Article

Psychological distress during COVID-19 pandemic distancing precautions in Brazil

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Abstract: Mass crises are disruptive to people's mental health. The study aimed to explore mental distress during COVID-19 quarantine in a sample of university workers in Brazil. The survey included sets of questions about demographics, health, and support, an open question about major concerns, and the Clinical Outcome Routine Evaluation (CORE-OM), a measure of mental distress. 407 professionals participated in the study: mean age of 40 years (SD = 11.2), mostly female (67.8%), married (64.8%) and fulfilling social distancing to avoid COVID-19 infection (99%). Using the Consensual Qualitative Research for simple qualitative data (CQR-M) the main areas of concern were grouped into six domains, as follows: Work, Health, Isolation, Personal life and routine, Social environment, and Future. Many responses were multiple. They form categories indicating specific concerns within these domains. Quantitative data were analyzed by identifying the simple effects of potential predictors of mental distress. The results indicated medium effects of help with household chores, psychiatric treatment, age and physical exercise. Having someone available to listen was the only variable with a large effect in reducing mental suffering. The hybrid approach showed that the psychological experience during the pandemic is quite multifaceted and complex pointing new clues for public mental health.

Keywords: COVID-19; Pandemics; Quarantine; Psychological Distress; Cross-Sectional Studies

1. Introduction

On 11th March 2020 the WHO announced the pandemic status of COVID-19 (CV-19) infection. Worldwide social distancing measures were adopted to prevent virus exposure. This completely new situation has consequences yet to be measured and understood by health professionals and researchers. Previous studies carried out in situations similar or analogous to the current pandemic show these have a deep and wide impact on the mental health [1]. Such impacts include, among others, the development of clinical conditions in hitherto healthy people and the worsening of pre-existing conditions. In addition, these conditions tend to persist in the long term even after the event that caused the crisis ceased [2].

It is well known that, in epidemics, substantial mental health troubles are experienced both by those directly affected by an infectious disease but also by many who are not infected. The pandemic fear creates increased levels of anxiety and stress due to fear of contagion, social isolation, economic loss, changes in the family and work environment, among other factors and causes feelings of abandonment and hopelessness and produce diverse health problems, including anxiety disorders, depression, and suicide [3].

Surveys carried out in China indicate that the majority of the population perceived a moderate or severe impact of the pandemic on their mental health [4]. Approximately one third of the people
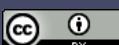
in the territory show signs of peritraumatic psychological suffering. Young adults are the most vulnerable group [5].

In Brazil, an effort made by the psychology community resulted in a set of scientific publications on mental health during the beginnings of the COVID-19 pandemic. Most studies are narrative reviews about the experience of countries previously affected by the pandemic, addressing guidelines for mental health care, assessment and prevention [6-,9] and the impact on vulnerable populations as children [10] and health professionals [11,12]. In addition, scientific institutions have suggested mental health care protocols for the pandemic [13- 15].

Empirical studies on mental health during the pandemic in Brazil are also rapidly developed. One study [16] evaluated 88 nurses working in the pandemic health care and identified that a quarter of them had depression (25%) and almost half had signs of anxiety (48.9%). An online survey [17] carried out on a community sample of 799 participants from the state of Rio Grande do Sul identified that being female, younger, and the presence of previous disorders were predictors of mental disorder during the pandemic. In addition, it was observed that effects of the current context such as being in the risk group, losing income and being exposed to negative news increase the risks to mental health [17].

Qualitative studies with Brazilian population on this topic are needed to understand pandemic impact on mental health. The bottom-up approach is suitable to investigate specificities of groups or segments of population regarding the experience during social isolation, therefore providing information to generate both preventive and rehabilitation actions in mental health. One of the few qualitative studies conducted in the country on this topic aimed to access the social representations about the coronavirus pandemic and its treatment. The representations of the pandemic were divided into two thematic axes: a) concept, contamination, and prevention of COVID-19; b) psycho-affective and social implications of the pandemic. The latter involves concerns about virus dissemination and its psychosocial and affective implications. Regarding treatment, the main themes related to the search for a cure (institutional responses to contain and develop treatments) and the economic and social difficulties in accessing treatment [18].

