Mental well-being in young people with psychiatric disorders during the early phase of COVID-19 lockdown

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Abstract

Background

Mental health and well-being were seriously impacted by the COVID-19 lockdown especially among young people and people with psychiatric disorders. This study aimed to identify factors associated with well-being in young people with psychiatric disorders, during early phase of COVID-19 lockdown in France.

Methods

A national cross-sectional online study started on the 8th day of COVID-19 lockdown in France (during March 25–30, 2020). We included young people aged from 16 to 29 who responded to the questionnaire, living and being confined in France, with past or current psychiatric treatment. The questionnaire was accessible online and explored demographics and clinical factors, well-being, stress, situation during lockdown. Well-being was measured by the Warwick-Edinburg Mental Well-Being Scale (WEMWBS). Simple and multiple linear regression analyses were carried out.

Results

439 individuals were included with 262 (59.7%) previously treated and 177 (40.3%) currently treated. WEMWBS total score were 42.48 (9.05). Feeling of useful was the most affected dimension. Well-being was positively correlated with: currently working on site, physical activity, abilities to cope with difficulties, family and social supports (p<0.05). It was negatively correlated with: elevated stress level, anxious ruminations, dissatisfaction with information, difficulties to sleep or reorganize daily life, feeling supported by medicines (p<0.05). No individual factor was correlated with well-being. The stepwise linear multivariate model had simple R² coefficient of determination of 0.535.
Conclusion
In the specific population of young people with psychiatric disorders, factors associated with well-being at early stage of lockdown were mainly psychosocial and related to brutal disorganisation of daily life.

Introduction

Well-being is a complex concept that combines eudaimonic and hedonic components. Eudaimonic or psychological well-being includes six main dimensions: self-acceptance, personal growth, purpose in life, positive relations with others, environmental mastery, autonomy [1]. Hedonic or subjective well-being refers to satisfaction with life and positive emotions [2]. Both perspectives refer to positive psychology that, by focusing on satisfactory aspects of daily life, psychological skills and needs, increases the ability to act and adapt to different events.

In December 2019, first cases of Coronavirus Disease 2019 (COVID-19) were diagnosed in Wuhan, China. On 11 March 2020, the World Health Organization (WHO) characterized the COVID-19 as a pandemic. To prevent the rapid spread of the virus, stringent nationwide lockdown was decided in France on March 16, 2020. The stress was sudden, major and multifactorial: physical distancing, loneliness, disorganization of daily life with inactivity and boredom, financial losses added to fears of infection, uncertain future and ruminations related to inadequate information.

As in previous pandemics [3], mental health was strongly impacted [4] with increased prevalence of anxious, depressive and post-traumatic symptoms [5] and aggravation of pre-existing psychiatric disorders [6]. Psychiatric symptoms and distress were more frequent and severe in very vulnerable populations, including young people and people with pre-existing psychiatric disorders [5,7–9], due to their high stress vulnerability [10]. Several alerts have been issued since the beginning of the pandemic on need for studies of these clinical subgroups to quickly develop early intervention strategies in mental health [11,12].

Disruption and disorganisation of daily life, caused by this brutal confinement, gave impression of new reality, new life which might be compared to occurrence of disease associated with functional alteration. Recovery-oriented approaches, aiming to achieve well-being despite illness, could also be interesting for everyone during such traumatic or stressful events. On the basis of their own goals, strengths and abilities, progressively, person regain pleasant, meaningful and engaged life [13]. Efficient, early and person-centred intervention requires identification of modifiable and causally well-being factors that could be different among different vulnerable subgroups [11].

Our study aimed at identifying factors associated with well-being in young people with psychiatric disorders, during the early phase of COVID-19 lockdown in France.

Materials and methods

Design and procedure

The data set came from our cross-sectional national, online observational study “LockUwell” [14], initiated on March 25, 2020, which aimed at studying mental wellbeing during the lockdown in France. The protocol respected the CHERRIES checklist (Checklist for Reporting Results of Internet E-Surveys) [15].
Materials and data collection
The questionnaire was accessible online via web link, distributed on social networks, online media and mailing lists. Participation was voluntary, without counterpart or sampling. The time to answer was estimated to be between 15 to 30 minutes and the questionnaire could be completed in several times. The platform used was that of INSERM (National Institute on Health and Mental Research). Only one response was possible per Internet Protocol address, to limit multiple responses. It was constructed, with a first and a second version, and available in English in supplementary material. The initial version consisted of 63 questions, quantitative and qualitative, single or multiple choices, divided into 6 domains: (a) Sociodemographic factors, (b) Level of well-being, (c) Level of stress, (d) Medical history with particular emphasis in psychiatric, psychological and addictological histories, (e) Perceptions of the COVID-19 pandemic and lockdown, (f) Lockdown process. Well-being was assessed by the Warwick-Edinburg Mental Well-Being Scale (WEMWBS) [16], translated and validated in French, and with excellent internal consistency [17]. The instrument refers to the last two weeks and consists of 14 items, evaluated according to a 5-point scale, the sum of which leads to an overall score ranging from 14 to 70 with higher scores associated with higher well being (no threshold exists for a state of well being, a former study indicated a mean score of 51.88 in a French student population [17]). A 11-point scale was used for the stress. A cut-off point at 6 were considered for “severe stress”. Tables 1 and 2 show relevant questions selected by authorships.

Participants
The inclusion criteria were: (1) age between 16 to 29 years old, (2) living and being confined in France, (3) a past or current psychiatric treatment. Only data from the 8th to 13th day of lockdown, i.e. from March 25, 2020 to March 30, 2020 were analysed, to could be compared with the previous analyses [14] and to limit possible time biases. During this period, participants for our study were selected among these above-mentioned population.

Statistical analysis
The software R were used. Incomplete questionnaires were removed. No weighting of the data was performed due to the lack of reference to this specific population. Univariate and bivariate tests by analysis of variance (ANOVA) were performed. Multiple linear regression analyses were performed including candidate variable with a significant bivariate test with a p-value less than 0.1. Given the exploratory nature of the study, a stepwise method was preferred to a hierarchical or non-hierarchical “forced entry” method. The results were considered statistically significant if the p-value was less than 0.05.

Ethics statement
The research board of the Vinatier Hospital (Bron, France) stated that no ethics committee approval was needed and that the project was conducted in accordance with survey ethics. Indeed, as the survey was conducted anonymously with no personal data the EU General Data Protection Regulation (GDPR) of May 25, 2018 did not apply.

