



**HAL**  
open science

## Deterioration of mental health and insufficient Covid-19 information among disadvantaged immigrants in the greater Paris area

A. Gosselin, M. Melchior, Séverine Carillon, Flore Gubert, Valéry Ridde, V. Kohou, I. Zoumenou, Jean-Noël Senne, Annabel Desgrées Du Loû

► **To cite this version:**

A. Gosselin, M. Melchior, Séverine Carillon, Flore Gubert, Valéry Ridde, et al.. Deterioration of mental health and insufficient Covid-19 information among disadvantaged immigrants in the greater Paris area. *Journal of Psychosomatic Research*, 2021, 146, 10.1016/j.jpsychores.2021.110504. hal-03616306

**HAL Id: hal-03616306**

<https://hal.science/hal-03616306v1>

Submitted on 9 May 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

**Title: Deterioration of mental health and insufficient Covid-19 information among disadvantaged immigrants in the Greater Paris area**

**Short running head: Deterioration of mental health among disadvantaged immigrants**

**Authors:**

Anne Gosselin<sup>1,2,3</sup>, Maria Melchior<sup>1,2</sup>, Séverine Carillon<sup>3</sup>, Flore Gubert<sup>1,4</sup>, Valéry Ridde<sup>1,3</sup>, Veroska Kohou<sup>5</sup>, Iris Zoumenou<sup>6</sup>, Jean-Noël Senne<sup>4,7</sup>, Annabel Desgrées du Loû<sup>1,3</sup> for the MAKASI Study Group.

1: French Collaborative Institute on Migrations/CNRS, Aubervilliers

2: Pierre Louis Institute of Public Health, ERES, Inserm S1136, Paris

3: CEPED (Université de Paris, IRD, Inserm), Paris

4 : DIAL (Université Paris Dauphine, IRD), Paris

5 : Arcat, Paris

6 : Afrique Avenir, Paris

7 : Université Paris Saclay (RITM)

**Corresponding author** : Anne Gosselin [anne.gosselin@iplesp.upmc.fr](mailto:anne.gosselin@iplesp.upmc.fr)

Hôtel à Projet, Campus Condorcet

8 Cour des Humanités

93200 Aubervilliers

France

The MAKASI Study Group included Annabel Desgrées du Loû, Nicolas Derche, Flore Gubert, Romain Mbiribindi, Maria Melchior (principal investigators), Séverine Carillon, Virginie Comblon, Karna Coulibaly, Angèle Delbe, Jacques Ebongue, Ruth Foundje, Fabienne El Khoury, Charles Gaywahali, Anne Gosselin, Veroska Kohou, France Lert, Jean Lusilu-Voza, Belinda Lutonadio, Yves Nyemeck, Eve Plenel, Patricia Mbiribindi, Thierry Miatti, Jean-Paul Ngueya, Andrainolo Ravalihasy, Valéry Ridde, Jean-Noël Senne, Oumar Sissoko, Corinne Taéron, Faya Tess, Iris Zoumenou.

**Key words** : immigrants ; Covid-19 ; mental health ; social epidemiology; lockdown/containment

**Conflict of interest.** The authors have no conflict of interest to declare.

**Acknowledgements** The Makasi project is funded by the Agence Régionale de Santé Ile-de-France and, the French National Agency of Research on HIV/Aids and Viral Hepatitis (ANRS) and a postdoctoral grant from the French Collaborative Institute on Migrations. The Makasi Covid project is funded by ANR-18-IDEX-001, Université de Paris. The funders had no role in the analysis or interpretation of the data.

**Abstract (218, max 250)**

**Objectives.** The aim of this study is to provide information on changes in mental health among disadvantaged immigrants from Sub-Saharan Africa in the Greater Paris area and their level of information about Covid-19.

**Methods.** Prior to the Covid-19 epidemic, the Makasi community-based cohort followed 850 immigrants from sub-Saharan Africa in the Greater Paris area. Between the 1<sup>st</sup> of April and the 7<sup>th</sup> of June 2020, all participants scheduled for a follow-up survey were systematically included into an additional COVID-19-related wave of data collection (N=100). We compared participants' type of housing, level of food insecurity, work and mental health (PHQ9) before and during the first COVID-19-related lockdown, using paired-Mc Nemar chi-2 tests. We next described their level of information on Covid-19 and policy measures, broken down by sex.