Literature underlines that pandemics are disruptive to mental health and produce negative affective reactions, like fear, anxiety, sadness, and stress. It appears that some people are more vulnerable than others are, and may experience intense psychological suffering, which can lead to serious behavioral or psychological problems, especially when unnoticed and therefore untreated. Thus, to plan psychological interventions targeting promotion of, and/or restoration of, mental health we need studies aiming at identifying populations at risk in terms of psychological distress, as well as studies focusing how people experience the life-threating situation.   In order to address this, we designed a hybrid study that aims to map the psychological distress and the conditions associated with it during the quarantine imposed by the COVID-19 pandemic, in a population of university workers in southern Brazil. The study primary goal was to provide information to develop psychological interventions to promote mental health within this population. We believe this mental health applied research generates knowledge that can be useful to inform public health research and programs.

2. Materials and Methods

This is a cross-sectional quantitative and qualitative study inquiring about mental health conditions from university staff about two months after beginning of social distance.

2.1 Participants

The population eligible to participate were employees and indirect workers (N≅ 1850) from a large private university located in southern region of Brazil. There were 407 respondents of whom one declared as transgender. Of the remaining, 276 (68%) were women. Age ranged from 19 to 71 with mean (M) 40.0 and median (Md) 38.

2.3 Instruments

A single questionnaire developed by researchers containing general information on sex, age, marital status, occupation, remote work, quarantine, and general health information. Most questions were structured with simple or multiple choices. An open-ended question was included asking about the main stressors that the participants were currently experiencing. In addition, the Clinical Outcome Routine Evaluation - Outcome Monitoring (CORE-OM) [19,20] was used. This questionnaire was developed in the United Kingdom during the 1990s. As well as the full CORE-OM there are four shorter versions [21].

The full version, CORE-OM, is a self-report scale, used to assess the effectiveness of treatments in mental health. It contains 34 items that assess four domains: subjective well-being (4 items); problems and symptoms (12 items); life functionality (12 items) and risk for yourself and others (6 items). These items are answered on a five-point scale, and range from "never" to "always or almost always". The measure has six scores reflecting items from those four domains plus the total score and the "non-risk" (NR) score of the 28 non-risk items. The scores reflect content domains not population dimensions or factors. Most studies of the internal structure show the risk and NR items to have quite low correlation with each other and clinically the risk items are recommended to be treated as "flags" rather than making up a psychometrically strong score while the NR score is a clear measure of psychological distress. Though we used the risk items to identify individuals at particular risk, this report uses the NR score as our main response variable.

An initial study in the United Kingdom with a clinical sample (n = 890) and a non-clinical sample (n = 1106) found an adequate general index of internal consistency (Cronbach's α = 0.94) for both samples. For all subscales, but not for risk, temporal stability was good, with test-retest correlations ranging from 0.87 to 0.91. Convergent validity with several symptom scales showed correlations between moderate and high (R ranging between 0.55 and 0.88). In addition, CORE-OM discriminate between clinical and non-clinical populations in all its dimensions [20].

The Brazilian Portuguese version of CORE-OM [22] was developed following the guidelines of the CORE System Trust (www.coresystemtrust.org.uk/cst-translation-policy) for the instrument translation. Studies on this version psychometric properties in the Brazilian population have not yet been reported but a well-powered initial study is currently being prepared for submission by the authors together with other colleagues and shows reassuring psychometric properties.

2.4 Procedures

Data collection occurred in May 2020. An invitation to participate in the survey together with a link to the form was sent by email to all individuals in the university official list of employees and workers (approx. 1850 employees). The forms remained open to responses for ten days.

