The Swiss Corona Stress Study: second pandemic wave, November 2020

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Abstract

The results of the third survey of the Swiss Corona Stress Study refer to the period from November 11-19, 2020, during which 11,612 people from all over Switzerland participated. Stress levels have increased significantly compared to the first survey during lockdown in April 2020. While the proportion of people reporting maximum stress levels was around 11% during the April lockdown, it rose to 20% in the second pandemic wave in November. The increase in stress was accompanied by an increase in depressive symptoms. The main drivers of psychological stress and depressive symptoms included burden due to a Covid-19-related change in work, school, or education, Covid-19-related financial losses, and fears about the future. These stressors have increased significantly, compared to the time of the April lockdown. Further factors were the fear that someone in the closest circle would become seriously ill or die from COVID-19, as well as the burden of social restrictions and burden from an increase in conflicts at home. While the proportion of respondents with moderately severe or severe (PHQ-9 ≥15) depressive symptoms was 3% before the pandemic, 9% during the April lockdown, and 12% during May, it increased to 18% in November. The risk for moderately severe or severe depressive symptoms was associated with age (with younger people showing the highest risk) and was increased in people experiencing financial losses due to the pandemic. In addition, people from the French-speaking part of Switzerland, which was most affected by the pandemic during the second wave, were at higher risk than people from the rest of Switzerland.

Introduction

Governments across the globe responded to the COVID-19 pandemic with restrictions to people's daily lives unprecedented in modern democratic societies during peacetime. Self-isolation, quarantines, shutdowns of educational institutions, recreational facilities and businesses had dramatic consequences for economies and are likely to impact mental health of the population in the short- and long-term. During the summer of 2020 in the northern hemisphere governments were able to relax the anti-COVID-19 measures, but face-masks have become probably the most publicly visible symbol of the continuing pandemic crisis. In the northern hemisphere COVID-19 case numbers were increasing in autumn 2020, in many countries even surpassing the case numbers and death toll seen in spring 2020; at the same time the successful search for vaccines raised hopes for many since several countries have started vaccination programmes.

These phases of the COVID-19 pandemic have felt like a roller-coaster ride to many people. In spring 2020 we set up the Swiss Corona Stress Study online survey to gain a better understanding of the impact of the COVID-19 pandemic on mental health. We collected data anonymously during the first confinement between the 6th and the 8th of April 2020 (survey 1), capturing a range of demographic aspects as well as perceived stress, depression and anxiety levels. We repeated the survey with adaptations twice in 2020 (see Figure 1), collecting data from the 11th of May until 1st of June 2020, during the partial lifting of measures (partial deconfinement) (survey 2) and during the second upsurge of the pandemic from the 11th until the 19th of November 2020 (survey 3). Each survey collected data from over 10,000 participants.

Limited knowledge of the health impact of the pandemic and of the counter measures makes finding the appropriate level of countermeasures a very difficult task. The impact of the pandemic differs considerably between occupational groups and social strata of the society. Some people have been unable to continue their careers, while others have

been overwhelmed with work and many switched to work from home for an unprecedented length of time. An approximation of the consequences of COVID-19 and its subsequent ramifications on our daily lives can be drawn from stress research. Stress can be conceptualized as being confronted with a challenging situation that requires some kind of adaptation [1]. With the imminent threat of getting infected, the problems arising from the governmental restrictions and the uncertainty about how and when people will be able to return to their normal routine, this situation is challenging for many. Humans are generally well-equipped to deal with challenges as our stress system is highly adaptive, and during phases of stress, anxiety and worries are normal reactions. However, since stress is a well-known risk factor for mental disorders, vulnerable individuals may be at increased risk to develop stress-related mental health problems in the current situation [2]. A position paper published in Lancet Psychiatry on April 15, 2020 explored psychological, social and neuroscientific consequences of the COVID-19 to inform immediate priorities and long-term strategies for public health and research. The position paper was based on surveys of the United Kingdom population. It emphasizes the immediate priority to collect data on the mental health effects of the COVID-19 pandemic across the whole population and vulnerable groups [3]. Until solid data are available, we can only speculate about the impact of COVID-19 on mental health. It is also possible that the occurrence of a common health crisis might trigger protective factors with regard to mental well-being. For example, in the wake of past national disasters that posed a possible threat to physical integrity (such as September 11, 2001) suicide rates have declined [4]. It was hypothesized that this effect might have been driven by increased social cohesion and stronger support from friends and families [4], [5]. It is also possible that the governmental restrictions during this crisis may entail relieving aspects, at least for some individuals. The generation of knowledge about the mental health consequences and the identification of risk and resilience factors is of utmost importance to inform about needs during the current and subsequent outbreaks of COVID-19 or any future outbreak of this sort.

This study, the "Swiss Corona Stress Study", investigates how the Swiss population adapts to the COVID-19 outbreak and the confinement measures in Switzerland; for an analysis of data collected during surveys 1 and 2 see de Quervain et al. [6]. In a companion study, "The Iranian Corona Stress Study", data was collected from participants in Iran between May 1st and May 25th, 2020 [7]. These studies set out to identify risk- and resilience factors, in particular behaviors amenable to change. Stress research has a long history and various evidence-based interventions to counter stress have been proposed [5], [8], [9]. However, since the COVID-19 pandemic is unprecedented, we lack evidence about whether the existing interventions are effective in the context of a pandemic lockdown. In a first stage of data analysis published earlier [6] we focused on investigating how subjective stress levels are affected during the time of confinement (survey 1), identifying important factors related to changes in stress levels, including potential resilience factors, and investigating the prevalence of moderately severe to severe depressive symptoms before the COVID-19 pandemic and during confinement. In a second stage of data analysis, we focused on the same analysis as in stage 1, but for the time of partial deconfinement (survey 2), and additionally compared the two waves and investigated potential risk and resilience factors with regard to the development of depressive symptoms.

We found notable similarities between the Iranian and the Swiss Covid Stress Studies: The prevalence of moderately severe to severe depressive symptoms (Patient Health Questionnaire 9, PHQ-9 >=15) increased about three-fold in both studies during the first pandemic wave. In both studies 30-40% of the participants reported increased stress levels, while about a quarter of the participants strikingly reported a decrease in stress levels. We also found similar risk and resilience factors are at play, with older age being a resilience factor and prior psychiatric disorders a risk factor.

Here, we mainly focus on the comparison between the data tof surveys 1 and 3, obtained at the relative peaks of COVID-19 cases in spring and in autumn 2020 (Figure 1). Due to the nature of the data collection, this is by definition not a representative

survey. However, the population of respondents represents a broad spectrum of the Swiss population in terms of sociodemographic characteristics, and survey 3 does not differ in these characteristics from our previous surveys.

Methods

Study design and participants

We conducted an anonymized survey investigating the impact of the COVID-19 pandemic and the countermeasures on mental well-being in Switzerland to follow-up on our first Swiss Corona Study conducted in April (survey 1) and May to June 2020 (survey 2) [6]. For survey 3 we collected data in November 2020. Participants from all regions of Switzerland were recruited through referrals to the study by a media release of the University of Basel, local newspapers, radio interviews and social media. For data analysis presented here all participants who completed the survey between November 11 and November 19 and had given informed consent were included if they had not taken part in our previous surveys, lived in Switzerland and were at least 14 years old. 11,612 participants fulfilled the inclusion criteria. No study protocol approval by the local Ethics committee was necessary, as the survey was anonymized. All participants gave prior written informed consent for participation. Participants did not receive any monetary compensation. However, they received recommendations for stress reduction on the basis of the information given in the survey.

Procedure and outcomes

The procedure was identical to the procedure of our first two Swiss Corona Stress Study surveys [6]. Potential participants visited a webpage, www.coronastress.ch,

where they could choose one of three possible national languages, German, French or Italian. If participants were interested to take part in the survey, they were directed to the questionnaire. The first page of the survey contained study information and informed consent. Only after agreement to the informed consent, the survey started and normally could be completed within 15 minutes. The software SoSci Survey was used for online assessment [10]. Only the day of participation was recorded in SoSci Survey, while IP-addresses and timestamps were not recorded.

In the first part of the survey we collected sociodemographic and further relevant data including gender, age, nationality, country of residence, living situation, family status, religiousness, burden of childcare, highest educational level, profession, relevant pre-existing physical or psychiatric conditions, coronavirus diagnostic status, acceptance of taken federal measures, fears related to the coronavirus, burdens arising from the federal measures, changes in consumption of food / gaming / drugs / sleeping pills and tranquilizers, changed habits, frequency of information seeking about news on the corona crisis, changes in circadian rhythm and eating routines, level of physical activity and meditation. Afterwards, the following outcomes of interest were assessed: stress level and anxiety level in February, i.e. before the COVID-19 pandemic; during lockdown in the first wave in April 2020; in September 2020 before the second COVID-19 pandemic wave and during the two weeks immediately before the survey in November. Stress and anxiety levels were assessed using 6-point Likert scales ranging from 0 (not at all) to 5 (extremely strong). Depressive scores were assessed by the "Patient Health Questionnaire 9" – PHQ-9, for the beginning of September and the two weeks prior to the survey. PHQ-9 is a 9-question self-rating questionnaire to screen for the presence and severity of depression. We used German, French and Italian translations of the PHQ-9 (see [11] for English version).

In addition, for participants who opted in, the survey continued with a Obsessive−Compulsive Inventory−Revised (OCI-R) questionnaire using the German version published by Gönner et al. [12], and the French and Italian translations thereof.

At the end of the survey, participants received automated recommendations for stress reduction on the basis of the information given in the survey, such as performing physical activities or mindfulness exercises. All questions needed to be answered in order to complete the survey.

Statistical analyses

Comparison of outcomes and burdens between Surveys

We compared outcomes (stress, depression and anxiety) between surveys by means of Wilcoxon tests. Differences exceeding a Wilcoxon effect size $|r| \geq 0.1$ were considered as significant and reported. The comparison of burdens / reliefs between surveys was conducted using both Wilcoxon and chi-square tests to identify changes in extreme categories. Differences exceeding a Wilcoxon effect size $|r| \geq 0.1$ or a Cramer's V ≥ 0.1 (overall) were interpreted.

Identification of factors related to moderately severe and severe depressive symptoms (PHQ-9≥15) during the second pandemic

A logistic regression model was built between socio-demographic factors and the categorization of depressive symptoms into moderately severe and severe (PHQ-9 score ≥15) and other (PHQ-9 score <15). Participants reporting gender different from male / female were excluded from this analysis as well as participants reporting unspecific household, yielding a total of N=11'393 participants. A first logistic regression model was built considering age, gender, education (university / not university), religious belief (believer/not believer), residency (countryside, city, agglomeration), history of prior psychiatric disorder and canton (German, French or Italian speaking). Only main effects showing significant statistical association and at least one post-hoc pairwise comparison reaching Cohen's D effect size > $|0.2|$ (square root of log(OR)*3/pi) were interpreted. The effect of financial consequences (loss vs. unchanged/more) was evaluated next within this model. A second logistic regression analysis was performed

considering profession (students/pupils/in training, job seeking, retired, in invalidity, house-wife/husband, workers in a sector financially impacted by the crisis, other workers), rather than age. Likewise, the effect of financial consequences (loss vs. unchanged/more) was next evaluated within this model. We finally conducted an analysis within workers, irrespective of their sector of activity, accounting for age, financial reserve and the other socio-demographic variables previously considered.

Statistical significance of main effects was assessed by likelihood ratio test between the full model and a model discarding the variable of interest and subsequent evaluation of Nagelkerke's R2. Post-hoc pairwise comparisons between levels of each factor were performed using least-square means method as implemented in the R package lsmeans. Marginal effects within a given model were obtained using the ggeffect function implemented in the R package ggeffect. All confidence intervals are reported at 95% threshold.