**Results.** Among the 100 participants, 68% had no legal residence permit. Food insecurity was more often reported during lockdown than before (62% vs 52%). 9% of participants had a score indicative of severe depression (PHQ9) before lockdown and 17% afterwards ( $p=0.17$ ). Only 51% knew about the possibility of asymptomatic transmission of the COVID-19 virus.

**Conclusions.** This study brings original information on a hard-to-reach population group. Our results suggest that the lockdown had a detrimental impact on various economic and mental health aspects among disadvantaged migrants residing in the Greater Paris area.

## **Main text (1494, max 1500)**

### **Background**

Immigrants appear to be disproportionately affected by Covid-19 (1). Far from biological mechanisms, many scholars pinpoint the role of socioeconomic factors to explain this disparity and call for collecting evidence (2). In July 2020, the French National Institute of Statistics published a report revealing that the mortality rate was twice as high among immigrants as among natives during the first wave of the COVID-19 epidemic in April and March 2020 (3). Among immigrants from sub-Saharan Africa, excess mortality was estimated at +114%. Although these are all-cause mortality data, there is no doubt that immigrants were more affected by Covid-19. Indeed, a large nationally-representative seroprevalence study showed that immigrants from countries outside EU experienced a higher seroprevalence of Sars-Cov-2 (9.4% versus 4.1% in the non-immigrant population) (4).

However, very little data are available on immigrants' experiences during the epidemic, and even less among immigrants who are undocumented or disadvantaged. Yet undocumented migrants are probably at even greater risk for Covid-19 than other immigrants because of a limited access to healthcare and lack of information (Bhopal 2020). A recent study conducted in Switzerland found poor mental health among undocumented migrants during the COVID-19-related lockdown (5) and a recent meta-analysis underlined that having a lower socio-economic status and experiencing social isolation are risk factors for depression and anxiety during the pandemic (6). Previous qualitative work showed how the fear of the new coronavirus and the fear of being arrested exacerbated by police presence in the public space, as well as global uncertainty regarding livelihood, were major determinants of mental health during the first lockdown (7).

The aim of this study is to provide detailed information on changes in mental health among disadvantaged immigrants from sub-Saharan Africa in the Greater Paris area and their knowledge and level of information about the Covid-19 during lockdown (17<sup>th</sup> March - 12<sup>th</sup> May 2020). The Greater Paris area was one of the regions most affected by the Covid-19. Our main hypotheses were 1) deterioration of mental health and 2) lack of information about Covid-19 due to distance from the healthcare system and public services. Our results can inform public response in case of another epidemic and potential lockdown.

### **Methods**

Prior to the Covid-19 epidemic, the Makasi community-based cohort followed 850 immigrants from sub-Saharan Africa in the Greater Paris area to assess the effectiveness of an intervention aiming to enhance participants' empowerment to reduce sexual risk.

Participants were recruited in the Greater Paris area via outreach activities conducted by the community-based charity Afrique Avenir. They were above 18 years old and met at least one of the following criteria of disadvantage: having unstable housing, being unemployed, having food deprivation, being undocumented, experiencing violence, having no medical insurance, and ignoring where to go to see a doctor. The level of acceptance was 63%, which is rather high for this kind of research among hard-to-reach populations (8,9). If they accepted, a written consent was collected by the outreach team. The research protocol included a baseline quantitative questionnaire assessing participants' living conditions and mental health and two follow-ups at 3 and 6 months (The study is registered in Clinical Trials: NCT04468724) (10). Between the 1<sup>st</sup> of April and the 7<sup>th</sup> of June 2020 (first lockdown in France), all participants who had a follow-up were systematically included in an additional COVID-19-related wave of data collection (N=100). The follow-up and additional data collection were conducted by telephone and included questions on health literacy and Covid-19-related knowledge. It should be noted that prior to the lockdown, some follow-ups were already made by phone if a person could not come to the interview. Therefore, we were able to compare participants' social and family situation, isolation and mental health during the lockdown and three months before.