2.5 Data Analysis

The epistemological position is pragmatic and contextual: we believe the evidential value of the data is defined by its actual or potential utility locally and potentially more widely and located within

the dual contexts of psychological and public health research. We used descriptive analysis to summarise quantitative socio-demographic, general and mental health, and self-care data.

The open-ended question was analyzed using Consensual Qualitative Research for simple qualitative data (CQR-M) [23]. The Consensual Qualitative Research (CQR) [24] from which the CQR-M was built is an eclectic qualitative method that combines elements of grounded theory, constructivism, phenomenology and post-positivism to explore or understand a phenomenon experienced by groups of individuals. The method uses consensus between judges in order to capture multiple viewpoints about the data (a form of triangulation). The team of raters were six psychology students that were trained to CQR-M by the first author. Since raters were inexperienced in qualitative analysis, the first author also audited all steps. First, pairs of independent raters examined 50 answers each to list different domains, i.e., broad topics to group data. All reviewed this list, and final domains were established in a consensual meeting with all raters and auditor. Then, raters returned to material and grouped ideas into similar categories. In another consensus meeting with all raters and auditor, the final categories were defined. After, the auditor reviewed all categories. Then, we verified the frequency of each category occurrence; and finally, made small adjustments in order to prevent having categories with very small frequency (< 1%). Miscellaneous irrelevant data were excluded (e.g. general comments about the survey).

The quantitative analytic approach was descriptive and exploratory: we recognise the data are from a subset of the employees of one university and wider generalization to the whole employee group, or wider, must be extremely cautious. Null hypothesis tests of association with a conventional alpha level of .05 were used to filter out associations and identify those of potential interest. For tests on continuous variables bootstrap p values were used (1000 bootstrap replications). Clearly with many associations explored the likelihood of some false positively significant associations/effects is high but as the testing was only filtering in effects for further comment and as all effects of interest were then given effect sizes to allow comparison of their possible impacts on the response variables the costs of this approach seemed lower than those of using any of the possible multiple tests "corrections" across so many and diverse associations.

Wherever possible 95% confidence intervals (CIs) around observed sample statistics are used as these convey the precision of estimation of the population parameters given the sample size (but the estimation will always be biased by selective non-participation so CIs themselves must be interpreted cautiously). To avoid the analytic realms being treated as unconnected, and to see what information each can add to the other, qualitative domain codings were also treated as quantitative variables hence the CORE-OM NR score was explored for associations with the following.

- Whether a free response was coded into one (or more) of the seven domains emerging from the qualitative analysis (see details below).
- Non-COVID-19 demographics: gender, age, social/relationship status, household size, number of children
- COVID-19 related demographics: member of an essential work group, having a member of the household in such a work group, being personally at high risk if infected, having been infected, having someone in the household who had been infected.
- Self-care/health activities per week: days alcohol consumed, days unprocessed food consumed, days exercised, days had some relaxation.
- General and professional psychological support: perception of help being available, perception of having listeners available, experience of counselling, experience of psychiatric support.

We recognised that there would be three major challenges to any simple analysis of the relationships between these predictors and the NR score response variable: associations between predictors, non-linear relationships between continuous predictors and response, and interactions. With these issues in mind the quantitative analyses started with an exploration of associations

between the major predictor variables to identify any strong and statistically significant associations. This was followed by a fairly exhaustive exploration of univariate predictor/response relationships with some exploration of linearity (for predictors with at least four ordered categories). Finally, bivariate interactions were explored for adding gender and age with each of the other predictors. Where possible 95% CIs are reported using bootstrap estimation except for the eta squared effect size statistics where parametric CIs are reported. The full exploration is available by request to the authors. The most clear and interesting relationships are reported next.

2.6. Ethical considerations

The Research Ethics Committee from university of origin approved the study protocol (CAAE: 31225520.0.0000.5344).