Results
Sample characteristics
We analysed data from 439 eligible young people whose questionnaire was fully completed. Main sociodemographic and clinical characteristics were (see Table 1 for more details): 335
|                              | Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|------------------------------|---------------------------|--------------------------------|
| **Sex**                      |                           |                                |
| Male                         | 87 (19.8)                 | 43.32 ± 10.41                  |
| Female                       | 335 (76.3)                | 42.5 ± 8.72                    |
| Other                        | 17 (3.9)                  | 37.65 ± 6.56                   |
| **Age (year)**               |                           |                                |
| 16–17                        | 16 (3.6)                  | 39.31 ± 11.94                  |
| 18–19                        | 32 (7.3)                  | 41.06 ± 10.62                  |
| 20–24                        | 144 (32.8)                | 41.11 ± 8.59                   |
| 25–29                        | 247 (56.3)                | 43.66 ± 8.74                   |
| **Marital status**           |                           |                                |
| Single, divorced, separated or widowed | 220 (50.1) | 41.42 ± 9.29                   |
| With a partner               | 219 (49.9)                | 43.54 ± 8.68                   |
| **Parental status**          |                           |                                |
| No child                     | 421 (95.9)                | 42.52 ± 9.03                   |
| One or more children         | 17 (3.9)                  | 41 ± 9.85                      |
| **Work situation**           |                           |                                |
| Other                        | 219 (49.9)                | 40.41 ± 9.26                   |
| Employed or independant worker | 220 (50.1) | 44.54 ± 8.35                   |
| **Student status**           |                           |                                |
| Not student                  | 242 (55.1)                | 43.1 ± 9.06                    |
| Student                      | 197 (44.9)                | 41.71 ± 8.99                   |
| **Education level (ISCED 2011)** |                       |                                |
| 4 or less                    | 113 (25.7)                | 39.75 ± 10.11                  |
| 5                            | 52 (11.8)                 | 42.46 ± 7.38                   |
| 6                            | 91 (20.7)                 | 41.71 ± 8.77                   |
| 7                            | 143 (32.6)                | 44.55 ± 8.43                   |
| 8                            | 40 (9.1)                  | 44.55 ± 8.66                   |
| **Chronic illness or disability** |                       |                                |
| No                           | 292 (66.5)                | 43.28 ± 8.6                    |
| Yes                          | 147 (33.5)                | 40.89 ± 9.7                    |
| **Psychiatric treatment**    |                           |                                |
| Current                      | 177 (40.3)                | 40.64 ± 9.31                   |
| Past                         | 262 (59.7)                | 43.72 ± 8.66                   |
| **Ongoing addiction or psychological treatment** |                       |                                |
| No                           | 288 (65.6)                | 43.15 ± 8.99                   |
| Yes                          | 151 (34.4)                | 41.19 ± 9.04                   |
| **Anxio-depressive disorders** |                           |                                |
| No                           | 32 (7.3)                  | 45.84 ± 9.62                   |
| Yes                          | 407 (92.7)                | 42.21 ± 8.96                   |
| **Sleep disorders**          |                           |                                |
| No                           | 286 (65.1)                | 43.32 ± 9.25                   |
| Yes                          | 153 (34.9)                | 40.91 ± 8.47                   |
| **Addiction**                |                           |                                |
| No                           | 395 (90.0)                | 42.46 ± 9.18                   |
| Yes                          | 44 (10.0)                 | 42.64 ± 7.78                   |
| **Psychotic disorders**      |                           |                                |
| Non                          | 421 (95.9)                | 42.47 ± 8.96                   |

(Continued)
participants (76.3%) were female, their mean age was 24.53 (3.42) years and 247 of them (56.3%) were aged between 25 to 29 years. 219 (49.9%) were in couple and 17 (3.9%) had children. Main academic and professional characteristics were: 274 participants (62.4%) had university degree or higher (ISCED $6$), 220 of them (50.1%) worked and 197 (44.9%) were student, which could be combined. As required by the inclusion criteria, all of them had benefited from psychiatric treatment and 177 (40.3%) were still treated; 151 (34.4%) had psychological or addiction treatment; 407 (92.7%) suffered from anxio-depressive disorders, 153 (34.9%) from sleep disorders and 18 (4.1%) from psychotic disorders. Many disorders might be associated.

### Lockdown processing

Main information related to lockdown were (see Table 2 for more details): 400 participants (91.1%) agreed with measures taken but 128 (29.2%) were unsatisfied with the information provided. 32 (7.3%) were infected; 207 (47.2%) had access to outdoor space and mean housing surface area was 79.73m$^2$ (55.6); 91 (20.7%) were confined alone; 177 (40.3%) did not work and 70 (15.9%) left their house to go to work; 264 (60.1%) practiced less than 30 minutes of sport per day. Respectively 329 (74.9%), 287 (65.4%) and 207 (47.2%) individuals had difficulties sleeping, eating regularly and reorganizing their daily life. Abilities to cope with difficulties, positive consequences and support helped respectively 295 (67.2%) and 241 (54.9%) of individuals to cope with the lockdown. Screen use and caloric food intake increased among 342 (77.9%) and 97 (22.1%) respectively. 195 (44.4%) did not take medication and 97 (22.1%) of the individuals concerned increased their medication consumption. 84 (19.1%) of all participants felt helped by medications. Social networks and phones represented the two main vectors of social interactions, and were used daily by 251 (57.2%) and 207 (47.2%) respectively. 378 (86.1%) received support, which was mainly family for 346 (78.8%), friendly for 299 (68.1%) and social for 153 (34.9%).

### Well-being and stress

Total mean WEMWBS score was 43.72 (±8.66) for the 262 (59.7%) individuals previously treated and 40.64 (±9.31) for the 177 (40.3%) still treated. Mean scores per variable were detailed in Tables 1 and 2. Feeling of useful was the dimension the most affected with an average of 2.32 (±1.05) as presented in Table 3. 291 (66.3%) of individuals were considered highly stressed (high score $> = 6$). 194 (44.2%) experienced anxious ruminations for more than one hour per day while 55 (12.5%) were not concerned.

### Table 1. (Continued)

| Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|----------------------------|--------------------------------|
| Yes 18 (4.1)               | 42.61 ± 11.23                  |
| No 327 (74.5)              | 42.89 ± 9.35                   |
| Yes 112 (25.5)             | 41.28 ± 7.99                   |
| No 372 (84.7)              | 42.72 ± 8.96                   |
| Yes 67 (15.3)              | 41.15 ± 9.49                   |