Burdens linked to age and PHQ-9 scores during the second pandemic wave

Spearman's correlations were derived between each burden related variable and age (continuous value) and PHQ-9 score. Burden factors were reported provided both correlation coefficients |r| were equal to or exceeded 0.1.

Comparisons of socio-demographic factors associated with moderately severe/severe depressive symptoms before the first pandemic and during the second pandemic

In order to evaluate the change in association of socio-demographic factors (age, gender, canton, prior psychiatric disorder) with elevated PHQ-9 score from the time before the first pandemic to the time during the second pandemic wave the following analyses were conducted. Firstly, we tested for evidence of multiplicative interactions between each variable and 'time point' using logit regression. In case of significant interactions, estimates of log odds per interaction term were obtained using least square means. Secondly, we tested for evidence of additive interactions (assessing differences

in prevalences between groups, across time points) using binomial linear regression. These latter analyses were conducted using the R package blm. Predicted percentages per interaction term were obtained using the R predict function, under a binomial regression model considering only the interaction term of interest. A similar approach was conducted considering models including profession instead of age.

Stress and depressive symptoms of survey 3: relation to socio-demographic variables, changeable behaviors, burdens, and reliefs

We applied linear models in combination with ANOVAs for nominal variables, Pearson correlations for interval variables and Spearman's rank correlations for ordinal variables. For a first overview, the statistical models consisted of one dependent variable (one of the main outcome variables) and one independent variable. In the case of linear models, the strength of the relationships was obtained by extracting the correlation value r from each corresponding linear model (i.e. normalized regression coefficient). We only report relationships with at least a small effect size ($|r| \geq 0.1$).

Role of funding source

The study was funded by the University of Basel. All authors had full access to all the data in the study and had final responsibility for the decision to submit for publication. None of the authors had any conflict of interest.

Results

Overview of survey 3 and demographics

11,612 participants were included in our analysis. The age of the participants ranged from 14-85 (median age 38 years, mean age 39.3 years, sd 13.4). Overall, 25.5% of the participants were male, 73.8% female; 58.4% had no children; 46.2% have a university degree, 4.4% a doctorate, 20.8% completed an apprenticeship. 5.5% of the participants are either going to school or are in training, 10.8% study at university and 68.6% are currently working, 3.6% are seeking a job, 4.4 % receive a pension, 1.6% receive disabled persons benefits.

In terms of socio-demographic characteristics, no major difference (Cramer's V < 0.1) was observed between participants from survey 3 and participants from survey 1 (Table 1).

Stress: comparison between survey 3 and 1

Participants from survey 3 reported higher stress levels during the second pandemic wave as compared to stress levels reported by participants from survey 1, during the first pandemic wave (mean survey 1 = 2.4 ; mean survey 3 = 2.8; Wilcoxon r = 0.11). We notably observed a higher proportion of participants reporting 'very strong' levels of stress during the second pandemic (survey 1: 11.4% ; survey 3: 20% ; see Figure 2-A). In terms of changes in stress levels (stress level in November minus stress level in September), a majority of participants reported higher stress levels (46.8%) or unchanged stress levels (41.2%), while only 12.0% reported a decrease in stress. Hence, this differs from the pattern observed during the first pandemic, where 26.0% of participants reported a general decrease in stress levels (see Figure 2-B).

Anxiety: comparison between survey 3 and 1

Levels of anxiety reported by participants from survey 3 during the second pandemic were of comparable magnitude as levels of anxiety reported in survey 1 during the first pandemic wave (mean survey 1: 2.0 ; mean survey 3: 2.0).

Depressive symptoms: comparison between survey 3 and 1

Participants from survey 3 reported higher depressive symptoms as compared to participants from survey 1, both before (mean survey 1 February: 4.6, mean survey 3 September: 6.4, Wilcoxon r = 0.13) and during the pandemic wave (mean survey 1 April: 6.5; mean survey 3 November: 8.2, Wilcoxon r = 0.11). Hence, levels of depressive symptoms in September, before the second pandemic wave, were of comparable magnitude as those observed during the lockdown and levels of depressive symptoms in November, during the second pandemic wave, exceeded those observed during April lockdown.

Burdens/reliefs: comparison between survey 3 and 1

Participants from survey 3 reported lower confidence of surviving the crisis well as compared to participants from survey 1 (Wilcoxon r = - 0.14) while higher burden due to thoughts about the future (Wilcoxon r = 0.10), and financial consequences (Wilcoxon r = 0.11) were observed. Among pupils/students/trainees, we observed over-representation of participants reporting 'very strong' burden due to change in school/study/training (survey 1: 16.4% ; survey 3: 29.8%, overall Cramer's V = 0.19); likewise, among workers, a higher proportion of participants from survey 3 reported 'very strong' burden for the change in the work situation (survey 1: 10.5% ; survey 3: 17.8% ; overall Cramer's V = 0.12) (Figure 3). We also observed a higher proportion reporting a 'very strong' burden of increased conflicts at home (survey 1: 1.3%; survey 3: 4.4% overall Cramer's V = 0.12).

In contrast, participants from survey 3 reported lower burden of taking care of children (Wilcoxon r = -0.11) as compared to survey 1.

Moderately severe and severe depressive symptoms (PHQ-9 ≥15): Prevalence across surveys

Beyond the increase in average PHQ-9 scores during the second pandemic wave, we also observed a significant increase in the proportion of participants reporting clinically relevant depressive symptoms levels with 18.4% of participants showing scores within the 'moderately severe' and 'severe' categories (PHQ-9 ≥ 15) as compared to 9.1% of participants during the first pandemic wave (Cramer's V = 0.13).

Overall, the percentage of participants with clinically relevant PHQ-9 scores thus increased from an estimated 3.4% before the first pandemic wave to 18.4% during the second pandemic wave.

Moderately severe and severe depressive symptoms (PHQ-9≥15): Relation to socio-demographic factors in Survey 3

Given the high prevalence of participants showing clinically relevant depressive symptoms during the second pandemic, we examined the association of high PHQ-9 (≥15) with socio-demographic factors, namely gender, age group, household (living alone, not alone), religious belief (believer, not believer), residency (city, agglomeration, countryside), education (university, not university), report of prior psychiatric disorder, and Swiss canton (German speaking, Italian speaking, or French speaking) (see Methods). Profession and age group being highly overlapping, professional status was not considered in this first analysis.

Using logit regression, we observed significant overall effects of prior psychiatric disorder (Nagelkerke R2 = 6.9%, p = 1.1e-107) and age group (Nagelkerke R2 = 3.4%, p = 5.5e-48) on the prevalence of PHQ-9≥15 depressive symptoms. Specifically, participants reporting prior psychiatric disorder showed an increased rate of moderately

severe and severe depressive symptoms during the pandemic (OR = 3.20 [CI:2.89-3.55]) ([Figure 4](#)-A) ([Table 2](#)). The incidence of higher depressive symptoms also decreased with increasing age, with an estimated marginal prevalence of 27.3% [CI:25-29.6%] in individuals less than 25 years old and 5.1% [CI:3.5-7.3%] in individuals aged 65 or more ([Figure 4](#)-B). We also observed a significant effect albeit of smaller magnitude (Nagelkerke R2 < 1%, p = 1.2e-11) of Swiss canton. Notably, post-hoc pairwise comparisons showed higher rates of participants reporting moderately severe and severe depressive symptoms within french speaking cantons as compared to german speaking (OR = 1.49 [CI:1.30-1.70]) and italian speaking cantons (OR = 1.44 [CI: 1.13-1.83])([Figure 4](#)-C)([Table 2](#)). A follow-up analysis in individual cantons where more than 250 subjects participated revealed a positive correlation between the proportion of moderately severe and severe depressive symptoms and the mean incidence over a 2 week period as reported by the Federal Office of Public Health (during survey 3: r = 0.87; see [Figure 5](#)).

We next considered a model accounting for loss in financial reserve during the pandemic (less vs. more-unchanged). The effect of financial reserve was significant (Nagelkerke R2 = 3.6%, p = 4.7e-55) with participants reporting loss in financial reserve at higher risk than other individuals (OR = 2.28 [CI: 2.06-2.52]). When accounting for financial reserve, the effects of the factors previously identified remained significant (age: p = 2.6e-43; prior psychiatric risk: p = 2.9e-98; canton: p = 5.8e-10).

We also considered a logit regression model considering professional status (students/pupils/in training, seeking for a job, in invalidity, workers in a sector financially impacted by the crisis, other workers, housewives/husbands, retired) rather than age. As expected from the previously identified age effect, we observed a significant effect of profession on the prevalence of moderately severe to severe depression (Nagelkerke R2 = 3.2% , p = 4e-44), with higher prevalence on participants who are studying or are at school while retired participants showed lower prevalence than all other groups ([Figure 6](#)). Yet, we also identified significantly higher prevalence in participants searching for a job (OR: 2.16 [CI:1.53-3.0] p = 5.5e-10), in invalidity (OR: 2.05 [CI:

1.27-3.30], *p* = 2e-04), or working in a sector financially impacted by the crisis (OR: 1.70 [CI: 1.25-2.31] *p* = 6e-6] as compared to other workers ([Figure 6](#))([Table 3](#)). Of note, while additionally accounting for financial reserve, the difference between workers in a sector impacted by the crisis and other workers vanished (OR: 1.35 [CI: 0.99-1.85] *p* > 0.05). To further evaluate the effect of age on higher depressive symptoms, we conducted an additional analysis on workers participants, irrespective of activity sector, aged between 18 and 64 years old (n=7'792), accounting for financial reserve. This revealed a significant effect of age (Nagelkerke R^2 = 1.1%, *p* = 1.3e-09) with younger workers [18-24] showing increased prevalence as compared to older ones [45-64] ([Figure 7](#))([Table 4](#)).

Overall, these results suggest that age, financial loss due to the pandemic, and to a smaller extent canton, are each independently associated with the prevalence of moderately severe to severe depressive scores during the second pandemic wave. In addition, higher prevalence is observed among workers financially impacted by the crisis as compared to other workers.

Burdens linked to depressive symptoms scores and age during the second pandemic wave

Given that higher depressive symptoms scores were reported in younger individuals, we examined which burdens showed simultaneous association with both age and PHQ-9 scores (Spearman's |r| ≥ 0.1). Younger individuals reported higher burdens for living alone at the moment (age r = -0.16), increased conflicts at home (age r = -0.11), switch to digital media / teaching (age r = -0.14), home office (age r = -0.26), restrictions in social life (r = -0.13) and cancellation of major events due to restrictions (r = -0.11). We also observed higher values among younger individuals for the fear that someone close could get seriously ill or die from the coronavirus (r = -0.11)([Figure 8](#)).

In addition, significant negative correlation was observed between age of participants and changes in daily rhythm, including change in working hours (r = -0.18), regularity of

meals (r = -0.19) and change in sleeping times (r = -0.20). Greater changes in daily rhythm were also associated with higher PHQ-9 scores (change in working hours: r = 0.19; change in sleeping times: r = 0.32; change in meals regularity: 0.34)(Figure 8).

Moderately severe and severe depressive symptoms (PHQ-9≥15): Comparison of socio-demographic factors before the first pandemic wave and during the second pandemic wave

We compared the association of main socio-demographic factors (age, gender, prior psychiatric disorder and canton) with the prevalence of high PHQ-9 scores (≥15) over time, namely between reports from survey 1 before the first pandemic wave (February 2020) and reports from survey 3 during the second pandemic wave (November 2020). For each factor, we tested for differential association between socio-demographic characteristics and elevated PHQ-9 scores between the two time points (before the first pandemic wave, during the second pandemic wave), either in terms of relative risk or in terms of differences in prevalences.