3. Results

3.1 Participants socio-demographic and psychosocial characteristics

Participants were 407 professionals, majority female (67.8%), married (64.8%). Mean age was 40 (SD = 11.12). Most were working in technical-administrative functions (50.9%), remotely, at home (85.7%). The vast majority, 264 (64.7%) of participants reported working hours as 40, other responses ranged from 4 to 60 (M= 34.27; Md = 40).

As with the number of weekly hours of work, cumulative days in social distancing had a very strong single peak with 196 participants (48.2%) saying 60 days. The vast majority of sample (98.8%) declared compliance with official social distancing recommendations and were going out of the home only once or twice a week for essential tasks (82.6%). Respondents often or almost always had support from others to help them with household chores (68.6%) and to share their problems and concerns (70.5%).

3.2 General health status and behaviors

21.4% reported having previous health conditions associated with high risk to COVID 19 complications. None of the participants had tested either positive or negative for the virus, although 42 (10.3%) reported having experienced mild or moderate COVID 19-like symptoms.

A significant portion of the respondents were under mental health treatments when pandemic started, 21.6% assisted by Psychologists and 10.1% by Psychiatrists. In addition, some others sought mental health assistance after the pandemic either with psychologist (1.7%) and/or with psychiatrist (1.7%).

Regular alcohol consumption was prevalent in 64.9% of participants, with 17.1% having some alcohol at least three times a week. Healthy habits were also highly prevalent: the majority ate homemade meals daily (64.4%), exercised at weekly basis (68.3%) and were practicing hobbies that promote relaxation (e.g., meditating) weekly (61.1%).

3.3 Major concerns – qualitative data

Only 12, 2.9% did not offer any qualitative comment. The responses (N=487) from the 395 who did were classified into six domains: Work (n= 111, 22.79%), Health (n= 84, 17.25%), Isolation (n= 73, 14.99%), Personal life and routine (n=90, 18.48%), Social environment (n=48, 9,86%), and Future (n=67, 13.76%), a seventh small set (n = 14, 2.87% from 487; 3.44% from 407) whose responses explicitly disavowed being stressed by COVID-19. Only 31 participants (7.6% of the 407) gave responses which did not clearly fit into the domains. Most of those were comments on the survey. As mentioned before, these responses were excluded as irrelevant, unrelated to question. Most participants had the

content of their response allocated to only one of the categories (N = 269; 66.1%). In addition, some participants provided more complex responses whose content covered two (N = 76; 18.7%), three (N = 14; 3.4%) or four (N = 3; 0.7%) domains. Categories falling in these domains are presented in Table 1, together with their frequencies in the domains.

Table 1 - Major concerns: CQR domains and categories

Domain/ Categories	%	Illustrative quotes
Work		
Work overload	45.94	*My workload has increased exponentially.*
Hyper connectivity and digital fatigue	22.52	*Having to work long hours on the computer is exhausting. Online teaching eliminates non-verbal language.*
Pressure from managers	9.91	*We are doing everything possible and impossible to deliver everything that is requested.*
Difficulty in establishing limits and routines	6.31	*Work invading holidays and weekends*
Concern and problems with productivity	9.01	*I am concerned that I am not being as productive as in person.*
Lack of access to tools and conditions for work	7.21	*Lack of facilities for work.*
Health		
Fear of contagion	44.05	*I am afraid to infect myself and parents who are at risk group.*
Symptoms and complains	25	*Sleep impairment, worsening diet and weight gain.*
Concerns with Family members	17.86	*My father being hospitalised in serious condition.*
Restrictions of self-care activities	13.09	*Reduced physical exercise.*
Isolation		
Longing and loneliness	56.16	*Living alone at times brings the feeling of loneliness*
Lack of Freedom	43.84	*It bothers me not being able to leave the house, not being able to carry out my tasks with freedom and autonomy*
Personal life and routine		
Reconcile multiple tasks	53.33	*Setting boundaries between personal time and working time.*