Abbreviations: WEMWBS, Warwick-Edinburg Mental Well-Being Scale; ISCED, International Standard Classification of Education.
| Table 2. Situation during the COVID-19 lockdown and WEMWBS total scores. | Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|---------------------------------------------------------------|-----------------------------|-------------------------------|
| **Overall stress level**                                     |                             |                               |
| Weak (< 6)                                                    | 148 (33.7)                  | 47.28 ± 8.89                  |
| Elevated (> = 6)                                              | 291 (66.3)                  | 40.04 ± 8.11                  |
| **Agreement with lockdown measure**                          |                             |                               |
| Agree                                                         | 400 (91.1)                  | 42.72 ± 8.96                  |
| Neither agree nor disagree                                     | 20 (4.6)                    | 38.65 ± 12.72                 |
| Disagree                                                      | 19 (4.3)                    | 37.32 ± 8.45                  |
| **Satisfaction with the level of information**                |                             |                               |
| Satisfied                                                     | 230 (52.4)                  | 44.61 ± 8.64                  |
| Neither satisfied nor dissatisfied                            | 81 (18.5)                   | 41.27 ± 9.21                  |
| Not satisfied                                                 | 128 (9.2)                   | 39.41 ± 8.69                  |
| **Contact with any person(s) likely to be contaminated**     |                             |                               |
| Being contaminated                                            | 32 (7.3)                    | 45.03 ± 9.17                  |
| Being in direct contact with contaminated or likely to be contaminated person(s) | 52 (11.8)                  | 42.71 ± 8.9                  |
| Being not in direct contact with contaminated or likely to be contaminated person(s) | 355 (80.9)                  | 42.21 ± 9.04                  |
| **Lockdown in usual accommodation**                           |                             |                               |
| Yes                                                           | 355 (80.9)                  | 42.43 (8.87)                  |
| No                                                            | 84 (19.1)                   | 42.67 (9.82)                  |
| **Dwelling surface area (in m²)**                             |                             |                               |
| ≤ 29 m²                                                       | 44 (10.0)                   | 41.57 ± 9.01                  |
| 30–39 m²                                                      | 133 (30.3)                  | 42.81 ± 8.57                  |
| 60–89 m²                                                      | 115 (26.2)                  | 42.94 ± 8.83                  |
| ≥ 90 m²                                                       | 141 (32.1)                  | 42.23 ± 9.58                  |
| **Outdoor space**                                             |                             |                               |
| No                                                            | 232 (52.8)                  | 42.62 ± 8.85                  |
| Yes                                                           | 207 (47.2)                  | 42.32 ± 9.27                  |
| **Number of people lockdown in household**                    |                             |                               |
| 1                                                             | 91 (20.7)                   | 42.73 ± 8.91                  |
| 2                                                             | 178 (40.5)                  | 43.58 ± 8.8                   |
| 3–10                                                          | 166 (37.8)                  | 41.34 ± 9.2                   |
| **Having one or all of your children living with you**        |                             |                               |
| No                                                            | 422 (96.1)                  | 42.54 ± 9.02                  |
| Yes                                                           | 17 (3.9)                    | 41 ± 9.85                     |
| **Working during lockdown**                                   |                             |                               |
| Working on site                                               | 70 (15.9)                   | 44.97 ± 8.74                  |
| Teleworking exclusively                                       | 192 (43.7)                  | 43.35 ± 8.63                  |
| No professional activity                                      | 177 (40.3)                  | 40.54 ± 9.26                  |
| **Workload**                                                  |                             |                               |
| Decrease                                                      | 87 (19.8)                   | 44.84 ± 8.45                  |
| No change                                                     | 65 (14.8)                   | 42.78 ± 9.33                  |
| Increase                                                      | 57 (13.0)                   | 43.05 ± 8.17                  |
| Variable and unpredictable                                    | 53 (12.1)                   | 44.08 ± 8.76                  |
| **Risk of precarious situation**                              |                             |                               |
| Very likely                                                   | 52 (11.8)                   | 38.63 ± 9.09                  |
| Probably                                                      | 64 (14.6)                   | 42.47 ± 7.61                  |
| Probably not                                                  | 171 (39.0)                  | 41.76 ± 8.83                  |

(Continued)
Table 2. (Continued)

| Activity                                | Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|------------------------------------------|---------------------------|--------------------------------|
| Certainly not                           | 152 (34.6)                | 44.61 ± 9.34                   |
| Work or study                            |                           |                                |
| Never                                    | 83 (18.9)                 | 38.47 ± 9.78                   |
| Less than 30 minutes                     | 45 (10.3)                 | 42.71 ± 8.38                   |
| From 30 minutes to 1 hour                | 31 (7.1)                  | 39.74 ± 8.2                    |
| More than 1 hour                         | 280 (63.8)                | 43.93 ± 8.62                   |
| Take care of yourself                    |                           |                                |
| Never                                    | 9 (2.1)                   | 37 ± 9.91                      |
| Less than 30 minutes                     | 213 (48.5)                | 40.14 ± 9.03                   |
| From 30 minutes to 1 hour                | 145 (33.0)                | 44.75 ± 8.38                   |
| More than 1 hour                         | 72 (16.4)                 | 45.51 ± 8.24                   |
| Nap                                      |                           |                                |
| Never                                    | 196 (44.6)                | 42.6 ± 9.17                    |
| Less than 30 minutes                     | 67 (15.3)                 | 43.72 ± 8.53                   |
| From 30 minutes to 1 hour                | 54 (12.3)                 | 44.56 ± 8.15                   |
| More than 1 hour                         | 122 (27.8)                | 40.68 ± 9.27                   |
| Read                                     |                           |                                |
| Never                                    | 106 (24.1)                | 40.17 ± 10.28                  |
| Less than 30 minutes                     | 85 (19.4)                 | 43.29 ± 8.16                   |
| From 30 minutes to 1 hour                | 109 (24.8)                | 42.6 ± 8.26                    |
| More than 1 hour                         | 139 (31.7)                | 43.65 ± 8.91                   |
| Creative activities (music, drawing …)   |                           |                                |
| Never                                    | 164 (37.4)                | 41.91 ± 9.89                   |
| Less than 30 minutes                     | 72 (16.4)                 | 41.9 ± 8.53                    |
| From 30 minutes to 1 hour                | 80 (18.2)                 | 42.94 ± 8.41                   |
| More than 1 hour                         | 123 (28.0)                | 43.28 ± 8.58                   |
| Practice physical activities             |                           |                                |
| Never                                    | 168 (38.3)                | 39.68 ± 9.26                   |
| Less than 30 minutes                     | 96 (21.9)                 | 42.8 ± 8.68                    |
| From 30 minutes to 1 hour                | 103 (23.5)                | 44.61 ± 8.53                   |
| More than 1 hour                         | 123 (28.0)                | 43.28 ± 8.58                   |
| Play video games                         |                           |                                |
| Never                                    | 211 (48.1)                | 42.5 ± 9.09                    |
| Less than 30 minutes                     | 33 (7.5)                  | 41.48 ± 8.23                   |
| From 30 minutes to 1 hour                | 32 (7.3)                  | 45.44 ± 8.31                   |
| More than 1 hour                         | 163 (37.1)                | 42.07 ± 9.25                   |
| Ruminating or being the object of anxious fears |                     |                                |
| Never                                    | 55 (12.5)                 | 51.69 ± 7.94                   |
| Less than 30 minutes                     | 104 (23.7)                | 45.76 ± 7.31                   |
| From 30 minutes to 1 hour                | 86 (19.6)                 | 43.22 ± 6.93                   |
| More than 1 hour                         | 194 (44.2)                | 37.78 ± 8.12                   |
| Difficulties in having good and regular sleep |                   |                                |
| No                                       | 110 (25.1)                | 47.33 ± 8.77                   |
| Yes                                      | 329 (74.9)                | 40.86 ± 8.56                   |
| Difficulties in having regular alimentation |                   |                                |

(Continued)
Table 2. (Continued)

| Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|---------------------------|--------------------------------|
| No                        |                                |
| 152 (34.6)                | 44.74 ± 8.81                   |
| Yes                       |                                |
| 287 (65.4)                | 41.28 ± 8.95                   |
| Difficulties in establishing new routines | |
| No                        |                                |
| 232 (52.8)                | 44.36 ± 9.16                   |
| Yes                       |                                |
| 207 (47.2)                | 40.37 ± 8.46                   |
| Being helped by media     |                                |
| No                        |                                |
| 301 (68.6)                | 41.66 ± 9.29                   |
| Yes                       |                                |
| 138 (31.4)                | 44.27 ± 8.24                   |
| Being helped by abilities to cope with difficulties | |
| No                        |                                |
| 144 (32.8)                | 39.33 ± 9.34                   |
| Yes                       |                                |
| 295 (67.2)                | 44.02 ± 8.5                    |
| Being helped by conviction of favourable outcome | |
| No                        |                                |
| 161 (36.7)                | 40.37 ± 10.02                  |
| Yes                       |                                |
| 278 (63.3)                | 43.7 ± 8.21                    |
| Being helped by religious faith | |
| No                        |                                |
| 403 (91.8)                | 42.34 ± 9.13                   |
| Yes                       |                                |
| 36 (8.2)                  | 44 ± 8.06                      |
| Being helped by support   |                                |
| No                        |                                |
| 198 (45.1)                | 41.33 ± 9.75                   |
| Yes                       |                                |
| 241 (54.9)                | 43.42 ± 8.33                   |
| Being helped by substances |                                |
| No                        |                                |
| 365 (83.1)                | 42.81 ± 9.22                   |
| Yes                       |                                |
| 74 (16.9)                 | 40.86 ± 7.98                   |
| Being helped by medicines |                                |
| No                        |                                |
| 355 (80.9)                | 43.88 ± 8.81                   |
| Yes                       |                                |
| 84 (19.1)                 | 36.55 ± 7.55                   |
| Coffee, tea, energy drinks use |                          |
| No use                    |                                |
| 73 (16.6)                 | 40.23 ± 9.75                   |
| No change                 |                                |
| 203 (46.2)                | 43.77 ± 8.43                   |
| Decrease or cessation     |                                |
| 33 (7.5)                  | 43.24 ± 7.6                    |
| Increase                  |                                |
| 130 (29.6)                | 41.53 ± 9.63                   |
| Caloric food              |                                |
| No use                    |                                |
| 12 (2.7)                  | 45.5 ± 10.72                   |
| No change                 |                                |
| 165 (37.6)                | 43.96 ± 8.85                   |
| Decrease or cessation     |                                |
| 52 (11.8)                 | 41.06 ± 9.45                   |
| Increase                  |                                |
| 210 (47.8)                | 41.5 ± 8.86                    |
| Tobacco use               |                                |
| No use                    |                                |
| 288 (65.6)                | 42.82 ± 9.36                   |
| No change                 |                                |
| 38 (8.7)                  | 42.68 ± 8.52                   |
| Decrease or cessation     |                                |
| 41 (9.3)                  | 43.73 ± 5.47                   |
| Increase                  |                                |
| 72 (16.4)                 | 40.28 ± 9.33                   |
| Alcohol use               |                                |
| No use                    |                                |
| 181 (41.2)                | 40.96 ± 9.56                   |
| No change                 |                                |
| 99 (22.6)                 | 43.79 ± 8.84                   |
| Decrease or cessation     |                                |
| 77 (17.5)                 | 43.58 ± 8.78                   |
Table 2. (Continued)

| Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|---------------------------|--------------------------------|
| Increase                  | 82 (18.7)                      | 43.22 ± 7.97 |
| Cannabis use              |                                |              |
| No use                    | 377 (85.9)                     | 42.84 ± 9.15 |
| No change                 | 22 (5.0)                       | 43.14 ± 8.55 |
| Decrease or cessation     | 13 (3.0)                       | 37 ± 9.83    |
| Increase                  | 27 (6.2)                       | 39.52 ± 6.16 |
| Other drugs (ecstasy, heroin, . . .) |                        |              |
| No use                    | 418 (95.2)                     | 42.55 ± 9.11 |
| No change                 | 8 (1.8)                        | 42.88 ± 9.23 |
| Decrease or cessation     | 10 (2.3)                       | 40.8 ± 7.38  |
| Increase                  | 3 (0.7)                        | 37.67 ± 5.51 |
| Medicines use             |                                |              |
| No use                    | 195 (44.4)                     | 44.21 ± 8.91 |
| No change                 | 123 (28.0)                     | 41.93 ± 8.17 |
| Decrease or cessation     | 24 (5.5)                       | 46.17 ± 8.63 |
| Increase                  | 97 (22.1)                      | 38.78 ± 9.3  |
| Screens use               |                                |              |
| No use                    | 3 (0.7)                        | 38.33 ± 9.24 |
| No change                 | 84 (19.1)                      | 43.57 ± 8.91 |
| Decrease or cessation     | 10 (2.3)                       | 42.9 ± 11.26 |
| Increase                  | 342 (77.9)                     | 42.23 ± 9.02 |
| Face to face interactions |                                |              |
| Maximum once a week       | 370 (84.3)                     | 42.34 ± 8.92 |
| Several times a week      | 28 (6.4)                       | 42.79 ± 10.36|
| Every day                 | 41 (9.3)                       | 43.49 ± 9.38 |
| Phone or texting interactions |                            |              |
| Maximum once a week       | 29 (6.6)                       | 38.17 ± 10.21|
| Several times a week      | 203 (46.2)                     | 41.64 ± 8.5  |
| Every day                 | 207 (47.2)                     | 43.9 ± 9.15  |
| Social networks interactions |                                    |              |
| Maximum once a week       | 76 (17.3)                      | 39.17 ± 9.0  |
| Several times a week      | 112 (25.5)                     | 43.22 ± 9.24 |
| Every day                 | 251 (57.2)                     | 43.15 ± 8.78 |
| Support                   |                                |              |
| No                        | 61 (13.9)                      | 37.59 ± 9.94 |
| Yes                       | 378 (86.1)                     | 43.27 ± 8.65 |
| Family support            |                                |              |
| No                        | 93 (21.2)                      | 37.94 ± 9.81 |
| Yes                       | 346 (78.8)                     | 43.7 ± 8.44  |
| Friend support            |                                |              |
| No                        | 140 (31.9)                     | 39.29 ± 9.88 |
| Yes                       | 299 (68.1)                     | 43.97 ± 8.23 |
| Health or another professionals support |                |              |
| No                        | 352 (80.2)                     | 42.78 ± 8.92 |
| Yes                       | 87 (19.8)                      | 41.24 ± 9.49 |

(Continued)
Factors associated with well-being

The simple and multiple linear regression coefficients are presented in Tables 4 and 5. The factors positively correlated with well-being were: work at workplace, physical activity, abilities to cope with difficulties, family and social supports. Those negatively correlated were: elevated stress level, anxious ruminations, dissatisfaction with information provided, difficulties to sleep or reorganize daily life, feeling supported by medications. The physical activity was protector from 30 minutes per day and the effect increased with the duration of practice. Anxious ruminations were strongly and negatively correlated and the coefficients increased according their importance, estimated by daily durations. No individual factor was correlated with well-being. The stepwise linear multivariate model had a simple $R^2$ coefficient of determination of 0.535.

Discussion

This first online study aimed to identify factors associated with well-being, at the early stage of lockdown, in young people concerned by psychiatric disorders. It occurred within the context of psychological health emergency following the COVID-19 pandemic [11,12,18] and aimed at identifying targets for early intervention.