Using a logit regression model, testing for multiplicative interaction between time point and each factor, we identified significant interactions for prior psychiatric disorders (*p* = 4.6e-14) and canton (*p* = 7.3e-04). Specifically, we observed that during the second pandemic wave, the relative risk of elevated PHQ-9 score between participants reporting existence of prior psychiatric disorder versus those not reporting any, decreased as compared to the time before the first pandemic wave (Figure 9). This suggests that even if history of prior psychiatric disorder is strongly associated with elevated prevalence of PHQ-9 score ≥ 15 during the second pandemic wave, the prevalence of elevated depressive symptoms is significantly increased as well in participants not reporting any prior psychiatric disorder. Notably, in subjects not reporting any prior psychiatric disorder, we observe during the second pandemic wave a prevalence of elevated depressive symptoms (13%; CI: 12.1-13.9%) higher than the

prevalence of elevated depressive symptoms in participants reporting prior psychiatric disorder before the first pandemic wave (10%; CI: 8.5-11.6%); this difference is driven by younger individuals (Figure 10-A). No additional interaction on relative prevalences (OR) was identified.

We also compared differences in prevalences between socio-demographic factors over time. Using a binomial linear regression model, we identified significant interactions of time point with canton (FR minus IT: difference between November and February: 6.2% CI: [4.2-8.2]%, p = 1.4e-9; FR minus GER: difference between November and February: 5.1% CI: [3.7-6.5]%, p = 1.4e-12)(Figure 10-B). We also observed significant interaction between age group and time points with notably increased differences between lower age groups (14-24 and 25-34) and older age groups (45-54 and more) from February 2020 to April 2020 (p < 2.2e-10 across age groups pairwise comparisons) (Figure 10-A). Significant additive interaction was also observed between prior psychiatric disorder and time points, with increased difference in prevalence between participants with or without psychiatric disorder history from February to November (difference with prior psychiatric disorder vs. others: 10.7% CI: 8.5-12.9%).

We performed a similar analysis considering profession rather than age. Using linear binomial regression we identified significant interaction between profession and time point. Notably, we observed a significant increase of the difference in prevalences between students and - workers (7.6% CI: 5.3-9.8%, p = 4.6e-11) - house-wives/husbands (9.8% CI: 6.7-12.9%, p = 3.4e-10) - retired (15.9% CI: 13.6-18.1%, p = 2e-43) - from the February to November (Figure 10-C). The difference between workers or housewives/husbands and retired participants also significantly increased from February to November (workers minus retired: 8.3% CI: 7.4-9.2%, p = 3.2e-71); house-wives/husbands minus retired: 6.1% CI: 3.8-8.3%, p = 1.3e-7)(Figure 10-C). Finally, job seekers and participants in invalidity showed increased difference as compared to retired participants from February to November (job seekers minus retired : 11.5% CI: 5.7-17.3%, p = 1.1e-04; in invalidity vs. retired: 11.5% CI: 1.2-21.8%, p = 0.03), while no such difference was observed with other categories (p > 0.05). Yet in our

studies these two groups (job seekers, in invalidity) include only a small number of participants.

Overall, these results suggest that the differences in prevalence of moderately severe and severe depressive symptoms, within age groups or professions, cantons, and participants with or without prior disorder, significantly increased during the second pandemic wave as compared to the time before the first pandemic wave.

Stress and depressive symptoms of survey 3: relation to socio-demographic variables, changeable behaviors, burdens, and reliefs

Socio-demographic variables (such as age, family status, pre-existing physical and psychiatric diseases), changeable behaviors (such as light or intense physical activity per week, changes in daily rhythm like sleeping times), burdens (such as burden due to changes at work or school, burden of living alone, burden of financial consequences due to the federal measures), and reliefs (such as relief due to loss of private or professional obligations) were associated to current stress levels (see Table 5) and to current depressive symptoms (see Table 6). Positive correlations are indicated by positive r values.

Obsessive compulsive symptoms of survey 3

34.7% reported more obsessive compulsive symptoms as compared to before the pandemic (question ranged from 0 to 5). Within the 34.7% reporting increased obsessive compulsive symptoms, the average increase was 2.2 (sd = 1.3). Participants reporting more obsessive symptoms as compared to before the pandemic had significantly more depressive symptoms (mean = 11.34, sd = 6.67) than participants

reporting an unchanged level of obsessive compulsive symptoms (mean = 6.50, sd = 5.88, Wilcoxon r = 0.36).

Summary of results and conclusion

During the second pandemic wave in November 2020 stress has increased significantly compared to the first wave. While the proportion of people reporting maximum stress was around 11% during the April lockdown, it rose to 20% during the second wave in November. The increase in stress was accompanied by an increase in depressive symptoms.

The main drivers of psychological stress and depressive symptoms included exposure to a Covid-19-related change in work, school, or education. Other factors included stress from Covid-19-related financial losses and fears about the future. These stressors have increased significantly, compared to the time of the April lockdown. Further factors were the fear that someone in the closest circle would become seriously ill or die from COVID-19, as well as the burden of social restrictions and stress from an increase in conflict at home.

While the proportion of respondents with major depressive symptoms was 3% before the pandemic (retrospective rating in survey 1), 9% during the April lockdown (survey 1), and 12% during the May (survey 2) lockdown period, it increased to 18% in November (survey 3).

Particularly hard hit, were:
- Young people: the prevalence of moderately severe or severe (PHQ-9 ≥ 15) depressive symptoms was 29% among 14-24 year olds, 21% among 25-34 year olds, 17% among 35-44 year olds, 14% among 45-54- year olds, 13% among 55-64 year olds, and 6% among 65+ year olds.

- Individuals who worked in a business sector that was financially impacted due to federal/cantonal measures (e.g., restaurant, culture, tourism). In addition, persons for whom financial reserves have decreased were twice as likely to experience severe depressive symptoms (28%) than persons with unchanged or increased reserves (14%).

- Individuals from the French-speaking part of Switzerland were more affected, with a frequency of severe depressive symptoms of 22%, than individuals from the German-speaking part with 17%, or the Italian-speaking part of Switzerland, with 16%. In addition, we found a correlation between the strength of the second wave (incidence of new infections) and the frequency of major depressive symptoms in the cantons.

As in previous surveys, we found that individuals who were physically active have, on average, slightly lower levels of stress and depressive symptoms. The stress-reducing effect of exercise is known from previous intervention studies.

Implications

Because young people are particularly vulnerable to the mental health effects of the pandemic, schools should take this into account by being flexible with the curriculum.

The current data also show that Covid-19-related financial losses are a significant psychological stressor. Compensating for these losses is thus important for mental health.

Figures

Figure 1

Illustrates the survey periods in relation to the COVID-19 cases (red) and deaths (black) in Switzerland in 2020 (data averaged over 7 days, obtained from European Centre for Disease Prevention and Control, https://www.ecdc.europa.eu/en). Surveys 1 (April 6-8) and 3 (November 11-19) capture similar periods of high case numbers in the progression of the pandemic, while survey 2 (May 11-June 1) captures the interim phase of relatively low case numbers.
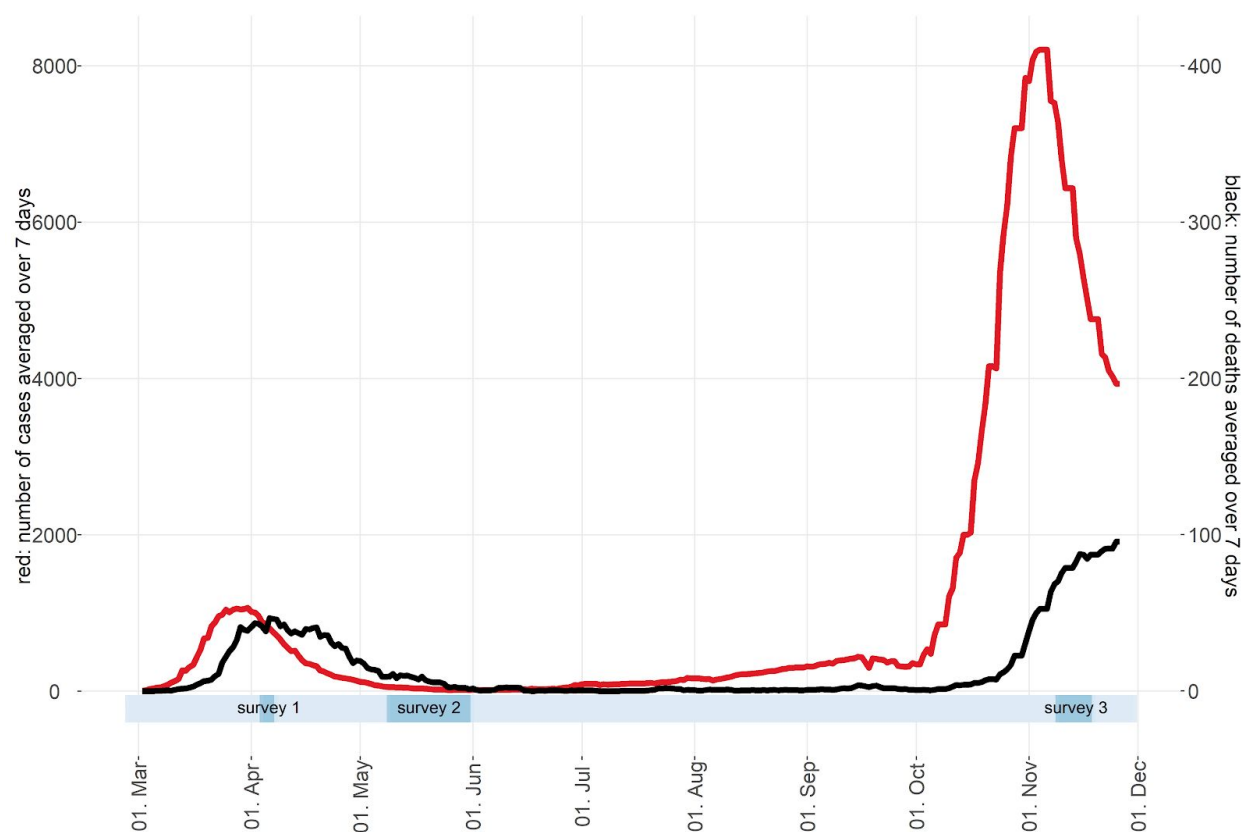
Figure 2

Stress levels before and during each pandemic wave (wave 1: survey 1; wave 2: survey 3).

%: relative to the total number of participants within each survey. Error bars correspond to 95% CI.