We described the study population according to sociodemographic characteristics. We compared the type of housing, food insecurity, employment and mental health (PHQ9) before and during the lockdown, using paired-Mc Nemar chi-2 tests. We then described the level of information on the Covid-19 epidemic.

### **Ethical approvals**

The MAKASI study was approved both by the Comité de Protection des Personnes Sud-Ouest et Outre-Mer (ID RCB 2018-A02129-46) and by the CNIL (Commission Nationale Informatique et Libertés), n°2215270 in France.

### **Results**

The population recruited in the Makasi study mostly includes undocumented migrants hosted by their social network. Among the 100 study participants recruited before March 2020 and interviewed by telephone during the lockdown, 79% were men, 68% had no legal residence permit and 40% had no health insurance before lockdown (Table 1). The majority came from a Western African country, and 43% arrived in France because of risks to their safety in their country of origin. Although one quarter of participants had been in France for less than a year, the sample also comprises persons living in France for 7 years and more (7%).

Food insecurity was more often reported during lockdown (62% vs 52% before lockdown,  $p < 0.24$ ) (Table 2) and 61% of participants reported that they had more difficulty getting what to eat. Besides, fewer participants reported living on the street during lockdown (5% vs 15% before lockdown) and a higher proportion were hosted by friends or acquaintances (66% vs 50%,  $p < 0.09$ ). However, 61% of participants reported that they had no personal space to sleep during the lockdown. Participants' mental health worsened during lockdown. Indeed, the proportion of the sample suffering from depression was 72% (vs. 65% before), and 17% of participants had a score indicative of severe depression (PHQ9) (vs. 9% before lockdown,  $p < 0.17$ ).

Regarding their professional activity (in the formal or informal sector), only 38% of participants had a job before lockdown. Among them, 82% lost their job. Those who kept their job were mainly working in frontline jobs such as delivery persons, home helpers, supermarket logistics and construction (data not shown).

Participants' level of knowledge of the Covid-19 appeared insufficient: 17% of the respondents reported that they did not know what to do in case of Covid-19 symptoms, and only 51% knew about the possibility of an asymptomatic transmission of the virus (Supplemental Material 1). Additionally, few participants had a precise knowledge of the specific policy measures implemented by the government: only 45% and 24% of them knew that the validity of all residence permits and the State Medical Aid (health insurance for undocumented persons) had been extended. Overall, 30% stated that they did not receive sufficient information from the authorities concerning the epidemic. Finally, regarding strategies to preserve one's health, the majority of participants mentioned barrier measures (masks, hand washing, physical distancing), which is in line with qualitative evidence showing a strict respect of barrier measures and lockdown instructions in this population (7).

## **Discussion**

This study brings original information on the impact of the COVID-19 epidemic on a hard-to-reach population. Our results suggest that the lockdown had a detrimental impact on various economic and mental health aspects among disadvantaged immigrants residing in the Greater Paris area. Moreover, their level of information on Covid-19 was insufficient. First, the sanitary crisis worsened their professional and financial situation which was already critical prior to the epidemic. Second, though mental health outcomes have deteriorated during lockdown in the general population of France, the level of depression found in Makasi (72%) was still more than three times higher than the highest proportion of depression measured in France during the same period (20.4%) (11).

Additionally, it is likely that overcrowded housing and working conditions in frontline jobs have resulted in greater risk of Covid-19 exposure, whereas economic hardship and deteriorated mental

health may have decreased individuals' access to healthcare, even in case of Covid-19 symptoms. Thus disadvantaged immigrants are at higher risk of Covid-19 infection and delayed access to healthcare (12). While strongly exposed to the disease, they did not have sufficient information about the epidemic and policy measures, even if some information campaigns were launched in France to address the specific needs of this population (13). More research is therefore needed to better understand what kind of interventions could be effective in conveying prevention messages to disadvantaged immigrants.

The main limitation of our study is its moderate sample size, which restricts the statistical analyses and inference, and calls for caution in the interpretation of the results.

However, our study focusing on a sub-sample of disadvantaged immigrants, still provides a useful insight into their specific difficulties during lockdown. The follow-up during lockdown was a unique opportunity to document its impact on such a population which is often not represented in official statistics. In France, a large population survey revealed that the COVID-19-related lockdown worsened the financial situation of 39% of immigrants from non-EU countries. However, this study did not include undocumented immigrants (14). NGOs have also reported the situation of undocumented immigrants placed in emergency shelters during lockdown (15) (16). Yet our study shows how the lockdown has impacted immigrants who are invisible in most studies, i.e. those who are hosted by relatives or friends and who have no legal residence status.