Altered well-being in young people with psychiatric disorders

Studying well-being required caution because of lack of consensual definition of "mental health" and "well-being" [19] and multiplicity of psychometric tools. WEMWBS was chosen for its analysis of both hedonic and eudemonic aspects, over the last two weeks, with good internal consistency and reproducibility [17]. Although, to date, no baseline data on young people with psychiatric disorders were available, our results highlighted significative impairment of wellbeing, with unknown kinetics. Outside pandemic period, French study [17] reported WEMWBS mean score of 44.86 (9.22) among French people suffering from schizophrenia in recovery process. However, such a score, is only partially comparable due to heterogeneity of our sample and the low representation of psychotic disorders. Concerning young workers and students without psychiatric disorders, WEMWBS mean scores were higher of 51.47 (7.19) and 51.88 (6.87) respectively. Scottish study found median score for young people of 53 (IC 95% [52–53]) [16]. First global analysis of our dataset showed, by the second week of lockdown, lower well-being when compared to studies outside lockdown setting among young people, and people with past or actual psychiatric disorder with mean scores of 47.80 (7.23),

| Other social support (colleagues, neighbours, associations, ...) | Number (%) of respondents | WEMWBS total score (Mean ± SD) |
|---------------------------------------------------------------|---------------------------|--------------------------------|
| No                                                            | 286 (65.1)                | 40.42 ± 8.98                  |
| Yes                                                           | 153 (34.9)                | 46.33 ± 7.85                  |
| Having pet                                                    |                           |                                |
| No                                                            | 213 (48.5)                | 41.97 ± 9.19                  |
| Yes                                                           | 226 (51.5)                | 42.96 ± 8.9                   |

Abbreviations: WEMWBS, Warwick-Edinburgh Mental Well-Being Scale; COVID-19, Coronavirus Disease 2019.
Table 3. WEMWBS subscores during the COVID-19 lockdown.

| Variables | Statements | No. (%) of respondents | Mean ± SD |
|-----------|------------|------------------------|-----------|
| 1         | To have been feeling optimistic | | |
| None of the time | 34 (7.7) | 2.85 ± 0.96 |
| Rarely | 123 (28.0) |
| Some of the time | 172 (39.2) |
| Often | 94 (21.4) |
| All of the time | 16 (3.6) |
| 2         | To have been feeling useful | | |
| None of the time | 109 (24.8) | 2.32 ± 1.05 |
| Rarely | 155 (35.3) |
| Some of the time | 108 (24.6) |
| Often | 60 (13.7) |
| All of the time | 7 (1.6) |
| 3         | To have been relaxed | | |
| None of the time | 28 (6.4) | 2.86 ± 0.92 |
| Rarely | 123 (28.0) |
| Some of the time | 183 (41.7) |
| Often | 92 (21.0) |
| All of the time | 13 (3.0) |
| 4         | To have been interested in other people | | |
| None of the time | 22 (5.0) | 3.51 ± 1.06 |
| Rarely | 56 (12.8) |
| Some of the time | 109 (24.8) |
| Often | 182 (41.5) |
| All of the time | 70 (16.0) |
| 5         | To have had energy to spare | | |
| None of the time | 32 (7.3) | 3.22 ± 1.13 |
| Rarely | 86 (19.6) |
| Some of the time | 135 (30.8) |
| Often | 126 (28.7) |
| All of the time | 60 (13.7) |
| 6         | To have been dealing with problems well | | |
| None of the time | 30 (6.8) | 3.12 ± 1.02 |
| Rarely | 89 (20.1) |
| Some of the time | 144 (33.0) |
| Often | 149 (29.6) |
| All of the time | 27 (10.5) |
| 7         | To have been thinking clearly | | |
| None of the time | 30 (16.6) | 3.17 ± 1.08 |
| Rarely | 88 (29.2) |
| Some of the time | 145 (31.4) |
| Often | 130 (29.6) |
| All of the time | 46 (10.5) |
| 8         | To have been feeling good about yourself | | |
| None of the time | 73 (16.6) | 2.64 ± 1.08 |
| Rarely | 128 (29.2) |
| Some of the time | 138 (31.4) |
| Often | 83 (18.9) |

(Continued)
This early impairment of well-being was consistent with the onset of major distress and psychiatric symptoms during this period [4,20,21].

Factors of well-being

Contrary to data in general population, no individual and pre-existing factors of well-being could be identified. All young people with psychiatric disorders, past or currently treated, and whatever the type of disorder, must be considered as at risk.

### Table 3. (Continued)

| Variables | Statements                                      | No. (%) of respondents | Mean ± SD |
|-----------|-------------------------------------------------|------------------------|-----------|
|           | All of the time                                 | 17 (3.9)               |           |
| 9         | To have been feeling close to other people      |                        | 3.02 ± 1.07|
|           | None of the time                                | 37 (8.4)               |           |
|           | Rarely                                          | 110 (25.1)             |           |
|           | Some of the time                                | 126 (28.7)             |           |
|           | Often                                           | 141 (32.1)             |           |
|           | All of the time                                 | 25 (5.7)               |           |
| 10        | To have been feeling confident                  |                        | 2.62 ± 0.98|
|           | None of the time                                | 53 (12.1)              |           |
|           | Rarely                                          | 150 (34.2)             |           |
|           | Some of the time                                | 156 (35.5)             |           |
|           | Often                                           | 68 (15.5)              |           |
|           | All of the time                                 | 12 (2.7)               |           |
| 11        | To have been able to make up your own mind about things |                        | 3.70 ± 0.94|
|           | None of the time                                | 8 (1.8)                |           |
|           | Rarely                                          | 39 (8.9)               |           |
|           | Some of the time                                | 116 (26.4)             |           |
|           | Often                                           | 190 (43.3)             |           |
|           | All of the time                                 | 86 (19.6)              |           |
| 12        | To have been feeling loved                      |                        | 3.49 ± 1.05|
|           | None of the time                                | 18 (4.1)               |           |
|           | Rarely                                          | 56 (12.8)              |           |
|           | Some of the time                                | 137 (31.2)             |           |
|           | Often                                           | 150 (34.2)             |           |
|           | All of the time                                 | 78 (17.8)              |           |
| 13        | To have been interested in new things           |                        | 3.12 ± 1.10|
|           | None of the time                                | 35 (8.0)               |           |
|           | Rarely                                          | 96 (21.9)              |           |
|           | Some of the time                                | 128 (29.2)             |           |
|           | Often                                           | 140 (31.9)             |           |
|           | All of the time                                 | 40 (9.1)               |           |
| 14        | To have been feeling cheerful                   |                        | 2.84 ± 0.92|
|           | None of the time                                | 35 (8.0)               |           |
|           | Rarely                                          | 115 (26.2)             |           |
|           | Some of the time                                | 183 (41.7)             |           |
|           | Often                                           | 99 (22.6)              |           |
|           | All of the time                                 | 7 (1.6)                |           |

Abbreviations: WEMWBS, Warwick-Edinburgh Mental Well-Being Scale.

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Table 4. Factors associated with well-being during the COVID-19 lockdown along simple linear regression analysis.