A   Stress levels before the pandemic waves (left) and during (right) pandemic waves.
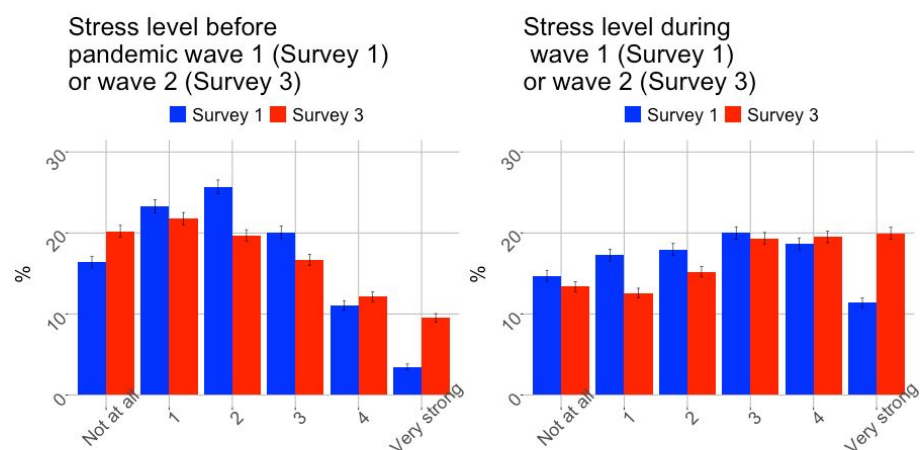
B Delta in stress levels during the two pandemic waves.
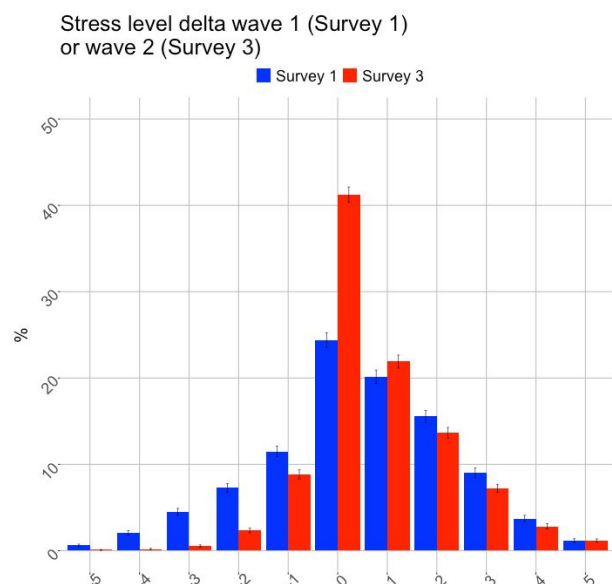
Figure 3

Examples of burdens differing between Survey 3 and Survey 1.

% : relative to the number of participants within each Survey. Error bars correspond to 95% CI.

The financial consequences burden me

The change of the work situation burdens me

The change in school/study/training is a burden for me

Figure 4

Moderately severe and severe depression symptoms incidence during the second pandemic wave, by socio-demographic factors.

Estimates were obtained from LS means pairwise comparisons on Logit regression model accounting for age, gender, prior psychiatric risk, religious belief, education, canton, residency, and household. Estimates for age, canton and household are shown by prior psychiatric disorder (yes/no). Error bars correspond to 95% confidence intervals.

A:

B:

Age

C:
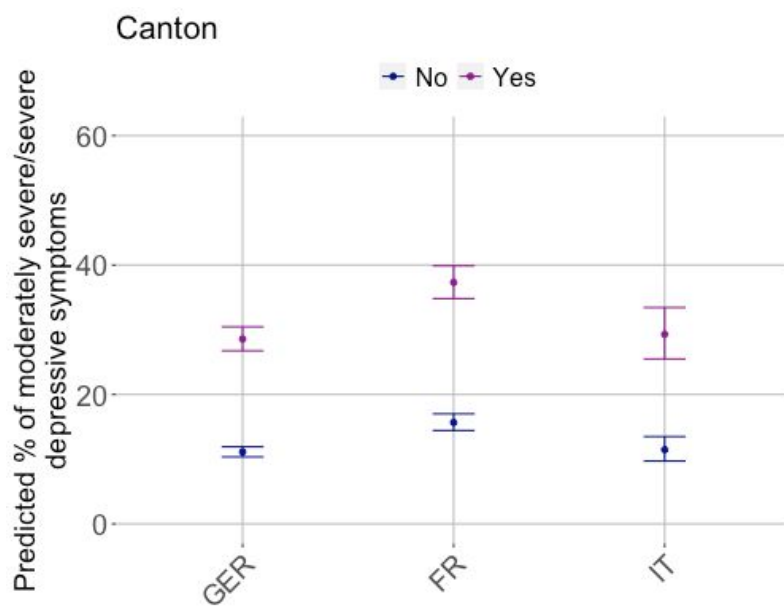
Canton

Figure 5

Cantonal mean incidence values (per 100,000 people) over the 2 weeks of Survey 1 (A) and 3 (B) VS percentage of participants presenting moderately severe and severe depressive symptoms. Only cantons where more than 250 subjects participated are represented.
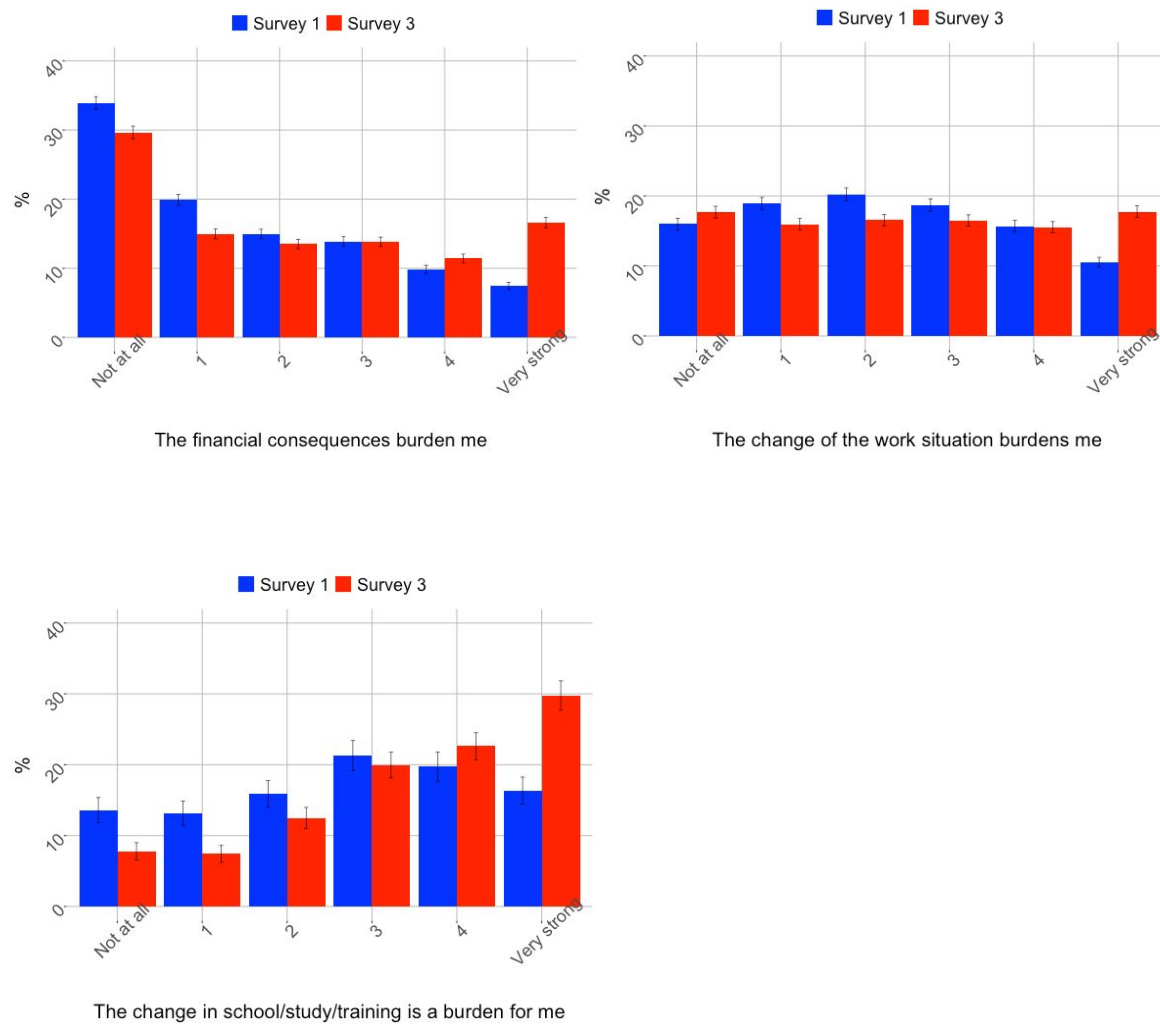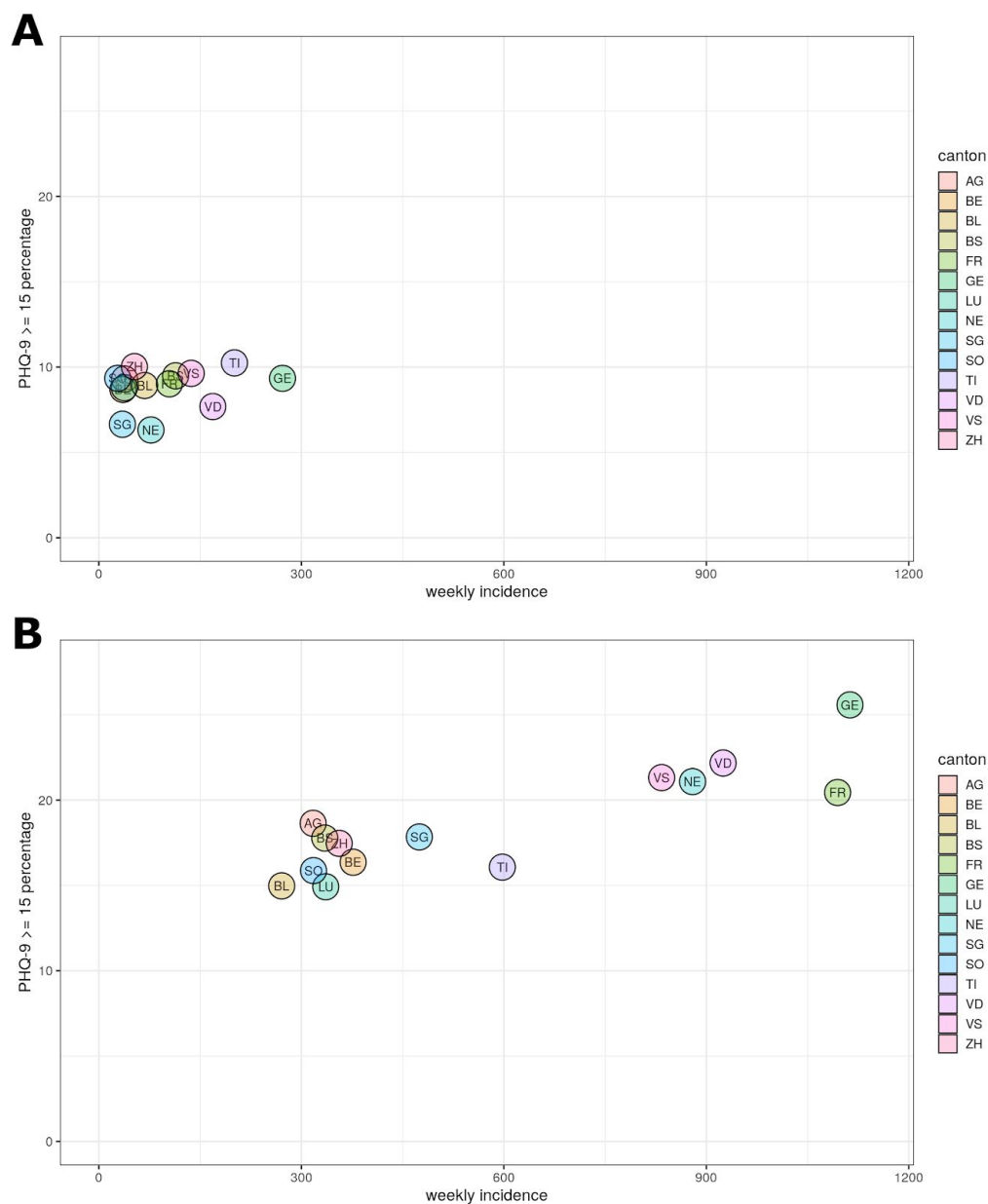
Figure 6

Moderately severe and severe depression symptoms incidence during the second pandemic wave, by socio-demographic factors.

