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Inequalities in the Risk of Onset of Psychological Distress During the Lockdown Linked to the Covid-19 Outbreak

First Results of the COCLICO Survey Conducted between 3 and 14 April 2020

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France is undergoing an unprecedented health crisis, linked to the Covid-19 epidemic, which led to a lockdown for the entire population. Yet, this measure has certainly had an impact on people's health, and in particular their mental health. The aim of this study is to determine the extent of psychological distress experienced by the French population during the initial phases of the lockdown, and to pinpoint the associated factors in order to identify vulnerable populations that require support. A first Internet survey was conducted between 3 and 14 April 2020, aimed at a sample of persons aged 18 or over, representative of the French population living in a standard household in mainland France. Psychological distress was observed in one third of the respondents. Although exposure to the virus was a risk factor, the conditions and consequences of the lockdown seem to have had the greatest impact. Some categories of the population most at risk were identified, in particular women, persons living with a chronic disorder, those with poor social support, those confined in over-crowded housing, and those whose financial situation had worsened. These results support the development of targeted measures to help these populations, whether to facilitate their access to mental healthcare or to attenuate the social and economic impacts of further lockdown measures if they were to become a necessity once again.

Since the end of January 2020 and the emergence of the first cases of infection by Covid-19, France has faced an unprecedented health crisis, with an exponential increase in the number of cases and deaths and a risk of saturation of the hospital system. This situation led to the implementation of measures to reduce the impact of the crisis, including the proclamation of a national pub-

lic health emergency and a lockdown for the entire population between 17 March and 11 May 2020. In this context, recommendations were widely diffused to guarantee effective social distancing. Any journeys that were not indispensable for a person's work, purchases of basic necessities, pressing family matters, or limited individual physical activities were forbidden. In parallel, all schools and businesses

considered non-essential were closed. But these measures may have an impact on the health of the population and its follow-up — aside from the risk of infection linked to Covid-19. Preliminary evidence drawn from previous epidemic crises (Ebola or Sars, in particular) attests to a link between the isolation of individuals, whether in their homes or in quarantine centres, and psychological distress. These

SOURCE AND METHOD

Survey and sampling method

The results presented originate from a first Internet survey wave conducted in the French general population. The chosen method of diffusion aimed to obtain a panel of respondents who were representative of this population. Given the increasing number of surveys relating to the effects of lockdown, a multidisciplinary consortium of international researchers in the field of mental health recommended this diffusion method (Holmes et al., 2020). In the framework of the COCLICO project, it was aimed at selected persons ($n=20,960$) who were asked to respond to the European Health Interview Survey (Enquête Santé Européenne, EHIS) (irdes.fr/ehis), a survey conducted by the ministry of Health's Directorate of Research, Study, Evaluation and Statistics (Direction de la Recherche, des Études, de l'Évaluation et des Statistiques, DREES), with the participation of the Institute for Research and Information in Health Economics (Institut de Recherche et Documentation en Économie de la Santé, IRDES) and the company Kantar for the implementation of the survey in the field in 2019. EHIS is the reference public statistics survey for health, healthcare access and coverage in France, whose preliminary results will be published at the end of 2020. The survey's sampling frame is representative of the population of persons in mainland France living in general households (excluding institutions). The weighting of the population of respondents in Wave 1 of the COCLICO survey was based on the survey weights of the sample from EHIS corrected via a calibration that reproduced the distributions of the general population relating to gender, age, and educational levels. All the results presented in this article are based on weighted data.

General content of the questionnaire

An online questionnaire lasting around twenty minutes was sent to the persons in the sampling frame used. It was based on the use of standardised measurement instruments, particularly for psychological distress and social support, as well as ad hoc questions to better assess exposure and vulnerability to the Covid-19 epidemic, the social conditions of the lockdown, and changes in the socio-economic situation and leisure activities.

