., Pacitti, F. et al. (2020). COVID-19 Pandemic and Lockdown Measures Impact on Mental Health Among the General Population in Italy. *Front Psychiatry*, 11, 790.
- Rubin, J.G. (2020). The psychological effects of quarantining a city. *BMJ*, 368, m313.
- Shiau, S., Krause, K.D., Valera, P., Swaminathan, S., Halkitis, P.N. (2020). The Burden of COVID-19 in People Living with HIV: A Syndemic Perspective. *AIDS Behav*, 1–6.
- Siewe Fodjo, J.N., Faria de Moura Villela, E., Van Hees, S., Tibério Dos Santos, T., Vanholder, P., Vanholder, P. et al. (2020). Impact of the COVID-19 pandemic on the medical follow-up and psychosocial well-being of people living with HIV: A cross-sectional survey. *J Acquir Immune Defic Syndr*, Epub ahead of print. PMID: 32826562.
- Singer, M. (2010). Pathogen-pathogen interaction: a syndemic model of complex biosocial processes in disease. *Virulence*, 1(1), 10–8.
- Spizzichino, L. (2008). *Counselling e psicoterapia nell'infezione da HIV. Dall'intervento preventivo al sostegno psicologico*. Milano: Franco Angeli.
- Talevi, D., Socci, V., Carai, M., Carnaghi, G., Faleri, S., Trebbi, E. et al. (2020). Mental health outcomes of the CoViD-19 pandemic. *Riv Psichiatr*, 55(3), 137–144.
- Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C.S. et al. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*, 17, 1729.
- Wang, Y., Di, Y., Ye, J., Wei, W. (2020). Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (CoViD-19) in some regions of China. *Psychol Health Med*, 1-10.
- Wittchen, H.U., Jacobi, F., Rehm, J., Gustavsson, A., Svensson, M., Jönsson, B. et al. (2010). The size and burden of mental disorders and other disorders of the brain in Europe. *Eur Neuropsychopharmacol*, 21,

655–679.

Zhang, Y., Ma, Z.F. (2020). Impact of the COVID-19 Pandemic on Mental Health and Quality of Life among Local Residents in Liaoning Province, China: A Cross-Sectional Study. *Int J Environ Res Public Health*, 17(7), 2381.

Tables

Table 1

Demographic and clinical characteristics.

Variables	N (%) or median*(IQR)
Male gender	74 (75.5)
Age, years	
31-40	13 (13.3)
41-50	24 (24.5)
51-60	45 (45.9)
>60	16 (16.3)
Education	
Lower secondary school	24 (24.5)
Upper secondary school	40 (40.8)
Bachelors Degree	23 (23.5)
Postgraduate	11 (11.2)
Sexual orientation	
Heterosexual	46 (46.9)
Homosexual	52 (53.1)
Employment status	
Unemployed	23 (23.5)
Retired	14 (14.3)
Employed	61 (62.2)
Years from HIV diagnosis	
<5 years	16 (16.3)
5-10 years	18 (18.4)
>10 years	64 (65.3)
Time from starting first cART regimen	
<5 years	17 (17.3)
5-10 years	22 (22.4)
>10 years	59 (60.2)
Own viremia knowledge	90 (91.8)
HIV-RNA <50 copies/mL	73 (74.5)

Adherence*, on a 0-10 scale	10 (9-10)
-----------------------------	-----------

Table 2

Levels of Depression, Anxiety and Distress in the Study Population (N=98).

Variables	Mean score (SD)	N (%)
DASS-21 Depression Subscale	4.47 (4.17)	
Average (0-9)		84 (85.7)
Mild (10-12)		9 (9.2)
Moderate (13-20)		4 (4.1)
Severe (21-27)		1 (1)
Extremely Severe (28-42)		0 (0)
DASS-21 Anxiety Subscale	2.36 (3.04)	
Average (0-6)		87 (88.8)
Mild (7-9)		7 (7.1)
Moderate (10-14)		3 (3.1)
Severe (15-19)		1 (1)
Extremely Severe (20-42)		0 (0)
DASS-21 Stress Subscale	4.14 (3.18)	
Average (0-10)		92 (93.9)
Mild (11-18)		6 (6.1)
Moderate (19-26)		0 (0)
Severe (27-34)		0 (0)
Extremely Severe (35-42)		0 (0)
IES-R avoidance subscale	1.20 (0.71)	
IES-R intrusion subscale	0.96 (0.79)	
IES-R hyperarousal subscale	1.10 (0.87)	
IES-R total score	22.62 (15.84)	
Average (range 0-23)		54 (55.1)
Mild (range 24-32)		19 (19.4)
Moderate (range 33-36)		3 (3.1)
Severe (>37)		22 (22.4)

Abbreviations: N number, SD standard deviation, IES-R Impact of Event Scale-Revised, DASS-21 Depression, Anxiety and Stress Scale.