Estimates were obtained from LS means pairwise comparisons from Logit regression model accounting for profession, gender, prior psychiatric risk, religious belief, education, canton, residency, and household. Estimates are shown by prior psychiatric disorder (yes/no). Error bars correspond to 95% confidence intervals.
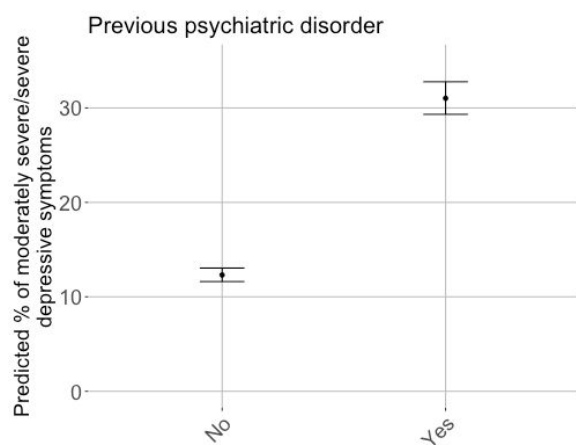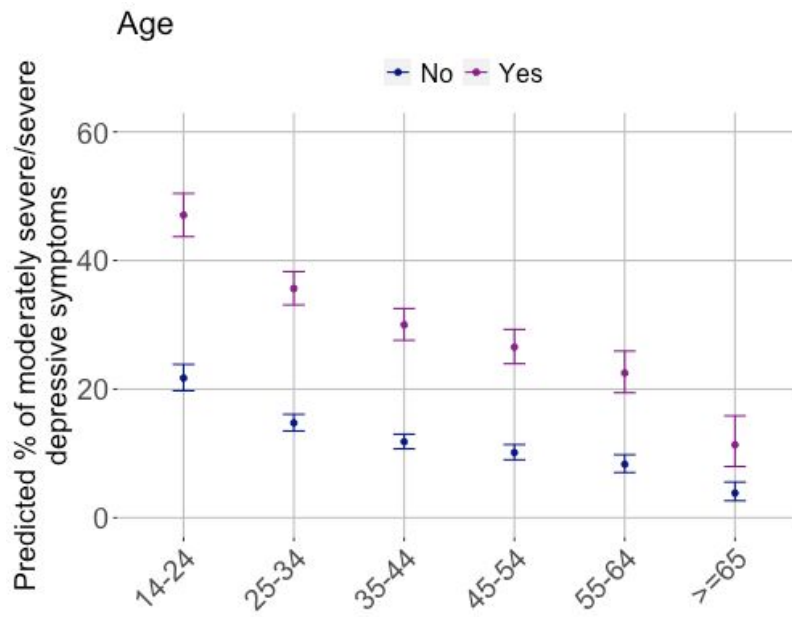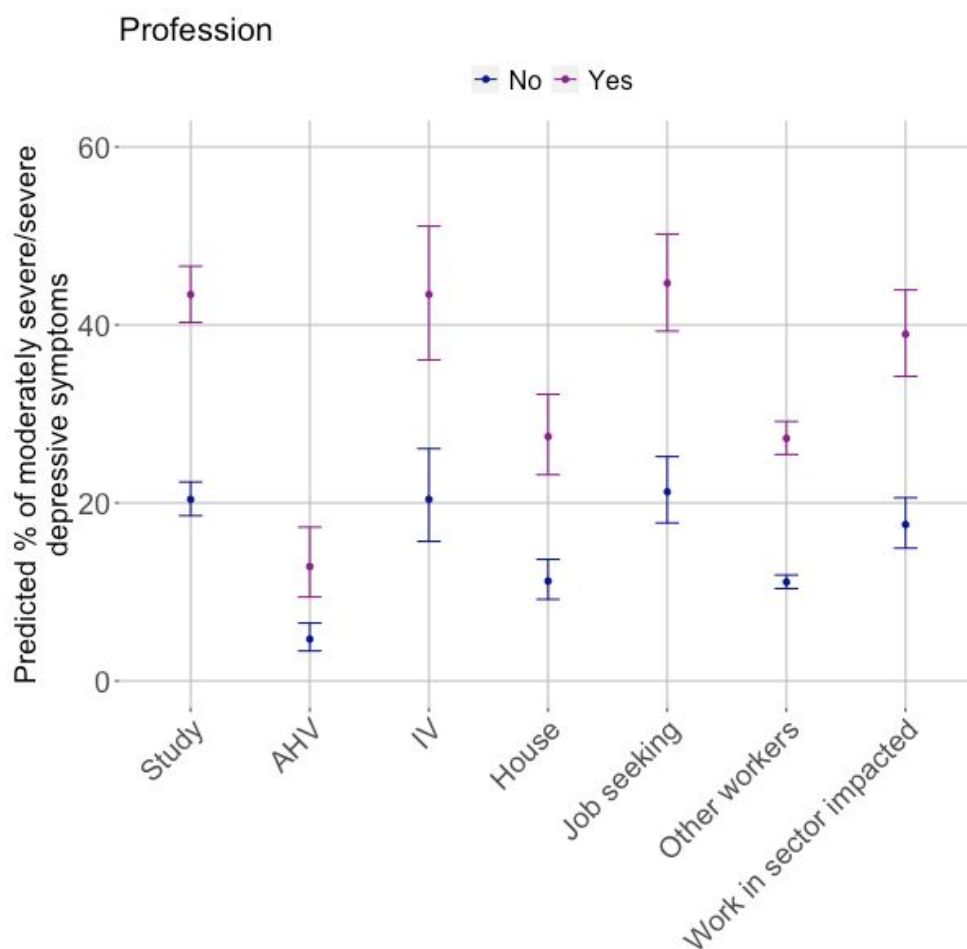
Figure 7

Moderately severe and severe depression symptoms incidence during the second pandemic wave, by age within workers.

Estimates were obtained from LS means pairwise comparisons from Logit regression model accounting for age, gender, prior psychiatric risk, religious belief, education, canton, residency, household and financial reserve, within workers aged [18-64] years old. Error bars correspond to 95% confidence intervals.
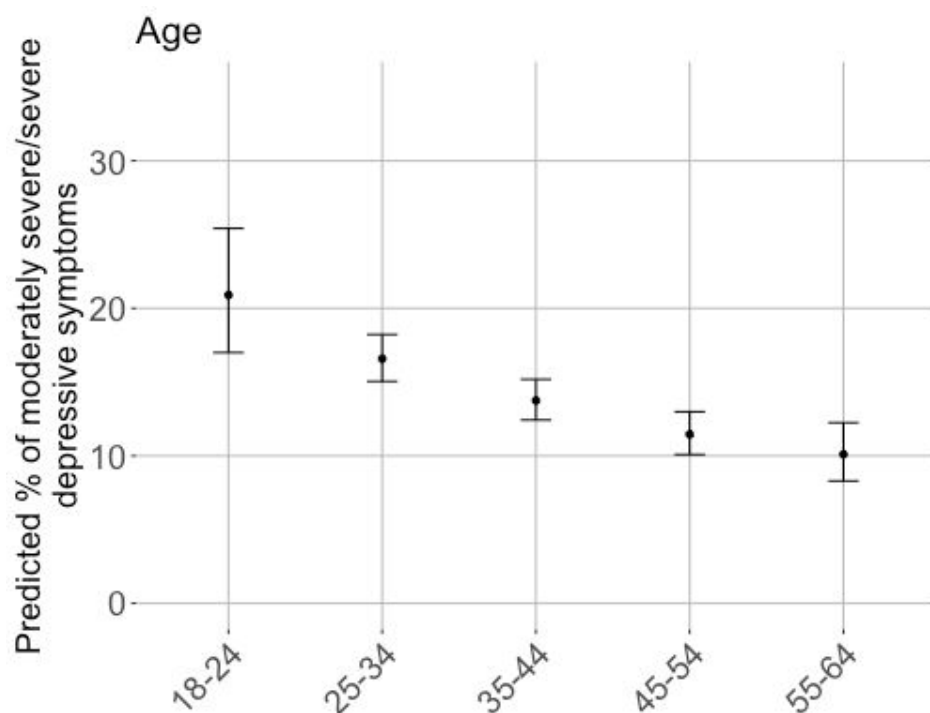
Figure 8

Examples of burdens showing association with both age and PHQ-9 depressive symptoms scores.

Distribution of responses per age group. Percentages are given relative to the total number of participants within each age group. Error bars correspond to 95% CI.
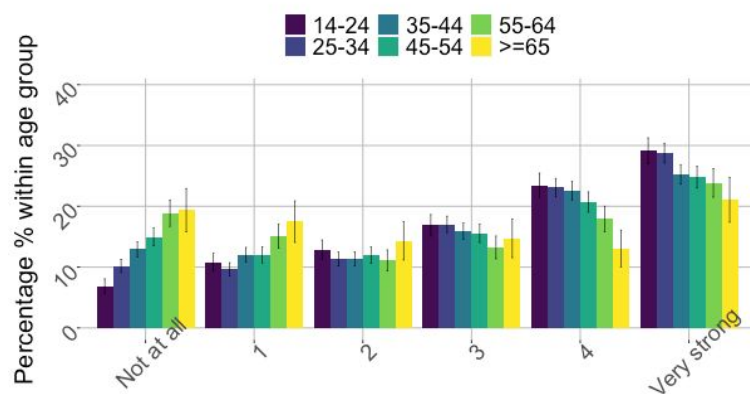
Afraid that someone from my close circle could die
from the coronavirus
n=11612
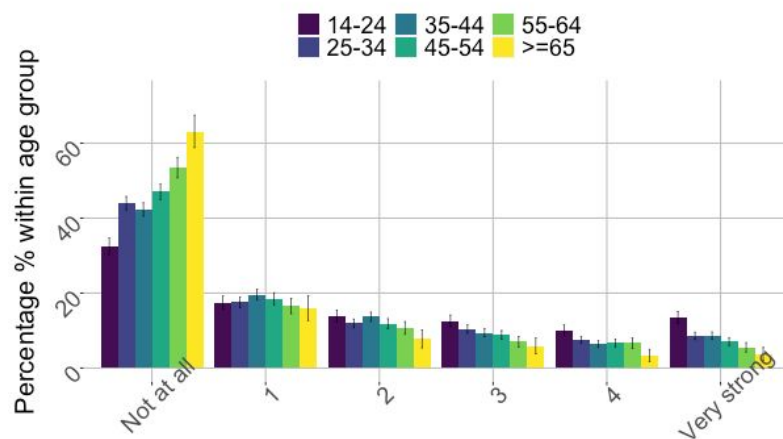
Tired by switch to digital media/teaching
n=11612