Children care	18.90	*Homeschooling*
Housework	13.33	*Another stressful thing is the overload of household chores (food routine, cleaning activities, housekeeping).*
Lack of personal time	2.22	*The lack of time for myself, even to do nothing.*
Family conflicts	8.89	*Lack of dialogue and the mobile phone that is always in everyone's hands!*
Difficulties with routine	3.33	*It is difficult to adapt to homeworking and find routines with any pleasure in them at home, with a routine that adds pleasure to doing it.*
Social environment		
Denial of COVID-19 severity	20.83	*To hear people saying with conviction that COVID19 is just a 'little flu', both on television and on the social network.*
Political and economic insecurity	37.50	*General insecurity in the management of the crisis in Brazil*
Social impact of pandemic	12.50	*In general, the concern with society, with the conditions in which other people are living*
Negative news	29.17	*Negative highlights that are given by some media referring to the numbers of people infected with COVID, they should highlight the people who are cured.*
Future		
Prospects of losing jobs and income	58.21	*The risk of losing my job (in case the crisis gets worse) and financial support in the near future also leaves me in an uncomfortable situation*
Uncertainty about returning to normal	41.79	*The feeling of uncertainty, of deadline without limits*

A minor convergent validity check was that there was a very marked mean score difference between those explicitly saying they were not stressed by CV-19 (M=0.31) versus those who declared stress within at least one of the qualitative domains (M=1.08, difference 0.77 with 95% CI[0.649 to 0.890])).

3.4 CORE-OM NR- quantitative data

Mental distress was accessed by Non-risk (NR) scale of CORE-OM. The scale presented the following descriptive analysis: Md=0.89; M=1.05; SD=0.66. Internal reliability was excellent (Cronbach α=.947[95% CI .938-.954]).

3.4.1. Associations between predictor variables

As expected, there were several statistically significant associations between potential predictors. Some of these are entirely logical (e.g. between number in the household and the number of children and those at high risk from COVID-19 being older than those who weren't). Others were emergent findings (e.g. that those with others in the household in CV-19 essential occupations were younger than those without).

We explored some interesting interactions. Having ever had support from a psychologist was associated with gender: 68.8% of women having, or having had, such support vs. 46.1% of the men; for psychiatric help the proportions were 36.1% vs. 23.9%. Age was not related to psychological help but there was a marginally significant tendency for those currently seeing a psychiatrist to be younger than those not seeing one. Perception of help available was not statistically significantly linked with gender or age, perception of having listeners available was not related to gender but was associated with age: increasing with age. Perception of help and of listeners available were positively correlated (R = 0.36[95%CI 0.26- 0.45]) None of the four health behaviours showed gender differences and only getting exercise showed a relationship with age: a curvilinear relationship with lowest rate of exercise at age 30 and a clear rise either side of that age.