| Variables                                      | N    | eta2 (1) | p.value.F (2) | Parameters                                                                 |
|------------------------------------------------|------|----------|----------------|-----------------------------------------------------------------------------|
| Sex                                            | 439  | 0.013    | 1.000          | Aov: F(2,436) = 2.828                                                      |
| Age                                            | 439  | 0.023    | 0.528          | Aov: F(3,435) = 3.484                                                      |
| Marital status                                 | 439  | 0.014    | 0.476          | Aov: F(1,437) = 6.076                                                      |
| Parental status                                | 439  | 0.001    | 1.000          | Aov: F(1,437) = 0.463                                                      |
| Work situation                                 | 439  | 0.052    | 0.000***       | Aov: F(1,437) = 24.139                                                    |
| Student status                                 | 439  | 0.006    | 1.000          | Aov: F(1,437) = 2.583                                                      |
| Education level                                | 439  | 0.047    | 0.015*         | Aov: F(4,434) = 5.322                                                      |
| Chronic illness or disability                  | 439  | 0.016    | 0.315          | Aov: F(1,437) = 6.896                                                      |
| Current psychiatric treatment                  | 439  | 0.028    | 0.018*         | Aov: F(1,437) = 12.595                                                    |
| Current psychological or addiction treatment   | 439  | 0.011    | 0.812          | Aov: F(1,437) = 4.693                                                      |
| Anxio-depressive disorders                     | 439  | 0.011    | 0.812          | Aov: F(1,437) = 4.819                                                      |
| Sleep disorders                                | 439  | 0.016    | 0.288          | Aov: F(1,437) = 7.173                                                      |
| Addiction                                      | 439  | 0       | 1.000          | Aov: F(1,437) = 0.015                                                      |
| Psychotic disorders                            | 439  | 0       | 1.000          | Aov: F(1,437) = 0.004                                                      |
| Eating disorders                               | 439  | 0.006    | 1.000          | Aov: F(1,437) = 2.663                                                      |
| Neurodevelopmental disorders                   | 439  | 0.004    | 1.000          | Aov: F(1,437) = 1.71                                                       |
| Overall stress level                           | 439  | 0.143    | 0.000***       | Aov: F(1,437) = 73.188                                                    |
| Agreement with the lockdown measure            | 439  | 0.024    | 0.190          | Aov: F(2,436) = 5.461                                                      |
| Satisfaction with the level of information     | 439  | 0.066    | 0.000***       | Aov: F(2,436) = 15.393                                                    |
| Contact with any person(s) likely to be contaminated | 439  | 0.007    | 1.000          | Aov: F(2,436) = 1.446                                                      |
| Lockdown in usual accommodation                | 439  | 0.001    | 0.832          | Aov: F(1,437) = 0.045                                                      |
| Accommodation surface area, $m^2$              | 433  | 0.002    | 1.000          | Aov: F(3,429) = 0.342                                                      |
| Outdoor space                                  | 439  | 0.0003   | 1.000          | Aov: F(1,437) = 0.122                                                      |
| Number of people lockdown in Household         | 435  | 0.012    | 1.000          | Aov: F(2,432) = 2.685                                                      |
| Having a child lockdown with you               | 439  | 0.001    | 1.000          | Aov: F(1,437) = 0.472                                                      |
| Work modalities                                | 439  | 0.035    | 0.018*         | Aov: F(2,436) = 7.85                                                       |
| Workload                                       | 262  | 0.01     | 1.000          | Aov: F(3,258) = 0.87                                                       |
| Risk of precarious situation                   | 439  | 0.043    | 0.011*         | Aov: F(3,435) = 6.528                                                      |
| Work or study                                  | 439  | 0.06     | 0.000***       | Aov: F(3,435) = 9.299                                                      |
| Take care of yourself                          | 439  | 0.08     | 0.000***       | Aov: F(3,435) = 12.534                                                    |
| Nap                                            | 439  | 0.02     | 0.812          | Aov: F(3,435) = 3.028                                                      |
| Read                                           | 439  | 0.023    | 0.570          | Aov: F(3,435) = 3.366                                                      |
| Creative activities (music, drawing, . . .)     | 439  | 0.005    | 1.000          | Aov: F(3,435) = 0.7                                                       |
| Practice physical activities                   | 439  | 0.068    | 0.000***       | Aov: F(3,435) = 10.656                                                    |
| Play video games                               | 439  | 0.009    | 1.000          | Aov: F(3,435) = 1.39                                                      |
| Ruminating or being the object of anxious fears| 439  | 0.282    | 0.000***       | Aov: F(3,435) = 57.058                                                    |
| Difficulties in having good and regular sleep  | 439  | 0.096    | 0.000***       | Aov: F(1,437) = 46.563                                                    |
| Difficulties in having regular alimentation    | 439  | 0.033    | 0.006**        | Aov: F(1,437) = 15.045                                                    |
| Difficulties in establishing new routines       | 439  | 0.048    | 0.000***       | Aov: F(1,437) = 22.27                                                    |
| Being helped by media                          | 439  | 0.018    | 0.190          | Aov: F(1,437) = 8.005                                                      |
| Being helped by abilities to cope with difficulties | 439  | 0.059    | 0.000***       | Aov: F(1,437) = 27.598                                                    |
| Being helped by conviction of favourable outcome| 439  | 0.031    | 0.009**        | Aov: F(1,437) = 14.192                                                    |
| Being helped by religious faith                 | 439  | 0.003    | 1.000          | Aov: F(1,437) = 1.11                                                      |
| Being helped by support                        | 439  | 0.013    | 0.528          | Aov: F(1,437) = 5.843                                                      |
| Being helped by substance                      | 439  | 0.006    | 1.000          | Aov: F(1,437) = 2.844                                                     |
| Being helped by medicines                      | 439  | 0.102    | 0.000***       | Aov: F(1,437) = 49.608                                                    |
| Coffee, tea and energetic drinks use           | 439  | 0.023    | 0.528          | Aov: F(3,435) = 3.488                                                    |
Severe stress and major anxiety were reported by 66.3% and 44.4% of young, in line with literature data showing higher levels in case of psychiatric history [8,20]. To date, major impact of stress in well-being were poorly documented during pandemic while its role on aggravation or onset of psychiatric disorders were established [5–7,22]. Being young or suffering from psychiatric disorders increased significantly risk of such psychiatric, but also physical, consequences [5,7,9], due to high vulnerability to stress [10,23].

At the early stage of brutal lockdown, many factors identified in our study refer to the suddenly break and disorganization of daily life. Bidirectional relationships between circadian rhythms and mental health were established in former studies [24]. The importance of routines and regular rhythms justifies psychoeducation of all young people to help them structure their daily life, creating new habits with regular sport and various activities, deciding on regular bedtime. Simple and individual timeframe might be helpful. Limiting late exposure to screens and permanent nibbling could facilitate falling asleep and restoration of dietary rhythms by reappearance of hunger and satiety signals.

Mental health benefits of regular physical activity were observed in general [25] and clinical [26] populations, and during COVID-19 pandemic [27]. Our study found the beneficial threshold of half an hour per day observed in Zhang’s study [27], who also noted negative correlation in case of excessive exercise for more than two and half hours per day, without specifying sense of cause-effect link.

Working did not impact well-being, before or during the lockdown but telecommuting was damaging. Interaction analysis could be interesting between working status, psychiatric status and well-being to understand such an indifference which could be the result of reduced interest in work related to recovery process or depressive symptomatology. In general population,
stop working was associated with lower well-being at the early stage but not telecommuting. [14,27]. Surprisingly, in our study, studying did not increase the risk while it did in general population [5,14].
Our study highlighted that satisfaction with information promoted well-being. Overabundance of information, rumors and misinformation are classic in pandemic context [28] but should be controlled at the risk of serious physical, psychical and social consequences [29,30]. During pandemic periods, information quality strongly conditioned respect of health recommendations [31] and psychological consequences. Information should be clear, easy to access, and concordant between reference sources (government, other decision-making bodies, health professionals), especially for risk levels which easily generates fear [3,30]. At the individual level, the WHO recommended limiting time of exposure and favoring reliable and official sources [32]. Major and increasing use of screens in our study and in the general population made this limitation complex [33]. Information was everywhere, quickly spread and might be intrusive, appearing spontaneous through social networks, newsletters, internet sites... Active participation of young people was required to control rumors and media exposure, prevent panic and preserve well-being.