Stressed by social life restrictions
n=11525

My sleeping times have changed
n=11612
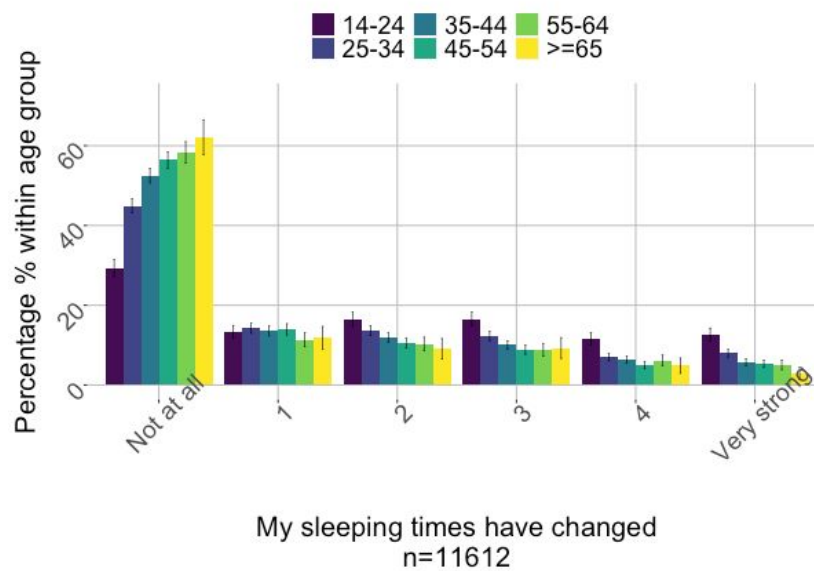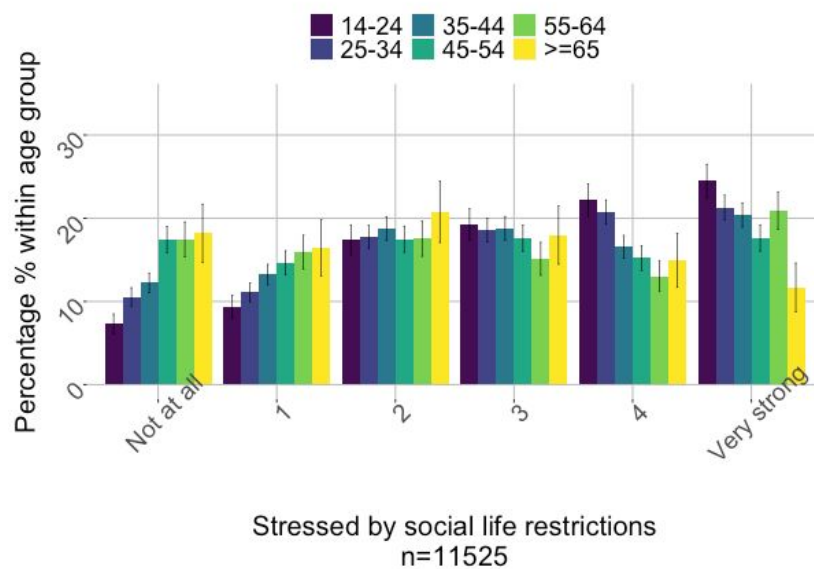
Figure 9

Log odds of moderately severe/severe depressive symptoms before the first pandemic and during the second pandemic, by prior psychiatric disorder.

Estimates obtained from lsmeans of interaction time x prior psychiatric disorder in logistic regression.
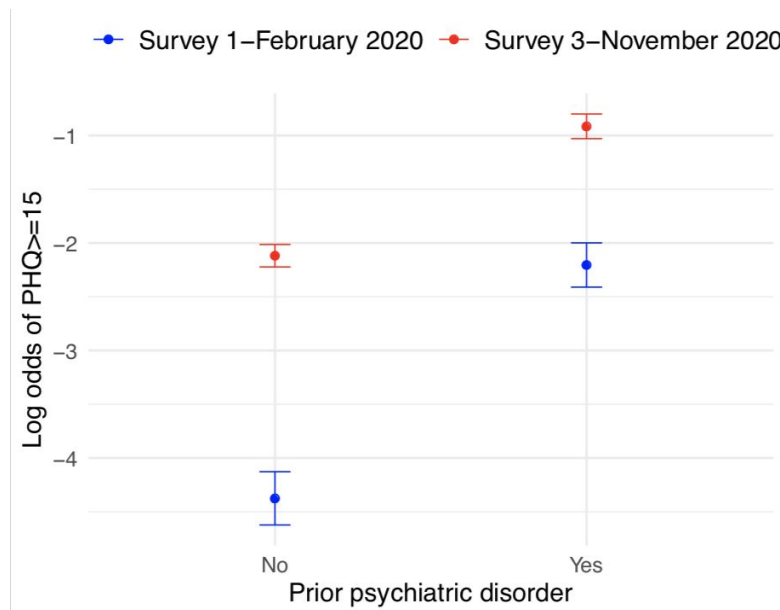
Figure 10

Predicted values of moderately severe/severe depressive symptoms over time.

Predicted values (%) were obtained from binomial linear regression. Error bars correspond to 95% confidence interval.

A: By age group (X-axis) and report of prior psychiatric disorder (no: left; yes: right).
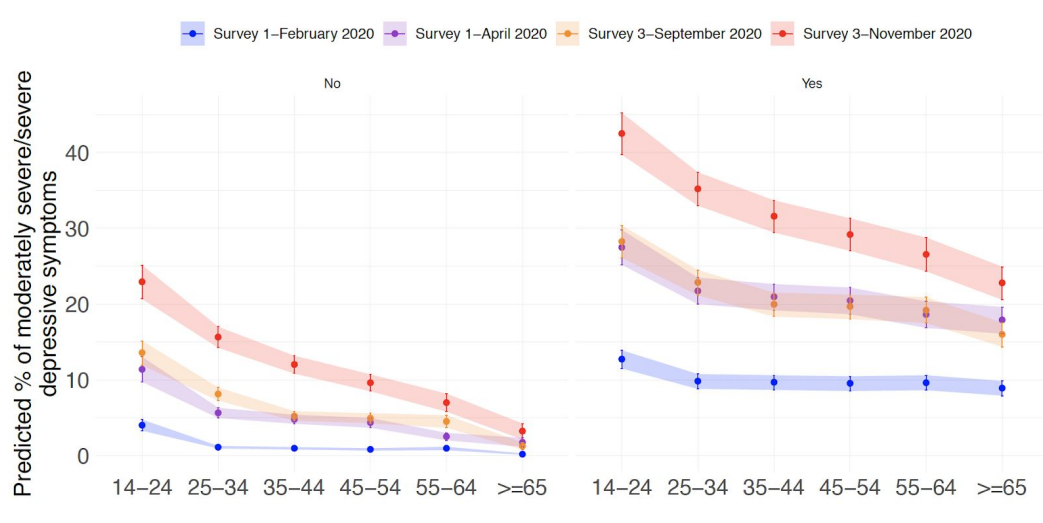
B: By canton (X-axis) and report of prior psychiatric disorder (no:left: yes: right).
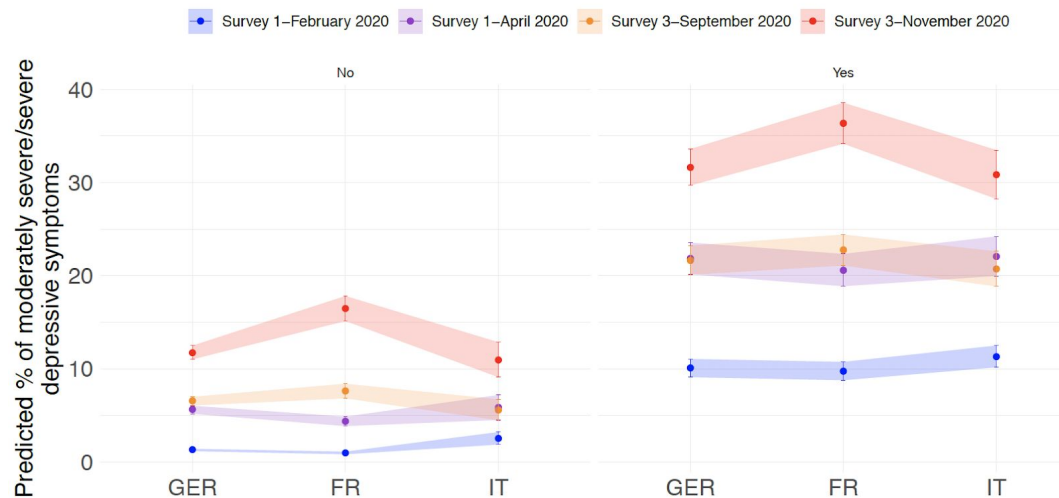
C: By profession group (X-axis) and report of prior psychiatric disorder (no: left; yes: right).
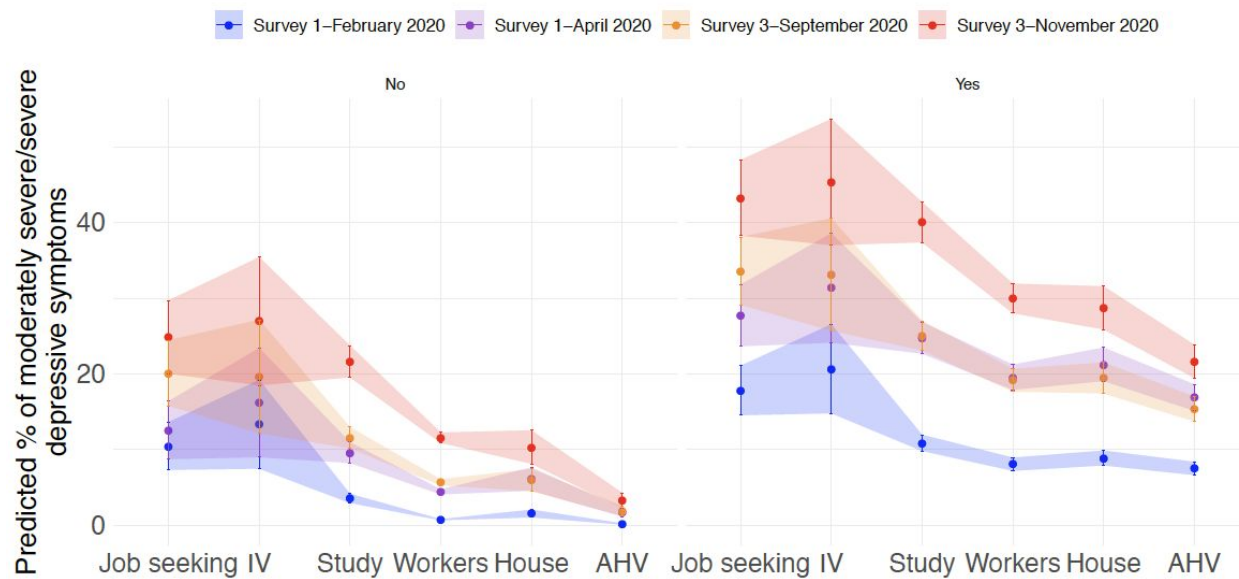
Tables

Table 1

Comparison of socio-demographic characteristics between Survey 3 (n=11'612) and Survey 1 (n=10'472).

Cramer's V: corresponds to effect size of chi-square test across all levels of the variable between populations. % : relative to total population within each survey.

Factor	Level	% Survey 1	% Survey 3	Cramer's V
Gender	male	28.6	25.5	0.041
	female	71	73.8	
	Other	0.3	0.7	
Age	14-24	11.7	14.9	0.053
	25-34	26.3	25.5	
	35-44	26	25.1	
	45-54	19	19.6	
	55-64	11.9	10.9	
	>=65	5	4.1	
Canton	GER	62.1	62.9	0.033
	FR	30.9	28.7	
	IT	7	8.4	
Household	Not alone	78.4	76.6	0.034
	Alone	19.8	22.2	
	Other	1.7	1.3	
Religious belief	Non believer	62.7	65.7	0.031
	Believer	37.3	34.3	
Children	No Child	54.3	58.4	0.041

	Child	45.7	41.6	
Education	No university	48.1	49.4	0.013
	University	51.9	50.6	
Prior psychiatric disorder	No	76.4	73.9	0.028
	Yes	23.6	26.1	
Residency	City	42.1	40.8	0.029
	Countryside	32.9	35.6	
	Agglomeration	25	23.6	
Age of younger child	No child	54.2	58.3	0.054
	0-1y	2	1.3	
	1-5y	10.4	8.5	
	5-10y	8.7	7.9	
	10-18y	11.8	10.8	
	> 18y	12.9	13.2	
Profession	Study/School/Training	13.9	16.1	0.041
	AHV	5.3	4.4	
	IV	1.5	1.6	
	House	5.9	5.7	
	Job seeking	3	3.6	
	Workers	70.4	68.6	

Table 2

Pairwise contrasts for logit model between prevalence of moderately severe to severe PHQ-9 score during the second pandemic wave and socio-demographic factors (including age) (n=11'393).