## **Conclusion**

Although information campaigns have been specifically designed in France to inform immigrants, our results clearly indicate that more needs to be done to reach-out the most disadvantaged ones. In particular, community-based approaches (17) could be key to develop multilingual, community-based information campaigns and interventions regarding prevention, access to healthcare, vaccination, and social support during the pandemic.

Temporary citizenship could greatly improve the situation of undocumented immigrants in France, facilitating their access to public social services and healthcare (18); unfortunately it seems that we are witnessing a restriction of immigrants' access to healthcare in France, through new limitations of the State Medical Aid and digitalization of all administrative procedures (19,20).

**Ethical statement**

This project was approved both by the CNIL (Commission Nationale Informatique et Libertés), n°2215270 and by the Comité de Protection des Personnes Sud-Ouest et Outre-Mer (ID RCB 2018-A02129-46).



## References

1. Public Health England. Disparities in the risk and outcomes of COVID-19 [Internet]. 2020 [cité 9 sept 2020]. Disponible sur: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/908434/Disparities\\_in\\_the\\_risk\\_and\\_outcomes\\_of\\_COVID\\_August\\_2020\\_update.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/908434/Disparities_in_the_risk_and_outcomes_of_COVID_August_2020_update.pdf)
2. Bhala N, Curry G, Martineau AR, Agyemang C, Bhopal R. Sharpening the global focus on ethnicity and race in the time of COVID-19. *The Lancet* [Internet]. 8 mai 2020 [cité 11 mai 2020];0(0). Disponible sur: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31102-8/abstract](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31102-8/abstract)
3. Papon S, Robert-Bobée I. Une hausse des décès deux fois plus forte pour les personnes nées à l'étranger que pour celles nées en France en mars-avril 2020 [Internet]. *Insee Focus* n°198; 2020. Disponible sur: <https://www.insee.fr/fr/statistiques/4627049>
4. Warzawski J, Bajos N, Meyer L, de Lamballerie X, Seng R, Beaumont A-L, et al. En mai 2020, 4,5 % de la population en France métropolitaine a développé des anticorps contre le SARS-CoV-2 Premiers résultats de l'enquête nationale EpiCov [Internet]. *DREES*; 2020 oct [cité 13 oct 2020]. Report No.: 1167. Disponible sur: <https://drees.solidarites-sante.gouv.fr/etudes-et-statistiques/publications/etudes-et-resultats/article/en-mai-2020-4-5-de-la-population-vivant-en-france-metropolitaine-a-developpe>
5. Burton-Jeangros C, Duvoisin A, Lachat S, Consoli L, Fakhoury J, Jackson Y. The Impact of the Covid-19 Pandemic and the Lockdown on the Health and Living Conditions of Undocumented Migrants and Migrants Undergoing Legal Status Regularization. *Front Public Health* [Internet]. 2020 [cité 16 déc 2020];8. Disponible sur: [https://www.frontiersin.org/articles/10.3389/fpubh.2020.596887/full?utm\\_source=Email\\_to\\_authors&utm\\_medium=Email&utm\\_content=T1\\_11.5e1\\_author&utm\\_campaign=Email\\_publication&field=&journalName=Frontiers\\_in\\_Public\\_Health&id=596887](https://www.frontiersin.org/articles/10.3389/fpubh.2020.596887/full?utm_source=Email_to_authors&utm_medium=Email&utm_content=T1_11.5e1_author&utm_campaign=Email_publication&field=&journalName=Frontiers_in_Public_Health&id=596887)
6. Luo M, Guo L, Yu M, Jiang W, Wang H. The psychological and mental impact of coronavirus disease 2019 (COVID-19) on medical staff and general public – A systematic review and meta-analysis. *Psychiatry Res.* sept 2020;291:113190.
7. Carillon S, Gosselin A, Coulibaly K, Ridde V, Desgrées du Loû A. Immigrants facing Covid 19 containment in France : An ordinary hardship of disaffiliation. *Journal of Migration and Health.* 1 janv 2020;1-2:100032.
8. Lydié N, éditeur. *Les populations africaines d'Ile-de-France face au VIH/sida, Connaissances, attitudes, croyances et comportements.* Editions Inpes. 2007. (Etudes Santé).
9. Bonevski B, Randell M, Paul C, Chapman K, Twyman L, Bryant J, et al. Reaching the hard-to-reach: a systematic review of strategies for improving health and medical research with socially disadvantaged groups. *BMC Med Res Methodol.* 25 mars 2014;14:42.
10. for the MAKASI Study Group, Gosselin A, Carillon S, Coulibaly K, Ridde V, Taéron C, et al. Participatory development and pilot testing of the Makasi intervention: a community-based outreach intervention to improve sub-Saharan and Caribbean immigrants' empowerment in sexual health. *BMC Public Health.* déc 2019;19(1):1646.