Measure of psychological distress

The measurement of psychological distress was based on the General Health Questionnaire comprising 12 items (GHQ-12), whose use was validated in the general population (Lundin et al., 2016). This questionnaire assessed the severity of non-specific psychological distress manifestations in the respondent (in this case, over the previous seven days leading up to the point when he or she completed the questionnaire) compared with their usual state. Therefore, it assessed the onset of psychological distress in the short-term based on the identification of recent functional difficulties or alarming signs. Hence, this questionnaire may be used reactively in a situation of crisis, such as that linked to the Covid-19 epidemic, without adopting a psychopathological approach when the questionnaire concerns such a brief period. It comprises 12 complementary questions (ability to concentrate, losing sleep, feeling like playing a useful part, capable of making decisions, constantly under strain, unable to overcome difficulties, able to enjoy normal day-to-day activities, able to face up to problems, unhappy or depressed, losing confidence in oneself, thinking of oneself as a worthless person, reasonably happy all things considered). Four kinds of answer are suggested for each question, formulated positively

("not at all"; "no more than usual"; "rather more than usual"; and "much more than usual") or negatively ("more than usual"; "same as usual"; "rather less than usual"; and "much less than usual"). There are several methods available to obtain scoring and to interpret the global score generated. We opted for the standard method, which is the most common one and in which the items are dichotomised (0-0-1-1), as well as the thresholds most often used with this scoring method: a global score of 0 to 3 indicated an absence of onset of psychological distress, while a score of 4 or more indicated the onset of psychological distress (a score higher than 8 indicating the onset of severe psychological distress).

Measures of social connections

To assess perceived social connections during the lockdown period, two synthetic measurements drawn from the international literature were applied. The measurement of social support was based on the Oslo Social Support Scale (OSSS-3), recommended for use in the general population (Kocalevent et al., 2018). This scale is based on three complementary questions that relate to the immediate period. The respondents were questioned about the number of persons close to them and on who they can count in case of great personal problems (4 graded responses with a score ranging from 1 to 4: "none", "1 or 2", "3 to 5", "6 or more"), the interest people close to them show in what they are doing (5 graded responses with a score ranging from 1 to 5: 'none', 'little', 'uncertain', 'some', 'a lot'), and the easiness to get practical help from neighbours when needed (5 graded responses with a score ranging from 1 to 5: 'very difficult', 'difficult', 'possible', 'easy', 'very easy'). Hence, a global score that can vary between 3 to 14 is obtained. A score of 3 to 8 indicates poor social support, a score of 9 to 11 moderate social support, and a score of 12 to 14 strong social support.

We also measured social isolation using the three-item loneliness scale, recommended for use in large surveys, which questions the frequency of the feeling of lacking companionship, feeling left out and feeling isolated from others. Four answers were suggested for each of these questions ("never"; "occasionally"; "quite often"; and "very often") with a score ranging from 1 to 4. A global score, used continuously and increasing with the level of loneliness felt, was then calculated (Hughes et al., 2004).

Analysis

We initially carried out descriptive analyses of the onset of psychological distress amongst the respondents, and of its most significantly impacted dimensions during the lockdown period. We then identified the link between the onset of psychological distress and the three major types of factor on which we placed strong association hypotheses (factors linked to the vulnerability to the epidemic, the lockdown conditions, and its practical consequences). In order to assess these associations, all things being equal, we carried out a logistical regression in which the onset or absence of psychological distress during the lockdown was introduced as a binary dependent variable. All of the associated potential factors considered were introduced simultaneously, as a result of our research hypotheses, as explanatory variables after prior verification of their correlations. The strength of the associations after adjustment was expressed by the adjusted odds ratio (OR) and its 95% confidence interval (95%CI). The statistical significance of the associations was confirmed by a p-value lower than 0.05.

effects also seem to be exacerbated by the length of time the individual is isolated (Brooks et al., 2020). As the duration of the lockdown and the extent of the associated restrictions linked to the Covid-19 were unprecedented, it can be hypothesized to be associated with a risk of onset of psychological distress in the French population, supported by an increase in the demand for treatments related to stress, anxiety, or depressive disorders in primary care during the lockdown (Monziols et al., 2020). It is important, however, to take into account the health crisis context and the associated economic crisis, which may also have had a significant impact on mental health.