In bold: contrasts exceeding |Cohen's D| of 0.2.

Factor	Contrast	OR	OR 95% CI	p-value
Gender	female - male	1.09	[0.97-1.23]	1.5e-01
Age	**14-24 - 25-34**	**1.6**	**[1.29-2]**	**1.4e-08**
	14-24 - 35-44	**2.07**	**[1.65-2.6]**	**7.1e-14**
	14-24 - 45-54	**2.46**	**[1.92-3.15]**	**5.2e-14**
	14-24 - 55-64	**3.06**	**[2.25-4.16]**	**5.4e-14**
	14-24 - >=65	**6.96**	**[3.88-12.48]**	**5.3e-14**
	25-34 - 35-44	1.29	[1.06-1.58]	3.5e-03
	25-34 - 45-54	**1.53**	**[1.22-1.92]**	**1.0e-06**
	25-34 - 55-64	**1.91**	**[1.42-2.55]**	**4.3e-09**
	25-34 - >=65	**4.34**	**[2.44-7.71]**	**5.6e-12**
	35-44 - 45-54	1.19	[0.94-1.5]	2.8e-01
	35-44 - 55-64	**1.48**	**[1.1-1.98]**	**2.4e-03**
	35-44 - >=65	**3.36**	**[1.88-5.98]**	**3.4e-08**
	45-54 - 55-64	1.24	[0.91-1.7]	3.4e-01
	45-54 - >=65	**2.83**	**[1.57-5.07]**	**6.2e-06**
	55-64 - >=65	**2.27**	**[1.23-4.19]**	**1.8e-03**
Residency	City - Countryside	1.16	[1-1.33]	4.2e-02
	City - Agglomeration	1.08	[0.92-1.26]	5.2e-01
	Countryside - Agglomeration	0.93	[0.79-1.1]	5.6e-01

Education	University - No university	0.82	[0.74-0.91]	2.8e-04
Prior psy. disorder	**Yes - No**	**3.2**	**[2.89-3.55]**	**4.6e-110**
Household	Alone - Not alone	1.41	[1.26-1.59]	9.7e-09
Canton	**FR - GER**	**1.49**	**[1.3-1.7]**	**4.8e-12**
	FR - IT	1.44	[1.13-1.83]	1.3e-03
	GER - IT	0.96	[0.77-1.22]	9.3e-01
Religious belief	Non believer - Believer	1.03	[0.92-1.14]	6.5e-01

Table 3

Pairwise contrasts for logit model between prevalence of moderately severe to severe PHQ-9 score during the second pandemic wave and socio-demographic factors (including profession) (n=11'393).

In bold: contrasts exceeding |Cohen's D| of 0.2.

Factor	Contrast	OR	OR 95% CI	p-value
Gender	female - male	1.15	[1.02-1.3]	2.2e-02
Profession	**Study - AHV**	**5.2**	**[3.02-9]**	**4.8e-14**
	Study - IV	1	[0.61-1.6]	1.0e+00
	Study - House	**2.03**	**[1.4-2.9]**	**3.0e-07**
	Study - Job seeking	0.95	[0.66-1.4]	1.0e+00
	Study - Other workers	**2.05**	**[1.68-2.5]**	**6.8e-14**
	Study - Work in sector impacted	1.2	[0.86-1.7]	6.6e-01
	AHV - IV	**0.19**	**[0.1-0.4]**	**4.1e-11**
	AHV - House	**0.39**	**[0.21-0.7]**	**1.2e-04**
	AHV - Job seeking	**0.18**	**[0.1-0.3]**	**8.2e-14**
	AHV - Other workers	**0.39**	**[0.23-0.7]**	**3.3e-06**
	AHV - Work in sector impacted	**0.23**	**[0.13-0.4]**	**5.7e-12**
	IV - House	**2.03**	**[1.14-3.6]**	**5.2e-03**
	IV - Job seeking	0.95	[0.54-1.7]	1.0e+00
	IV - Other workers	**2.05**	**[1.27-3.3]**	**2.1e-04**
	IV - Work in sector impacted	1.2	[0.69-2.1]	9.6e-01
	House - Job seeking	**0.47**	**[0.29-0.7]**	**3.0e-05**
	House - Other workers	1.01	[0.71-1.4]	1.0e+00
	House - Work in sector impacted	**0.59**	**[0.38-0.9]**	**8.8e-03**

	Job seeking - Other workers	**2.16**	**[1.53-3]**	**5.5e-10**
	Job seeking - Work in sector impacted	1.27	[0.82-2]	6.9e-01
	Other workers - Work in sector impacted	**0.59**	**[0.43-0.8]**	**6.0e-06**
Residency	City - Countryside	1.15	[1-1.3]	4.5e-02
	City - Agglomeration	1.1	[0.94-1.3]	3.4e-01
	Countryside - Agglomeration	0.95	[0.81-1.1]	7.6e-01
Education	University - No university	0.83	[0.74-0.9]	3.2e-04
Prior psy. disorder	**Yes - No**	**3**	**[2.7-3.3]**	**2.9e-95**
Household	Alone - Not alone	1.33	[1.18-1.5]	2.5e-06
Canton	**FR - GER**	**1.48**	**[1.29-1.7]**	**1.3e-11**
	FR - IT	**1.48**	**[1.16-1.9]**	**4.4e-04**
	GER - IT	1	[0.79-1.3]	1.0e+00
Religious belief	Non believer - Believer	1.08	[0.97-1.2]	1.8e-01

Table 4

Pairwise contrasts for logit model between prevalence of moderately severe to severe PHQ-9 score during the second pandemic wave and socio-demographic factors (including age and financial loss), within workers aged [18-64](n=7'792).

In bold: contrasts with |Cohen's D| > 0.2.

Factor	Contrast	OR	OR 95% CI	p-value
Gender	female - male	1.07	[0.92-1.24]	3.7e-01
Age	18-24 - 25-34	1.33	[0.9-1.96]	2.6e-01
	18-24 - 35-44	**1.66**	**[1.12-2.44]**	**3.5e-03**
	18-24 - 45-54	**2.04**	**[1.36-3.06]**	**1.4e-05**
	18-24 - 55-64	**2.35**	**[1.48-3.73]**	**4.4e-06**
	25-34 - 35-44	1.25	[1-1.56]	5.2e-02
	25-34 - 45-54	**1.54**	**[1.19-1.98]**	**3.6e-05**
	25-34 - 55-64	**1.77**	**[1.26-2.48]**	**4.5e-05**
	35-44 - 45-54	1.23	[0.96-1.58]	1.6e-01
	35-44 - 55-64	1.42	[1.01-1.99]	3.9e-02
	45-54 - 55-64	1.15	[0.81-1.64]	8.2e-01
Residency	City - Countryside	1.14	[0.96-1.37]	1.9e-01
	City - Agglomeration	1.09	[0.9-1.34]	5.4e-01
	Countryside - Agglomeration	0.96	[0.78-1.18]	8.8e-01
Education	University - No university	0.94	[0.82-1.07]	3.3e-01
Prior psy. disorder	**Yes - No**	**2.9**	**[2.54-3.31]**	**7.2e-56**

Household	Alone - Not alone	1.41	[1.22-1.62]	2.4e-06
Canton	**FR - GER**	**1.44**	**[1.22-1.7]**	**1.1e-06**
	FR - IT	**1.44**	**[1.05-1.96]**	**1.8e-02**
	GER - IT	1	[0.74-1.35]	1.0e+00
Religious belief	Non believer - Believer	1.06	[0.92-1.21]	4.3e-01
Financial loss	**Less - More-Unchanged**	**2.18**	**[1.91-2.48]**	**1.2e-31**

Table 5

Stress levels of survey 3 associations with variables |r| ≥ 0.1

Variable associated with stress levels	N	r	p
Stress levels in September (before the 2nd wave): I felt stressed	11612	0.64	<2.2e-16
Anxiety level in September (before the 2nd wave): I felt anxious	11612	0.48	<2.2e-16
Stress level in lockdown: I felt stressed	11612	0.46	<2.2e-16
The thought of the future burdens me	11612	0.44	<2.2e-16
I find it stressful to live alone at the moment	2573	0.44	7.11E-124
PHQ score (before the 2nd wave)	11612	0.43	<2.2e-16
Confidence that I will survive the Corona crisis well	11612	-0.43	<2.2e-16
Current OCD score subscale obsessing	3618	0.42	5.49E-156
The change of the work situation burdens me	7965	0.42	<2.2e-16
The change in school/study/training is a burden for me	1875	0.39	8.69E-71
Current OCD total score	3617	0.37	6.39E-119
Anxiety level in lockdown: I felt anxious	11612	0.36	<2.2e-16
Change in Consumption (within consumers): Sleeping/calming tablets	4871	0.32	4.65E-115
Daily rhythm: My sleeping times (when I go to bed, when I get up) have changed	11612	0.30	3.52E-246

Burden measures: The restrictions in social life (no carefree meeting of friends, club closures, upper limits of groups of people, etc.) are a burden to me	11525	0.30	1.14E-239
Compulsions: Compared to before the corona crisis, I now suffer more from compulsions (e.g. washing, checking that doors are locked)	11612	0.30	3.86E-240
Conflicts at home have increased in the corona crisis compared to before	9039	0.29	1.78E-172
Past (one year ago) subscale obsessing	3482	0.27	3.67E-58
Daily rhythm: The regularity of my meals has changed	11612	0.26	2.69E-182
Communication: I am overwhelmed by the switch to digital media / teaching	11612	0.26	9.59E-173
Daily rhythm: The regularity of my working hours has changed	11612	0.25	4.28E-166
Burden measures: Home office burdens me	9002	0.25	2.72E-127
Current OCD score subscale checking	3617	0.24	1.34E-48
Past (one year ago) OCD total score	3481	0.23	2.40E-44
Current OCD score subscale ordering	3618	0.23	4.27E-43
Current OCD score subscale washing	3618	0.22	4.74E-42
I have more time to relax	10877	-0.21	3.42E-109
Having dinner indoors without protective measures (distance, masks) with friends or family members who do not live in the same household worries me / would worry me.	11612	0.21	1.51E-115
Taking care of my children is a burden	3612	0.21	4.31E-36
I am afraid that someone in my immediate circle could become seriously ill with the Corona virus	11612	0.21	1.80E-110
I am afraid that someone in my immediate circle might die from the Corona virus	11612	0.20	7.27E-103