Variations in drug treatment did not interfere with well-being, but young who felt helped could need special attention. Although data on the safety were insufficient at this time [34], continuation of treatment was recommended because of excessive risk of aggravation of psychiatric disorders and withdrawal syndrome [35]. In our study, 97 (39.8%) young people increased their treatment, which could be related to an increase in psychiatric symptomatology [6].

A person-centered approach
Promotion of well-being in pandemic period could be compared to recovery-oriented approach, requiring interdisciplinary collaboration and active participation of young people. Empowerment contributes to supporting eudemonic well-being by reinforcing senses of useful and control [36], self-esteem and self-confidence. After having evaluated risk, psychoeducational interventions could help young people to identify their vulnerabilities, harmful environmental factors, but also their coping skills, recovery strengths and environmental resources in order to boost resilience.

Psychoeducation must be proposed to entire family to promote adaptative family coping and cohesion in order to preserve family support. Communication must be warm, caring, regular and interesting [37]. Stress of lockdown added to burden of disease, leading to high-risk for mental health of caregivers who needed support themselves: impaired well-being, quality of life, depression, isolation and financial difficulties [37–39]. During lockdown, 50% of caregivers did not feel supported according to French survey by UNAFAM (The French National Union of Families and Friends of Sick or Psychically Handicapped People) [40].

Individual resilience and social support are highly related [41], which could contribute to protector effect of social support. Sense of cohesion should be strengthened by citizen involvement, neighbourhood solidarity, and promotion interactions, whatever their frequency and with respect for physical distancing measures. Respecting containment is already a responsible and altruistic act that should be valued. Continuing group therapeutic activities could be also interesting to maintaining peer relationships.

Strengths and limitations
Firstly, our study could not analyse kinetics of degradation of well-being and variations over time of different studied variables because of its cross-sectional nature. A cohort study would have been ideal but none ethics committee could be mobilized very quickly in France in March 2020.

Secondly, several recruitment biases must be taken into account. Convenience sampling used for LockUwell survey could explain part of the over-representation of anxiety and
depressive disorders and the under-representation of psychotic disorders. However, easy to carry out, it allowed us to quickly obtain a large sample. Need for access to digital technologies, existence of motivational factor due to absence of counterpart, choice of intermediate inclusion criteria also impacted representativeness. As inclusion depended on the presence of current or past psychiatric cares, young people who never engaged with services because of refusal, denial, lack of demand, difficulties in accessing care or non-reporting for fear of stigmatisation or coerced cares were not included. However, psychiatric cares were clinical and relevant criterion, focusing on severity rather than the type of mental disorder.

Thirdly, the setting of our survey, targeting general population with online response limited the level of precision in clinical explorations. Some specific variables to this population could be interesting to improve risk prediction at the start of lockdown: age of onset of disorder, addictions, medications, type of follow-up… Current absence of specific risk factors must encourage proactive contact, evaluation and closely support systematically for each young people suffering from psychiatric disorders.

Conclusions
Several factors impacting well-being of young people with psychiatric disorders, at early stage of lockdown, have been identified. Mainly psychosocial and related to brutal disorganisation of daily life, these factors could justify early psychoeducational interventions aiming at boosting resilience, fostering empowerment and promoting social relationships.

Supporting information
S1 File.
(XLS)

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Declarations
Ethics approval. The research board of the Vinatier Hospital (Bron, France) stated that no ethics committee approval was needed and that the project was conducted in accordance with survey ethics. As the survey was conducted anonymously with no personal data the EU General Data Protection Regulation (GDPR) did not apply.
Consent to publish. Participation was anonymous and voluntary.

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References
1. Ryff CD. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. Journal of Personality and Social Psychology. 57(6), 1069–1081. https://doi.org/10.1037/0022-3514.57.6.1069.
2. Ryan RM, Deci EL. (2001). On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being. Annual Review of Psychology. 52(1), 141–166. https://doi.org/10.1146/annurev.psych.52.1.141 PMID: 11148302
3. Brooks SK., Webster RK, Smith LE, 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. https://doi.org/10.1016/S0140-6736(20)30460-8 PMID: 3212714
4. Pierce M., Hope H., Ford T., Hatch S., Hotopf M., John A., et al. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. The Lancet. Psychiatry. 7(10), 883–892. https://doi.org/10.1016/S2215-0366(20)30308-4 PMID: 32707037
5. Xiong J., Lipsitz O., Nasri F., Lui L. M. W., Gill H., Phan L., et al. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. Journal of Affective Disorders. 277, 55–64. https://doi.org/10.1016/j.jad.2020.08.001 PMID: 32799105
6. Vindegaard N., & Benros M. E. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. Brain, Behavior, and Immunity. 89, 531–542. https://doi.org/10.1016/j.bbi.2020.05.048 PMID: 32485289
7. Chevance A., Gourion D., Hoertel N., Llorca P.-M., Thomas P., Bocher R., et al. (2020). Ensuring mental health care during the SARS-CoV-2 epidemic in France: A narrative review. L’Encephale. 46(3), 193–201. https://doi.org/10.1016/j.encep.2020.04.005 PMID: 32370982
8. González-Blanco L., Dal Santo F., García-Álvarez L., de la Fuente-Tomás L., Moya Lacasa C., Paniagua G., et al. (2020). COVID-19 lockdown in people with severe mental disorders in Spain: Do they have a specific psychological reaction compared with other mental disorders and healthy controls? Schizophrenia Research, 223, 182–198. https://doi.org/10.1016/j.schres.2020.07.018 PMID: 32771308
9. Mergin A., Alié M. C., Rolling J., Ligier F., Schroder C., Lalanne L., et al. (2020). [Psychopathological consequences of confinement]. L’Encephale. https://doi.org/10.1016/j.encep.2020.04.007 PMID: 32370983
10. De Girolamo G., Dagni J., Purcell R., Cocchi A., & McGorry P. D. (2012). Age of onset of mental disorders and use of mental health services: Needs, opportunities and obstacles. Epidemiology and Psychiatric Sciences. https://doi.org/10.1017/s2045796011000746 PMID: 22670412
11. Holmes E. A., O’Connor R. C., Perry V. H., Tracey I., Wessely S., Arseneault L., et al. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: A call for action for mental health science. The Lancet. Psychiatry. 7(6), 547–560. https://doi.org/10.1016/S2215-0366(20)30168-1 PMID: 32304649
12. Yao H., Chen J.-H., & Xu Y.-H. (2020). Patients with mental health disorders in the COVID-19 epidemic. The Lancet. Psychiatry. 7(4), e21. https://doi.org/10.1016/S2215-0366(20)30090-0 PMID: 32199510
13. Seligman MEP (2002). Authentic Happiness: Using the New Positive Psychology to Realise Your Potential For Lasting Fulfilment. New York: Free Press.
14. Haesebaert F., Haesebaert J., Zante E., Franck N. (2020). Who maintains good mental health in a locked-down country? A French nationwide online survey of 11,391 participants. Health & Place, 66, 102440. https://doi.org/10.1016/j.healthplace.2020.102440.
15. Eysenbach G. (2004). Improving the Quality of Web Surveys: The Checklist for Reporting Results of Internet E-Surveys (CHERRIES). Journal of Medical Internet Research. 6(3). https://doi.org/10.2196/jmir.6.3.34 PMID: 15471760
16. Tennant R., Hiller L., Fishwick R., Platt S., Joseph S., Weich S., et al. (2007). The Warwick-Edinburgh Mental Well-being Scale (WEMWBS): Development and UK validation. Health and Quality of Life Outcomes. 5, 63. https://doi.org/10.1186/1477-7525-5-63 PMID: 18042300
17. Trusselard M., Steider D., Duthelle D., Claverie D., Canini F., Fenouillet F., et al. (2016). Validation of the Warwick-Edinburgh Mental Well-Being Scale (WEMWS) in French psychiatric and general populations. Psychiatry Research. 245, 282–290. https://doi.org/10.1016/j.psychres.2016.08.050 PMID: 27565700