Hence, several major types of factor may be linked to the onset of psychological distress during the lockdown, linked in particular to vulnerabilities related to the individual's health or social and economic conditions, either pre-existing or resulting from the crisis. Firstly, in an epidemic context of this magnitude, one must take into account the fact that exposure or physiological vulnerability to the Covid-19 epidemic is likely to cause significant distress (Pfefferbaum and North, 2020). Nevertheless, this psychological distress may be attenuated by lockdown measures that could limit the feeling of vulnerability to the epidemic. However, the reduction in social interactions outside the household — with a possible aggravation of situations of isolation and an increase in time spent with the other persons living in the household — may have led to a decrease in the social support the individuals usually receive. Yet, this social support plays a protective role with regard to mental health (Rohde et al., 2016) that lockdown measures may have restricted. Likewise, by confining people to their homes, the lockdown may have exacerbated the link between poor living conditions and psychological distress, aggravating pre-existing inequalities (Pevalin et al., 2017). Lastly, the lockdown has had a significant impact on daily activities, particularly with regard to eventual changes in professional activities (termination of contracts, furlough or partial unemployment, sick leave or leave to care for children, mandatory holiday leave, etc.) and households' financial situations, which are likely to have an impact on mental health (Le Clainche and Lengagne, 2019). The restriction of leisure activities

may also have played a role, as it may have had a different impact on individuals who habitually have limited social or outdoor leisure activities in normal times.

In this context, and to provide scientific evidence to confirm these hypotheses, this study aims at determining the extent of the onset of psychological distress in the French population during the first stages of the lockdown, and at identifying the associated factors to determine categories of individuals which require particular attention. The factors explored, based on the hypotheses outlined above, include factors linked to the health crisis (exposure or physiological vulnerability to the virus), whose impact on psychological distress may be modified by the lockdown, as well as factors directly linked to the lockdown measures (the lockdown's social conditions) and to their practical consequences

(changes in the socio-economic situation and leisure activities) [see "Source and Method" inset].

The onset of psychological distress was experienced by one third of the respondents during the lockdown

The onset of psychological distress was observed in 33% of the respondents, 12% of whom manifested severe forms of distress (see "Source and Method" inset). In particular, there was an aggravation in problems relating to tension, stress, sleep, and concentration, and the feeling of being unhappy or depressed (Graph 1).

Vulnerability to the epidemic does not appear to have been the main determinant of the onset of psychological distress during the lockdown

Exposure to Covid 19, quantified by a continuous synthetic measurement attributing a score of 1 for any proven infection by the virus (confirmed by a test or medical diagnosis), any possible infection by the virus

(presence of symptoms, but without a test or medical diagnosis), and any professional activity exposing the respondent, a relative living in his/her household, or a relative living outside his/her household, was linked with a higher risk of onset of psychological distress during the lockdown (Table 1), which, all things being equal, persisted (Graph 2). However, the low numbers of persons who declared they were in each of these categories did not enable to distinguish the actual effect of the different types of exposure studied.

The factors of vulnerability to a severe form of Covid-19 infection, linked to being older or male, were not linked to an increased risk of onset of psychological distress during the lockdown. Age was not significantly linked with this risk after adjustment on other factors, while women had a higher risk than men, with a more marked impact than that observed for proven or possible exposure to the virus (Graph 2). This may be explained by a number of elements. On the one hand, the lockdown may have had a protective effect on the populations most at risk of a severe infection by limiting their sense of exposure to the virus. On the other hand, the conditions and consequences of the lockdown might have played a more significant role in the risk of onset of psychological distress. The everyday activities of older persons may have been less affected than