3.4.2. Notable predictor-response associations

Covariance effects of gender and age on NR score were examined when testing potential predictors. There was no statistically significant gender effect (bootstrap p = .12) but a strong relationship with age with a broadly linear decrease in scores with age ($\eta2$ =0.122, 95%CI [0.077 to 0.173]), as shown in Figure 1. The age effect was independent from gender.
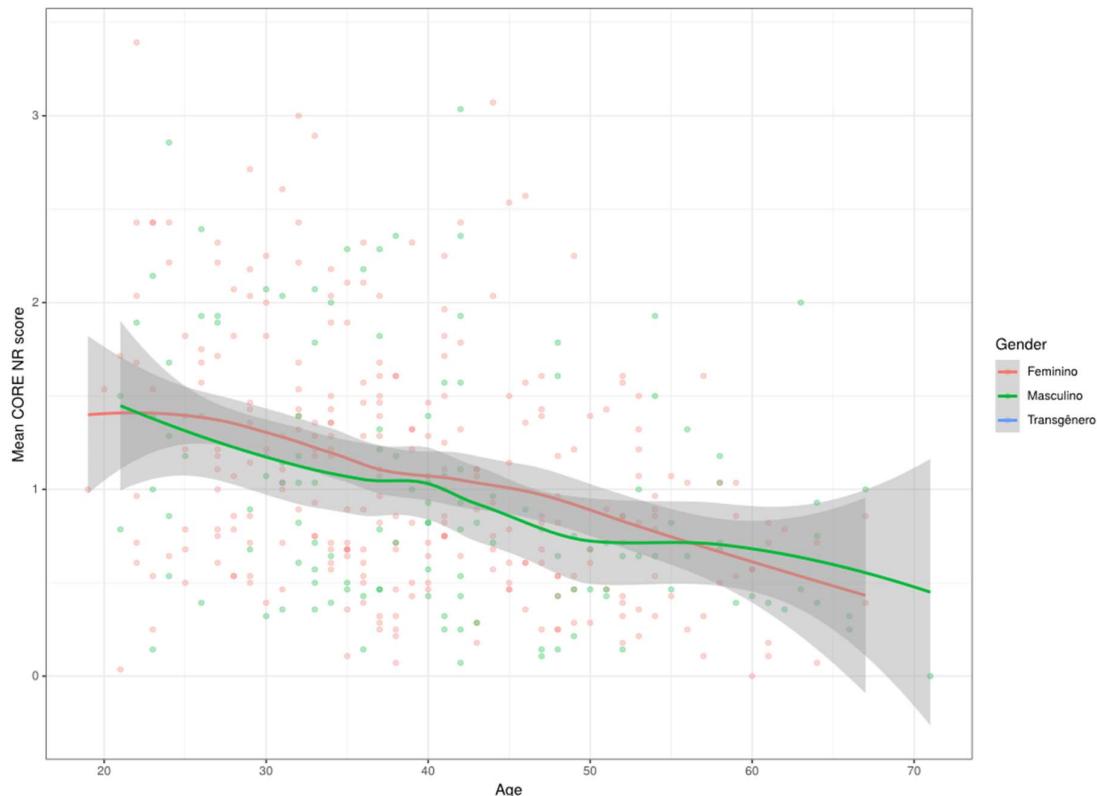