Change in Consumption (within consumers): television	10630	0.20	2.45E-92
Current use of professional psychological support	11612	0.19	2.12E-96
I am afraid that I could get seriously ill with the Corona virus	11612	0.19	6.21E-96
Burden measures: The distance rules (1.5 metres) are a burden	11358	0.18	3.80E-84
Current OCD score subscale hoarding	3618	0.18	1.11E-26
Change in Consumption (within consumers): Smoking	5444	0.18	1.03E-38
Age	11612	-0.17	4.88E-76
Communication: In order to maintain my social contacts, I increasingly use my mobile phone / computer / telephone	11612	0.17	1.40E-75
Burden measures: I am burdened by the obligation to wear masks	11450	0.17	1.90E-74
Burden measures: The limited opportunities to attend cultural events are a burden to me	11303	0.17	1.15E-70
Psychiatric pre-existing conditions	11612	0.16	1.76E-68
I am afraid that I could die of the Corona virus	11612	0.16	1.06E-68
Current OCD score subscale neutralizing	3618	0.16	1.98E-21
Change in financial reserves due to the corona crisis	11612	-0.15	6.39E-60
Change in Consumption (within consumers): Gaming/Video games	6346	0.15	2.20E-33
Burden measures: The cancellation of most major events (e.g. carnival, sporting events) is a burden	11223	0.15	2.27E-54
Anxiety level just before the corona crisis (e.g. during the first two weeks in February 2020): I felt anxiety	11612	0.14	1.08E-53
Burden measures: The restrictions in sport are a burden to me	10563	0.14	2.74E-48

Stress levels just before the corona crisis (e.g. during the first two weeks in February 2020): I felt stressed	11612	0.14	2.26E-51
Past (one year ago) subscale OCD	3483	0.14	1.75E-16
Mental disease: anxiety disorder	11612	0.14	1.42E-50
Age of oldest child	4842	-0.14	2.00E-21
Past (one year ago) subscale ordering	3483	0.14	7.47E-16
Age of youngest child	4842	-0.13	5.84E-21
Mental disease: Depression	11612	0.13	1.15E-42
Past (one year ago) subscale washing	3482	0.12	1.66E-13
I feel relieved by the omission of professional/school obligations	8818	-0.12	1.47E-30
I think that personal freedom (e.g. restrictions on freedom of movement, restrictions in social life) is being restricted too much	11612	0.12	1.38E-38
Change in Consumption (within consumers): Cannabis	3917	0.12	2.62E-13
Change in Consumption: Food	11612	0.11	1.15E-34
Past (one year ago) subscale hoarding	3483	0.11	3.14E-11
Use of professional psychological support before the pandemic	11612	0.11	4.42E-34
Change in Consumption (within consumers): alcohol	9259	0.11	4.51E-26
Past (one year ago) subscale neutralizing	3482	0.11	1.18E-10
Light physical activity per week (e.g. walking, gardening)	11612	-0.11	1.45E-30

Table 6

Depressive symptoms of survey 3 associations with variables |r| ≥ 0.1

Variable associated with depressive symptoms	N	r	p
PHQ score (before the 2nd wave)	11612	0.77	<2.2e-16
Current OCD score subscale obsessing	3618	0.63	<2.2e-16
Current OCD total score	3617	0.57	9.49E-305
I find it stressful to live alone at the moment	2573	0.49	1.56E-154
Confidence that I will survive the Corona crisis well	11612	-0.47	<2.2e-16
Past (one year ago) subscale obsessing	3482	0.46	7.00E-180
The thought of the future burdens me	11612	0.45	<2.2e-16
Stress levels in September (before the 2nd wave): I felt stressed	11612	0.44	<2.2e-16
Daily rhythm: My sleeping times (when I go to bed, when I get up) have changed	11612	0.44	<2.2e-16
Daily rhythm: The regularity of my meals has changed	11612	0.43	<2.2e-16
Anxiety level in September (before the 2nd wave): I felt anxious	11612	0.43	<2.2e-16
Past (one year ago) OCD total score	3481	0.42	4.58E-148
Change in consumption (within consumers): sleeping/calming tablets (within consumers)	4871	0.41	7.49E-195

Compulsions: Compared to before the corona crisis, I now suffer more from compulsions (e.g. washing, checking that doors are locked)	11612	0.41	<2.2e-16
The change in school/study/training is a burden for me	1875	0.38	2.02E-64
Anxiety level in lockdown: I felt anxious	11612	0.36	<2.2e-16
Current OCD score subscale checking	3617	0.35	1.09E-106
Conflicts at home have increased in the corona crisis compared to before	9039	0.35	5.90E-260
The change of the work situation burdens me	7965	0.35	4.78E-229
Current OCD score subscale ordering	3618	0.35	6.00E-104
Stress level in lockdown: I felt stressed	11612	0.34	3.92E-307
Current OCD score subscale hoarding	3618	0.32	2.92E-88
Communication: I am overwhelmed by the switch to digital media / teaching / teaching	11612	0.30	1.23E-244
Daily rhythm: The regularity of my working hours has changed	11612	0.30	3.11E-232
Current OCD score subscale neutralizing	3618	0.29	1.68E-73
Psychiatric pre-existing conditions	11612	0.29	9.18E-230
Current use of professional psychological support	11612	0.29	6.10E-236
Current OCD score subscale washing	3618	0.28	4.54E-65
Burden measures: Home office burdens incriminates me	9002	0.28	9.14E-159
Mental disease: Depression	11612	0.27	4.77E-195
Burden measures: The restrictions in social life (no carefree meeting of friends, club closures, upper limits of groups of people, etc.) are a burden to me	11525	0.27	2.22E-191

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Change in consumption (within consumers): television	10630	0.26	2.02E-167
Past (one year ago) subscale hoarding	3483	0.25	2.61E-52
Past (one year ago) subscale OCD	3483	0.25	3.87E-50
Past (one year ago) subscale ordering	3483	0.24	2.70E-46
Mental disease: anxiety disorder	11612	0.24	2.05E-149
Age	11612	-0.24	2.58E-147
Change in consumption (within consumers): gaming	6346	0.22	2.33E-73
Change in financial reserves due to the corona crisis	11612	-0.22	3.92E-131
Change in consumption (within consumers): smoking	5444	0.22	1.04E-61
Taking care of my children is a burden	3612	0.22	2.55E-40
Past (one year ago) subscale neutralizing	3482	0.20	8.30E-34
Use of professional psychological support before the pandemic	11612	0.20	1.64E-109
Past (one year ago) subscale washing	3482	0.19	1.61E-30
Change in consumption (within consumers): cannabis	3917	0.18	8.86E-31
I am afraid that someone in my close circle might die from the Corona virus	11612	0.18	6.76E-81
Burden measures: The limited opportunities to attend cultural events are a burden to me	11303	0.17	1.11E-74
I am afraid that someone in my close circle could become seriously ill with the Corona virus	11612	0.16	3.12E-70
Burden measures: The distance rules (1.5 metres) are a burden	11358	0.16	1.86E-68

Burden measures: The cancellation of most major events (e.g. carnival, sporting events) is a burden	11223	0.16	1.14E-65
Anxiety level just before the corona crisis (e.g. during the first two weeks in February 2020): I felt anxious	11612	0.16	2.44E-65
I have more time to relax	10877	-0.16	1.32E-60
Light physical activity per week (e.g. walking, gardening)	11612	-0.15	2.01E-61
Mental disease: Other	11612	0.15	2.57E-60
Change in Consumption: Food	11612	0.15	1.14E-58
Mental disease: post-traumatic stress disorder	11612	0.15	5.69E-58
Communication: In order to maintain my social contacts, I increasingly use my mobile phone / computer / telephone	11612	0.15	4.38E-56
Burden measures: The restrictions in sport are a burden to me	10563	0.14	8.07E-49
Change in consumption: alcohol (within consumers)	9259	0.14	8.50E-41
Have I ever been in self-isolation	11612	0.14	1.63E-44
Burden measures: I am burdened by the obligation to wear masks	11450	0.14	2.28E-48
Having dinner indoors without protective measures (distance, masks) with friends or family members who do not live in the same household worries me / would worry me.	11612	0.13	7.93E-48
Mental disease: I take psychotropic drugs	11612	0.13	2.95E-45
I think that personal freedom (e.g. restrictions on freedom of movement, restrictions in social life) is being restricted too much	11612	0.13	3.45E-44
Number of children grouped (children / no children)	11612	0.13	1.52E-42
I am afraid that I could get seriously ill with the Corona virus	11612	0.13	3.34E-42
Number of children	11612	-0.12	1.41E-39

Intensive physical activity per week (e.g. jogging, weight training)	11612	-0.12	6.35E-37
Stress levels just before the corona crisis (e.g. during the first two weeks in February 2020): I felt stressed	11612	0.12	5.42E-36
Mental disease: obsessive-compulsive disorder	11612	0.11	4.97E-35
I am afraid that I could die of the Corona virus	11612	0.11	3.17E-34
Have I ever been in quarantine	11612	0.11	2.07E-28
The financial consequences burden me	11612	0.11	1.12E-31
Profession grouped (working / not working)	11612	0.11	1.24E-31

References

[1] B. S. McEwen, "Stress, Adaptation, and Disease: Allostasis and Allostatic Load," *Annals of the New York Academy of Sciences*, vol. 840, no. 1, pp. 33–44, 1998, doi: 10.1111/j.1749-6632.1998.tb09546.x.

[2] E. R. de Kloet, M. Joëls, and F. Holsboer, "Stress and the brain: from adaptation to disease," *Nat Rev Neurosci*, vol. 6, no. 6, Art. no. 6, Jun. 2005, doi: 10.1038/nrn1683.

[3] E. A. Holmes *et al.*, "Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science," *The Lancet Psychiatry*, Apr. 2020, doi: 10.1016/S2215-0366(20)30168-1.

[4] M. A. Reger, I. H. Stanley, and T. E. Joiner, "Suicide Mortality and Coronavirus Disease 2019—A Perfect Storm?," *JAMA Psychiatry*, Apr. 2020, doi: 10.1001/jamapsychiatry.2020.1060.

[5] S. K. Brooks *et al.*, "The psychological impact of quarantine and how to reduce it: rapid review of the evidence," *The Lancet*, vol. 395, no. 10227, pp. 912–920, Mar. 2020, doi: 10.1016/S0140-6736(20)30460-8.

[6] D. de Quervain *et al.*, "The Swiss Corona Stress Study," OSF Preprints, Apr. 2020. doi: 10.31219/osf.io/jqw6a.

[7] S. Sabouhi *et al.*, "The Iranian Corona Stress Study," OSF Preprints, Nov. 2020. doi: 10.31219/osf.io/cfgbk.

[8] W. P. Jayawardene, D. K. Lohrmann, R. G. Erbe, and M. R. Torabi, "Effects of preventive online mindfulness interventions on stress and mindfulness: A meta-analysis of randomized controlled trials," *Preventive Medicine Reports*, vol. 5, pp. 150–159, Mar. 2017, doi: 10.1016/j.pmedr.2016.11.013.

[9] B. Stubbs *et al.*, "An examination of the anxiolytic effects of exercise for people with anxiety and stress-related disorders: A meta-analysis," *Psychiatry Research*, vol. 249, pp. 102–108, Mar. 2017, doi: 10.1016/j.psychres.2016.12.020.

[10] D. J. Leiner, *SoSci Survey*. 2014.

[11] K. Kroenke and R. L. Spitzer, "The PHQ-9: A New Depression Diagnostic and Severity Measure," *Psychiatric Annals*, vol. 32, no. 9, pp. 509–515, Sep. 2002, doi: 10.3928/0048-5713-20020901-06.

[12] S. Gönner, R. Leonhart, and W. Ecker, "The Obsessive–Compulsive Inventory-Revised (OCI-R): Validation of the German version in a sample of patients with OCD, anxiety disorders, and depressive disorders," *Journal of Anxiety Disorders*, vol. 22, no. 4, pp. 734–749, May 2008, doi: 10.1016/j.janxdis.2007.07.007.