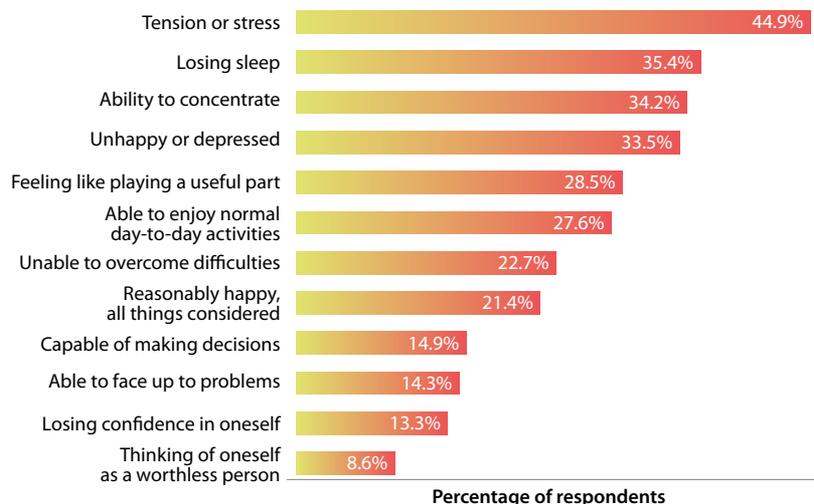
CONTEXT



This study constitutes the first phase of the project entitled Coronavirus Containment Policies and Impact on the Population's Mental Health (COCLICO), which aimed to assess the effects of the lockdown on mental health, associated factors, and their development over time. As the project progressed, the associated factors studied, in particular the problems of access to and the use of healthcare services during the lockdown, also became research subjects in their own right. To address these research areas, the COCLICO project used reactive data collection tools via the diffusion of Internet surveys aimed at the general population, comprising adults living in mainland France in general households, in three waves (Wave 1, between 3 and 14 April 2020, focused on mental health and associated factors; Wave 2, between 27 April and 6 May 2020, focused on access to healthcare and the socio-economic changes in households; and Wave 3, between 22 June and 30 June 2020, focused on mental health and associated factors). The COCLICO project also includes a specific section for persons living with a chronic disease or disability, in order to document the specific difficulties they experienced during the lockdown. This section was based on a single survey wave, addressed to a social network of patients (Carenity) and associations of service users. Lastly, it includes an international perspective as it is a French adaptation of a similar survey conducted in Belgium by the Catholic University of Louvain (Leuven)—run by Professor Vincent Lorant—and was integrated into the international network, Covid-Minds Network (www.covidminds.org).
For further information: www.irdes.fr/coclico

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Percentage of respondents experiencing more difficulties than usual with regard to the various aspects measured by the GHQ-12



Scope: Adults who completed the questionnaire (n=3,200), living in general households in mainland France.

Source: COCLICO survey in the general population, Wave 1, conducted between 3 and 14 April 2020.

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Psychological distress per category of respondents during the lockdown

Characteristics of the respondents	Population in psychological distress	
	Number	% of the total number
Gender		
Male	400	26.3
Female	643	38.4
Age category		
18 to 24 yrs	88	32.0
25 to 34 yrs	211	38.3
35 to 44 yrs	201	37.0
45 to 54 yrs	164	33.2
55 to 64 yrs	185	33.5
65 yrs and over	197	25.1
Score of proven or possible exposure to Covid-19		
Score not null	657	34.9
Score null	378	29.1
Presence of a chronic disorder		
Yes	386	36.7
No	622	30.6
Consultation with a mental health professional over the previous twelve months		
Yes	174	51.7
No	849	30.2
Social support		
Poor	367	46.2
Moderate	553	30.9
Strong	117	20.0
Loneliness scale score		
3 to 5	424	21.6
5 to 12	648	54.3
Number of persons in the household during lockdown		
1	235	35.0
2	326	30.3
3	192	32.5
4 and over	269	33.8
Not living with the same number of persons as usual during the lockdown		
Yes	198	34.3
No	824	32.2
Number of square metres per occupant in the household during the lockdown period		
3 to 27 m ²	280	39.7
27 to 40 m ²	284	34.8
40 to 60 m ²	214	28.8
60 to 400 m ²	165	27.2
Changes in the employment situation during the lockdown period		
Unemployment (termination of contract, furlough, or partial unemployment)	171	34.2
Interruption in employment (for sickness or childcare) or mandatory holiday leave	114	39.7
No change in the employment situation (including persons who were not working prior to the lockdown)	249	30.1
Household's financial situation during the lockdown period		
Worse	355	47.5
Unchanged or improved	630	27.8
Daily time spent on social networks during the lockdown period		
0 to 1 hour	120	23.3
1 to 3 hours	323	28.1
3 to 6 hours	393	39.5
6 hours and over	192	40.7
Continuation of leisure activities score		
-13 to -5	398	38.0
-5 to -4	135	33.4
-4 to -2	259	32.6
-2.4 and over	138	26.8

Note: The respondents were given the option of refusing to answer certain questions, so the total number of respondents to the questions presented in this study is not always equal to the total number of respondents.

Scope: Adults who completed the questionnaire (n=3,200), living in general households in mainland France.