11. Santé Publique France. Covid-19 : une enquête pour suivre l'évolution des comportements et de la santé mentale pendant l'épidémie [Internet]. 2020 [cité 9 sept 2020]. Disponible sur: <https://www.santepubliquefrance.fr/etudes-et-enquetes/covid-19-une-enquete-pour-suivre-l-evolution-des-comportements-et-de-la-sante-mentale-pendant-l-epidemie>
12. Winters M, Rechel B, de Jong L, Pavlova M. A systematic review on the use of healthcare services by undocumented migrants in Europe. *BMC Health Serv Res.* 18 2018;18(1):30.
13. Coronavirus : santé et droits - langue étrangère [Internet]. Youtube. Disponible sur: [https://www.youtube.com/playlist?list=PL9\\_lfFWdutwtW6o3VUcFTXLgLEEDZBpxW](https://www.youtube.com/playlist?list=PL9_lfFWdutwtW6o3VUcFTXLgLEEDZBpxW)
14. Bajos N, Warszawski J, Pailhé A, Counil E, Jusot F, Spire A, et al. Les inégalités sociales au temps du COVID-19 [Internet]. IRESP; 2020 oct [cité 13 oct 2020]. Report No.: 40. Disponible sur: [https://www.iresp.net/wp-content/uploads/2020/10/IReSP\\_QSP40.web\\_.pdf](https://www.iresp.net/wp-content/uploads/2020/10/IReSP_QSP40.web_.pdf)
15. Médecins Sans Frontières. Covid-19: High seroprevalence of antibodies among people living in precarious situations in île-de-France | Epicentre [Internet]. 2020 [cité 13 oct 2020]. Disponible sur: <https://epicentre.msf.org/en/actualites/sars-cov-2-forte-seroprevalence-des-anticorps-chez-les-pr%C3%A9caires>
16. Longchamps C, Ducarroz S, Crouzet L, El Aarbaoui T, Allaire C, Colleville A-C, et al. Knowledge, attitudes, practices and impact of covid-19 among persons living in homeless shelters in france: first results of the ECHO study. *Bulletin Epidémiologique Hebdomadaire* [Internet]. 2021;(1). Disponible sur: <https://www.santepubliquefrance.fr/maladies-et-traumatismes/maladies-et-infections-respiratoires/infection-a-coronavirus/documents/article/connaissances-attitudes-et-pratiques-liees-a-l-epidemie-de-covid-19-et-son-impact-chez-les-personnes-en-situation-de-precarite-vivant-en-centre-d>
17. Cleveland J, Hanley J, Jaimes A, Wolofsky T. Impacts de la crise de la covid-19 sur les « communautés culturelles » montréalaises Enquête sur les facteurs socioculturels et structurels affectant les groupes vulnérables [Internet]. Institut universitaire SHERPA; 2020. Disponible sur: [https://sherpa-recherche.com/wp-content/uploads/impact\\_covid19\\_communautes\\_culturelles.pdf](https://sherpa-recherche.com/wp-content/uploads/impact_covid19_communautes_culturelles.pdf)
18. Bhopal RS. COVID-19: immense necessity and challenges in meeting the needs of minorities, especially asylum seekers and undocumented migrants. *Public Health* [Internet]. 15 avr 2020 [cité 16 avr 2020]; Disponible sur: <http://www.sciencedirect.com/science/article/pii/S0033350620301153>
19. Observatoire du Droit à la Santé des Etrangers (ODSE). La fin de la trêve dans l'accès aux soins [Internet]. Observatoire du droit à la santé des étrangers. 2021 [cité 19 mars 2021]. Disponible sur: <https://www.odse.eu.org/spip.php?article223>
20. Cimade. Dématérialisation des demandes de titre de séjour : de quoi parle-t-on ? [Internet]. La Cimade. 2021 [cité 19 mars 2021]. Disponible sur: <https://www.lacimade.org/dematérialisation-des-demandes-de-titre-de-sejour-de-quoi-parle-t-on/>