18. Xiang Y.-T., Yang Y., Li W., Zhang L., Zhang Q., Cheung T., et al. (2020). Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. The Lancet. Psychiatry. 7(3), 228–229. https://doi.org/10.1016/S2215-0366(20)30046-6 PMID: 32032543

19. Fusar-Poli P., Salazar de Pablo G., De Micheli A., Nieman D. H., Correll C. U., Kessing L. V., et al. (2020). What is good mental health? A scoping review. European Neuropsychopharmacology. 31, 33–46. https://doi.org/10.1016/j.euroneuro.2019.12.105 PMID: 31901337

20. Garcia-Alvarez L., de la Fuente-Tomás L., García-Portilla M. P., Saiz P. A., Lacasa C. M., Dal Santo F., et al. (2020). Early psychological impact of the 2019 coronavirus disease (COVID-19) pandemic and lockdown in a large Spanish sample. Journal of Global Health. 10(2). https://doi.org/10.7189/jogh.10.020505.

21. González-Sanguino C., Ausin B., Castellanos M. A., Saiz J., López-Gómez A., Ugidos C., et al. (2020). Mental health consequences during the initial stage of the 2020 Coronavirus COVID-19 pandemic in Spain. Brain, Behavior, and Immunity. 87, 172–176. https://doi.org/10.1016/j.bbi.2020.05.040 PMID: 32405150

22. Steardo L., & Verkhratsky A. (2020). Psychiatric face of COVID-19. Translational Psychiatry. 10. https://doi.org/10.1038/s41398-020-0694-0 PMID: 32066704

23. Millan M. J., Andrieux A., Bartzokis G., Cadena K., Dazzan P., Fusar-Poli P., et al. (2016). Altering the course of schizophrenia: Progress and perspectives. Nature Reviews. Drug Discovery. 15(7), 485–515. https://doi.org/10.1038/nrd.2016.28 PMID: 26939910

24. Walker W. H., Walton J. C., De Vries A. C., & Nelson R. J. (2020). Circadian rhythm disruption and mental health. Translational Psychiatry. 10. https://doi.org/10.1038/s41398-020-0694-0 PMID: 32066704

25. Eime R. M., Young J. A., Harvey J. T., Charity M. J., & Payne W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: Informing development of a conceptual model of health through sport. The International Journal of Behavioral Nutrition and Physical Activity. 10, 98. https://doi.org/10.1186/s12889-014-0094-5 PMID: 23945179

26. Pascoe M. C., Bailey A. P., Craike M., Carter T., Patten R., Stepto N. K., et al. (2020). Exercise interventions for mental disorders in young people: A scoping review. BMJ Open Sport & Exercise Medicine 6(1), e000678. https://doi.org/10.1136/bmjsem-2019-000678 PMID: 32426161

27. Zhang S. X., Wang Y., Rauch A., & Wei F. (2020). Unprecedented disruption of lives and work: Health, distress and life satisfaction of working adults in China one month into the COVID-19 outbreak. Psychiatry Research. 288, 112958. https://doi.org/10.1016/j.psychres.2020.112958 PMID: 32283450

28. Larson H. J. (2018). The biggest pandemic risk? Viral misinformation. Nature. 562, 309–309. https://doi.org/10.1038/d41586-018-07034-4 PMID: 30327527

29. Shimizu K. (2020). 2019-nCoV, fake news, and racism. Lancet. 395(10225), 685–686. https://doi.org/10.1016/S0140-6736(20)30357-3.

30. Zarocostas J. (2020). How to fight an infodemic. Lancet (London, England), 395(10225), 676. https://doi.org/10.1016/S0140-6736(20)30461-X PMID: 32113495

31. Caleo G., Duncombe J., Jephcott F., Lokee C., Looijen E., et al. (2018). The factors affecting household transmission dynamics and community compliance with Ebola control measures: A mixed-methods study in a rural village in Sierra Leone. BMC Public Health, 18(1), 248. https://doi.org/10.1186/s12889-018-5158-6 PMID: 29439682

32. World Health Organization. (2020). Mental health and psychosocial considerations during the COVID-19 outbreak. World Health Organization. Retrieved from https://www.who.int/publications-detail-redir/SARS-CoV-2 epidemi
data.2020.1.

33. Rolland B., Haesebaert F., Zante E., Benyamina A., Haesebaert J., Franck N. (2020). Global Changes and Factors of Increase in Caloric/Salty Food Intake, Screen Use, and Substance Use During the Early COVID-19 Containment Phase in the General Population in France: Survey Study. JMIR Public Health and Surveillance, 6(3). https://doi.org/10.2196/19630.

34. Bilb M., Paparone P., Kim A. N., Mutalik S., Ernst C. L. (2020). Psychopharmacology of COVID-19. Psychosomatics, 61(5), 411–427. https://doi.org/10.1016/j.psych.2020.05.006 PMID: 32425246

35. Javelot H., Llorca P., Draper D., Fakra E., Hingray C., Meyer G., et al. (2020). [Informations on psychotropic and their adaptations for patients suffering from mental disorders in France during the SARS-CoV-2 epidemic]. L’Encéphale. https://doi.org/10.1016/j.enceph.2020.04.006 PMID: 32376004
36. Vinkers C. H., van Amelsvoort T., Bisson J. I., Branchi I., Cryan J. F., Domschke K., et al. (2020). Stress resilience during the coronavirus pandemic. European Neuropsychopharmacology, 35, 12–16. https://doi.org/10.1016/j.euroneuro.2020.05.003 PMID: 32446705

37. Dillinger R. L., & Kersun J. M. (2020). Caring for caregivers: Understanding and meeting their needs in coping with first episode psychosis. Early Intervention in Psychiatry, 14(5), 528–534. https://doi.org/10.1111/eip.12870 PMID: 31452318

38. Gupta M., & Bowie C. R. (2018). Family cohesion and flexibility in early episode psychosis. Early Intervention in Psychiatry, 12(5), 886–892. https://doi.org/10.1111/eip.12384 PMID: 27601077

39. World Health Organization, Victorian Health Promotion Foundation, & University of Melbourne. (2005). Promoting mental health: Concepts, emerging evidence and practice (Summary Report) Geneva: World Health Organization. Retrieved from https://www.who.int/mental_health/publications/promoting_mh_2005/en/.

40. UNAFAM. (2020). Baromètre UNAFAM (p. 23). Retrieved from https://www.unafam.org/actualites/lunafam-publie-son-premier-barometre-et-libere-les-maux-de-45-millions-de-proches.

41. Ozbay F., Johnson D. C., Dimoulas E., Morgan C. A., Charney D., & Southwick S. (2007). Social support and resilience to stress: from neurobiology to clinical practice. Psychiatry (Edgmont (Pa.: Township)), 4(5), 35–40. PMID: 20806028