Source: COCLICO survey in the general population, Wave 1, conducted between 3 and 14 April 2020.

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those of the active population, while new domestic activities resulting from the lockdown (such as increase in housework and looking after children who were no longer in school) may have been performed more by women.

The declaration of a chronic health problem, whatever it is, is linked to an increased risk of onset of psychological distress during the lockdown (Table 1), which persists even after adjustment on other factors (Graph 2). Nevertheless, the possible perception of a higher probability of severe infection by the Covid-19 due to an individual's poor state of health is not the only factor that could lead to an increase in the onset of psychological distress in this population. As pointed out by health professionals, some individuals living with chronic disorders were worried about not being able to access intensive care and resuscitation units in the event of infection by Covid-19 due to their other conditions. A reduction in the use of healthcare for their chronic condition during the lockdown, whether linked to factors related to individuals (fear of being contaminated by the virus, fear of bothering the health professionals involved in dealing with the epidemic, etc.) or to the healthcare system (closure of structures, cancellation or putting off consultations to a later date) may also have played a role. These hypotheses will be further explored by using the data from the second wave of the COCLICO survey in the general population and the specific phase concerning persons living with a chronic disease or a disability, which document more specifically the problems related to healthcare access during the lockdown.

Aside from factors of vulnerability to Covid-19 infection, the health crisis may also aggravate pre-existing vulnerabilities relating to an individual's mental health state. These vulnerabilities may reduce the mental resources required to cope with an exceptional event and be exacerbated by the lockdown measures. A greater probability of psychological distress was observed amongst persons who had received mental healthcare treatment in the preceding twelve months and women (Table 1 and Graph 2), who are particularly affected by anxiety and depressive episodes outside crisis situations (Pisarik et al., 2017).

Poor social support was significantly associated with the onset of psychological distress, independently of the household's composition

Psychological distress was experienced more frequently by individuals with poor or moderate social support than by those with strong social support during the lockdown (Table 1). The adjustment, all things being equal, confirmed the existence of a risk of onset of psychological distress that was sig-

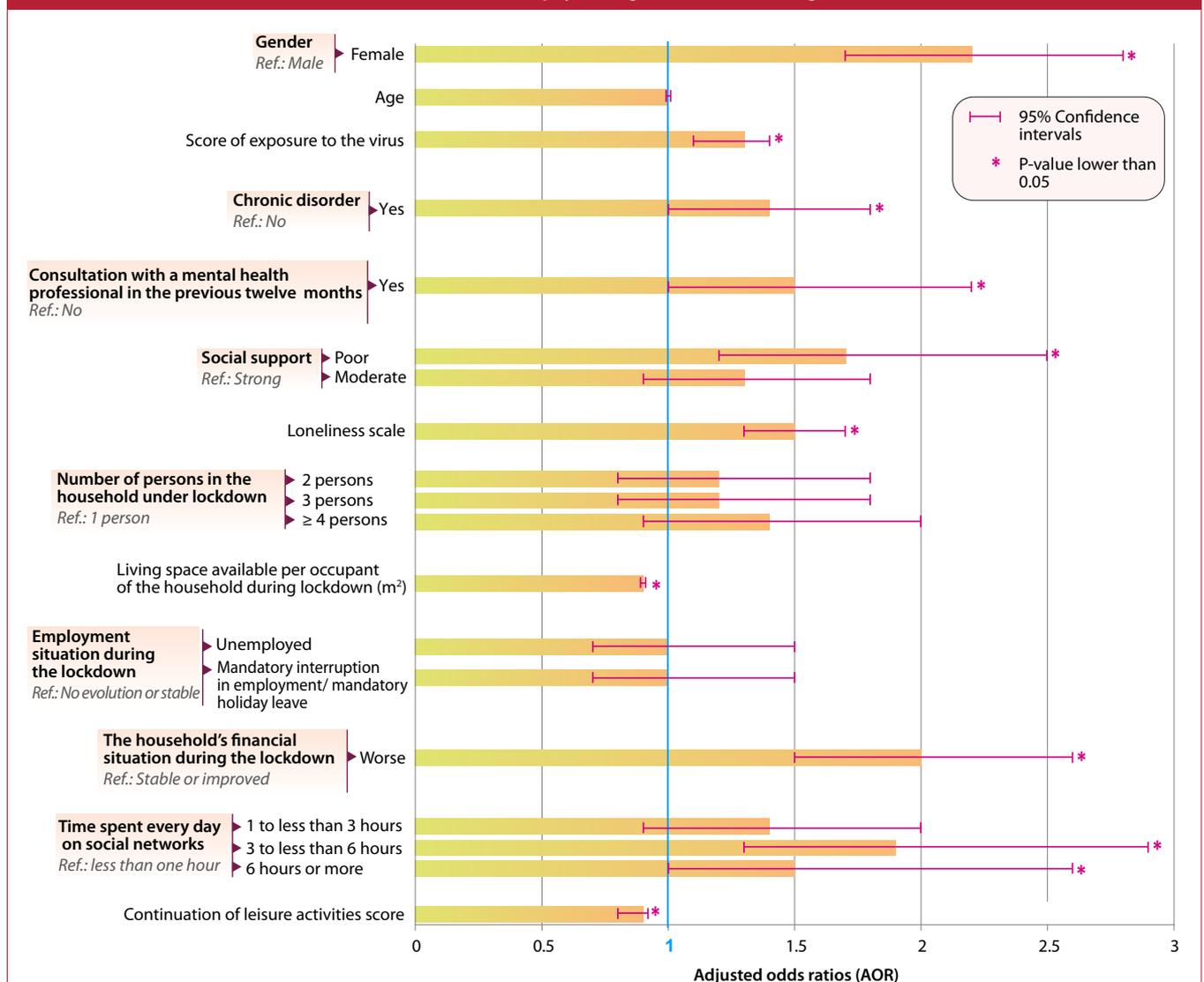
nificantly higher amongst individuals who had the poorest social support in comparison with those with the strongest social support (Graph 2). These results were also confirmed when we considered the loneliness scale score. Hence, its increase was linked with a higher risk of onset of psychological distress during the lockdown, which persisted after adjustment on other factors (Table 1 and Graph 2).