Table 3

Description of contact history and physical health status.

Variables	N (%)
Contacts with individuals with confirmed COVID-19 infection	4 (4.1)
Contacts with individuals with suspected COVID-19 infection	4 (4.1)
Contact with infected materials	7 (7.1)
Consultation with a doctor	19 (19.4)
Hospitalization	1 (1)
Testing for COVID-19	5 (5.1)
Quarantine	2 (2)
Self rating health status	
Poor	0 (0)
Passable	10 (10.2)
Good	46 (46.9)
Very good	30 (30.6)
Excellent	12 (12.2)
Total physical symptoms	-
Fever	8 (8.2)
Chills	18 (18.4)
Headache	33 (33.7)
Myalgia	18 (18.4)
Cough	10 (10.2)
Breathing difficulty	5 (5.1)
Dizziness	3 (3.1)
Coryza	11 (11.2)
Sore throat	10 (10.2)
Triad of symptoms	1 (1)

Abbreviations: N number

Table 4

Description of Knowledge and Concerns about COVID-19.

Variables	N (%) or median* (IQR)
Habit of keeping informed about pandemic trend	92 (93.9)
Main source of health information	
Television	58 (59.2)
Internet	34 (34.7)
Radio	3 (3.1)
Other sources	3 (3.1)
Route of transmission through droplets	
Agree	85 (86.7)
Disagree	2 (2)
Do not know	11 (11.2)
Route of transmission through contaminated objects	
Agree	83 (84.7)
Disagree	6 (6.1)
Do not know	9 (9.2)
Satisfaction with amount of health information*	7 (5-8)
Likelihood of surviving if infected with COVID-19	
no chance	0 (0)
unlikely	1 (1)
likely	8 (8.2)
very likely	60 (61.2)
highly likely	29 (29.6)
Level of confidence in the own doctor's ability to diagnose*	8 (7-10)
Concern about COVID-19 situation in Italy*	7 (5-8)
Concern about contracting COVID-19*	6 (5-8)
Concern about other family members getting COVID-19*	8 (5-9)
Feeling too much unnecessary worry about the epidemic	
always	21 (21.4)
most of times	15 (15.3)

sometimes	36 (36.7)
occasionally	14 (14.3)
never	12 (12.2)

Abbreviations: N number, IQR Interquartile Range

Table 5

Precautionary measures adopted by participants.

Variables	N (%)
Washing hands with soap and water	
Always	82 (83.7)
Most of the time	14(14.3)
Sometimes	1(1)
Occasionally	1 (1)
Never	0(0)
Washing hands immediately after coughing, rubbing nose or sneezing	
Always	42(42.9)
Most of the time	32(32.7)
Sometimes	17 (17.3)
Occasionally	5 (5.1)
Never	2 (2)
Washing hands after touching contaminated objects	
Always	79 (80.6)
Most of the time	15 (15.3)
Sometimes	3 (3.1)
Occasionally	1 (1)
Never	0 (0)
Avoiding sharing of utensils during meals	
Always	68 (69.4)
Most of the time	16 (16.3)
Sometimes	9 (9.2)
Occasionally	2 (2.0)
Never	3 (3.1)
Covering mouth when coughing and sneezing	
Always	77(78.6)
Most of the time	20 (20.4)
Sometimes	1 (1)

Occasionally	0 (0)
Never	0 (0)
Wearing mask regardless of the presence or absence of symptoms	
Always	63 (64.3)
Most of the time	33 (33.7)
Sometimes	0 (0)
Occasionally	2 (2)
Never	0 (0)
Average number of hours staying at home per day	
0-9 hours per day	21 (21.4)
10-19 hours per day	48 (49)
20-24 hours per day	29 (29.6)

Abbreviations: N number

Table 6

Additional health information variables reported by participants.

Variables	N (%)
Information about the global trend of pandemic	42 (42.9)
More details on symptoms	38 (38.8)
Advices on prevention	38 (38.8)
Information about routes of transmission	51 (52.0)
Information about treatment	63 (64.3)
Information about availability of medicines/vaccines	63 (64.3)
Updates on the state of pandemic in their location	45 (45.9)
Number of people infected in their location	49 (50)
Management in foreign countries	45 (45.9)
Tips for moving from home safely	34 (34.7)

Abbreviations: N number

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [S1.doc](#)
- [S2.doc](#)
- [S3.doc](#)
- [S4.doc](#)
- [S5.doc](#)