## Tables and figures

**Table 1. Sociodemographic characteristics of disadvantaged immigrants, MAKASI project, April-June 2020**

|   | TOTAL<br>N=100 |
|---|----------------|
| <b>Sex</b>                                  |                |
| Men   | 79%            |
| Women                                       | 21%            |
| <b>Age</b>                                  |                |
| 19-29                                       | 34%            |
| 30-39                                       | 39%            |
| 40+   | 27%            |
| <b>Region of birth</b>                      |                |
| West Africa                                 | 54%            |
| Central Africa                              | 41%            |
| Eastern and Southern Africa                 | 4%             |
| Missing                                     | 1%             |
| <b>Reason for coming to France</b>          |                |
| Find work, try one's luck                   | 37%            |
| Join a family member                        | 10%            |
| Threatened in his/her country               | 43%            |
| Studies                                     | 5%             |
| Medical reasons                             | 3%             |
| Others                                      | 2%             |
| <b>Level of education</b>                   |                |
| None/Primary                                | 27%            |
| Secondary                                   | 57%            |
| Superior                                    | 16%            |
| <b>Length of stay in France</b>             |                |
| First year                                  | 24%            |
| Second year                                 | 19%            |
| Third year                                  | 15%            |
| 3-6 years                                   | 34%            |
| 7 years and more                            | 7%             |
| Missing                                     | 1%             |
| <b>Has a stable partner before lockdown</b> | 47%            |
| <b>Has children before lockdown</b>         | 62%            |
| <b>Legal status before lockdown</b>         |                |
| Undocumented                                | 68%            |
| Permits <1 year (incl. asylum seekers)      | 22%            |
| Permits ≥1 year                             | 3%             |
| 10-y residency permit or French nationality | 7%             |
| <b>Health insurance before lockdown</b>     |                |

|  |     |
|--|-----|
| None   | 40% |
| State Medical Aid (for undocumented persons)       | 22% |
| Basic health insurance                             | 23% |
| Basic health insurance and complementary insurance | 9%  |
| In the process of renewing health insurance        | 6%  |

**Table 2. Comparison of social situation before and during lockdown among disadvantaged immigrants, MAKASI project, April-June 2020**

|   | BEFORE<br>LOCKDOWN | DURING<br>LOCKDOWN | p*          |
|---|--------------------|--------------------|-------------|
| <b>Stable housing</b>   |                    |                    |             |
| Yes   | 23%                | 18%                | 0.42        |
| No  | 77%                | 82%                |             |
| <b>Type of housing</b>  |                    |                    |             |
| Personal dwelling   | 23%                | 16%                | <b>0.09</b> |
| Hosted by family/friends, ...   | 50%                | 66%                |             |
| Hosted by a charity   | 11%                | 13%                |             |
| Nowhere to go/street  | 15%                | 5%                 |             |
| <b>Has spent at least a day without eating in the preceding month for lack of money</b> |                    |                    |             |
| Yes   | 52%                | 62%                | 0.24        |
| No  | 48%                | 38%                |             |
| <b>Mental Health (PHQ9) :</b>   |                    |                    |             |
| Absence of significant depression symptoms of depression (score PHQ9 : 0-9)             | 35%                | 28%                | 0.32        |
| Presence of significant symptoms of depression (score PHQ9 10 and more)                 | 65%                | 72%                |             |
| <b>Severe depression (score PHQ9 :20 - 27)</b>  | 9%                 | 17%                | <b>0.17</b> |

*\* paired McNemar chi2 tests comparing distributions before and during lockdown*