Overall, social support seemed to play a more significant role in the onset of psychological distress during the lockdown

than the composition of the household. No significant association was observed between a specific recomposition of the household during the lockdown (for example family groupings) and the risk of onset of psychological distress after adjustment on other factors. Likewise, the number of persons living in the household was not significantly associated with this risk, all things being equal, and, in particular, after taking into account the number of square metres available per occupant of the household during the lockdown. This factor was significantly associated with an increased

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Factors linked to the onset of psychological distress during the lockdown



Note: All the explicatory variables introduced into the model are presented. The adjusted odds ratio (AOR) reflects the strength of the link between the onset of psychological distress and each factor considered after adjustment on other factors potentially linked with this distress. An AOR equal to 1 (or whose 95%CI includes 1) reflects the absence of association between the factor studied and the onset of psychological distress, an AOR higher than 1 (and whose 95%CI does not include 1) indicates a link between the factor studied and an increase in the risk of onset of psychological distress, and an AOR lower than 1 (and whose 95%CI does not include 1) indicates a link between the factor studied and a reduction in the risk of onset of psychological distress. The more the AOR is removed from 1, the greater the strength of the link.

Scope: Adults who completed the questionnaire (n=3,200), living in general households in mainland France.

Source: COCLICO survey in the general population, Wave 1, conducted between 3 and 14 April 2020.

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risk of onset of psychological distress when it decreased and indicated overcrowding within the dwelling, even if its impact was less significant than that of social support (Graph 2).

A worsening of the financial situation had a significant impact on the onset of psychological distress, independently of changes in employment situation

A worsening of the household's financial situation as a result of the lockdown (in comparison with a stable situation or an improved one) was linked to a high risk of psychological distress (Table 1), which remained significant after adjustment on other factors (Graph 2). No significant association was found with changes to the situation related to employment (total unemployment, furlough, and partial unemployment or mandatory leave compared with a stable situation) (Graph 2), which was not strongly correlated with changes in the financial situation. It is possible that the changes in the professional activity included contrasting realities in terms of keeping one's income (for example, furlough or partial unemployment which was or was not accompanied by a wage reduction). Hence, it suggests that it was mainly financial problems that led to the occurrence of psychological distress during the initial phases of the lockdown, more than anxiety linked to a changing employment situation. It could be reasonably assumed that a change in this situation without financial loss was generally managed well by individuals (more time for oneself and one's family). From this standpoint, by maintaining wages for eligible persons, the large-scale partial unemployment measures may well have contributed to limiting the onset of psychological distress in the French population.

The continuation of leisure activities played a protective role against the onset of psychological distress

The continuation of regular leisure activities was quantified by a number that

assessed the difference between a leisure activity score calculated before and after the lockdown. This score was obtained by adding up the increasing score attributed to the practice of different leisure activities (seeing friends or family; watching shows or attending conferences or concerts; practising a sport, going to the theatre, or playing music; reading, watching a film, listening to music, etc.), depending on their weekly frequency, whether outside or at home. It appeared that the more usual leisure activities were maintained during the lockdown, the less likely the risk of onset of psychological distress (see Table 1 and Graph 2).

Individuals who spent a lot of time on the social networks during the lockdown were more likely to suffer from psychological distress. After adjustment, individuals using these networks for more than three hours per day had a far higher risk of suffering from psychological distress compared with those persons who used them for less than one hour per day (Graph 2). Intensive use of these networks may in particular have had a negative impact due to individuals' access to a great deal of potentially stressful information related to the epidemic crisis, as attested by recent studies conducted in China in the context of the Covid-19 epidemic (Gao et al., 2020). Indeed, studies conducted outside crisis periods attested to a strong link between the use of social networks and a risk of depression, particularly amongst young adults (Lin et al., 2016). This may have partly explained the absence of a significant link between age and the onset of psychological distress after adjustment on other factors (Graph 2) as the youngest respondents were those who spent the most time on the social networks during the initial phase of the lockdown.

New evidence with regard to the mental health of the populations in the context of the implementation of lockdown measures

These results complement the first studies published about the impact of the lockdown on mental health during the crisis linked to the Covid-19 epidemic,

particularly in China (Qiu et al., 2020; Wang et al., 2020), by taking into account specificities of the national context and the political measures implemented. In France, the onset of psychological distress during the lockdown was observed in one third of the population. Although being exposed to the virus was one of the risk factors, the conditions and consequences of the lockdown seem to have had the greatest impact. Our results highlighted certain categories of the population who require particular attention, specifically women, persons living with a chronic disease, those who receive little social support, those living in overcrowded housing, and those whose financial situation worsened during the lockdown. These observations complement those of an initial study conducted in France (Chan Chee et al., 2020) with a sampling plan designed to be more representative of the French population. They confirm the study's conclusions about a greater risk of psychological distress amongst women, persons with difficult financial situations, or those living in overcrowded housing, and underline other points that need to be monitored. Hence, it appears that the lockdown had a greater impact on populations that were already vulnerable and reinforced pre-existing inequalities. These results support the need for the development of actions targeted at these populations, whether to facilitate their access to mental health services or to attenuate the social and economic impact of new lockdown measures, should they reoccur. From this perspective, it is important to take into account the protective nature of the continuation of an individual's usual leisure activities and to raise awareness about the overuse of social networks during crises.

This first study will be complemented by the findings of the subsequent waves of the COCLICO survey. They will provide complementary information about the persistence of the effects observed over time as well as after the end of the lockdown, because a return to a more normal life after an event of this magnitude may be difficult for certain categories of the population. The subsequent waves will also enable us to assess — aside from the onset of psychological distress — any over-prevalence of depressive disorders during the lockdown (using the PHQ 8, Brief Patient Health Questionnaire, Depression

Module, for which there was a measurement for the general population before the crisis linked to the Covid-19 epidemic). Qualitative studies could also complement our analyses by confirming our hypotheses about the causal mechanisms involved. Lastly, online surveys aimed at the general population may have a limited capacity to document the problems encountered by sectors of the population who are particularly at risk (such as children, per-

sons suffering from economic precarity, or migrants). Other projects will focus in particular on these populations, such as for example those conducted by our institute (Institute for Research and Information in Health Economics, IRDES), aimed at undocumented immigrants (recontact of facilities that house these populations, as part of the 'Premiers pas' survey, www.irdes.fr/premiers-pas). ♦

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