Figure 1 Relationship of CORE-OM NR score with age and gender

There was a statistically significant effect of social/relationship status with partnered participants having higher NR scores than single participants: mean difference -0.15 (95%CI[-0.28-0.01]). There was a complex effect of gender and household size with a statistically significant interaction (p =.02) with women's mean NR scores tending to increase with household size while men's scores were not associated with household size. However, neither simple effect of gender or household size was statistically significant. There was no effect of number of children.
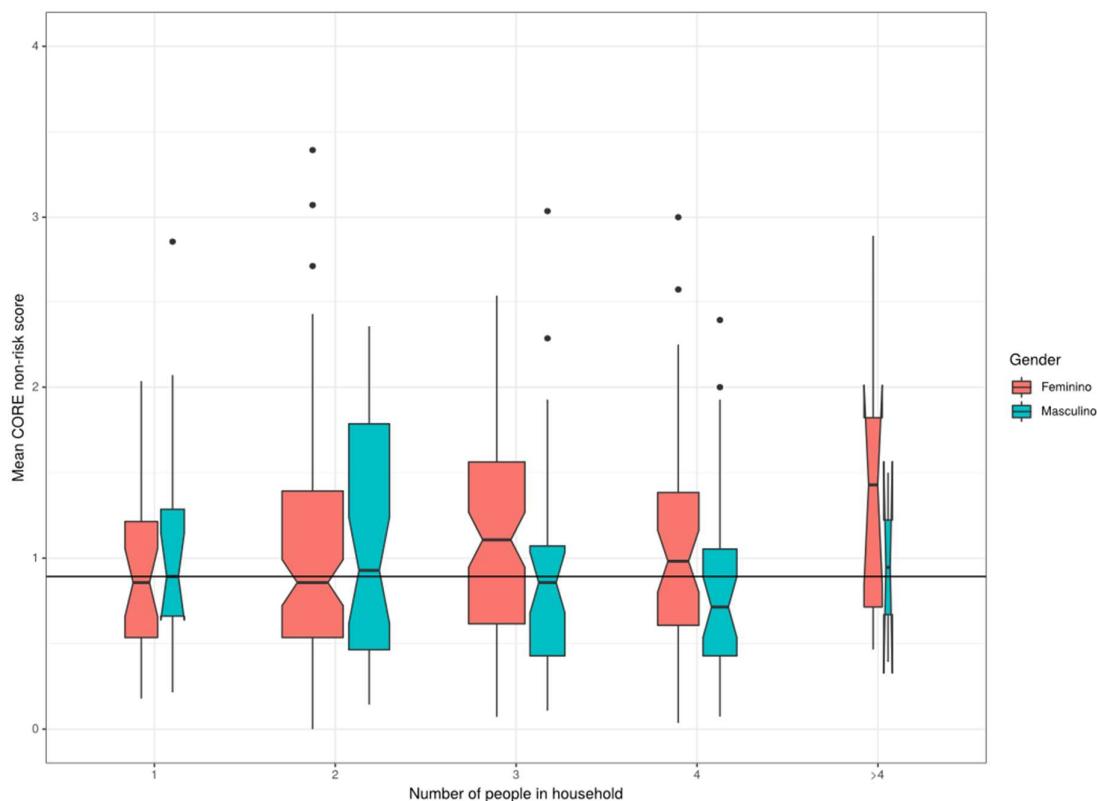
Figure 2 Effect of gender and household size on CORE-OM NR score

It is noteworthy that higher NR scores were detected in people experiencing COVID-19 like symptoms compared with those who were not (η^2 = 0.015; 95%CI [0.002-0.04]). Also a really marked effect were found if another person in the household experiencing COVID-19 symptoms (η^2= 0.028; CI95% [0.007 to 0.059]). It is worth remembering that, until the moment of the research, these people did not have a diagnosis confirmed by laboratory tests. By contrast, surprisingly, being at high risk from COVID-19 was associated with *lower* mean NR scores with mean difference 0.19 (CI 95% [0.03 to 0.35]). And there is no differences of being essential worker (η^2 = 0.00; 95%CI [0.0- 0.0]) or living with someone that is essential worker (η^2 = 0.01; 95%CI [0.00-0.031]).

Another group of predictors were self-care/health activities per week: days alcohol consumed ($\eta2$ = 0.022; 95%CI [0.01-0.046]), days unprocessed food consumed ($\eta2$ = 0.046; 95%CI [0.014-0.078]), days exercised ($\eta2$ = 0.13; 95%CI [0.079-0.178]) and days relaxing ($\eta2$ = 0.37; 95%CI [0.009-0.066]).

The last group of predictors were perception of receiving general and professional psychological support. About general support, somewhat surprisingly the perception of help having been available was statistically significantly associated with NR score but with a strongly curvilinear relationship, not the simple trend we expected (see Figure 3A). The curvilinear relationship had a

medium effect size (Figure 4). On the other hand, perception that listeners were available was very linearly linked with NR scores (η^2 = 0.176; 95%CI [0.118-0.227]).

About professional help, when we compare the group that never experienced counseling (M= 0.912; 95%CI [0.817-1.0]), to people that did it in the past (M= 1,13; 95%CI [1.04-1.23]) and to people that are experiencing now (M= 1,17; 95%CI [0.99-1.37]) we can see that this variable is related to mental distress as measured by NR score ($\eta2$ = 0.029; 95%CI [0.006-0.059]). The same effect is observed comparing groups that never (M= 0.943; 95%CI [0.88-1.01]); in the past (M= 1.230; 95%CI [1.09- 1.37]) and now (M= 1.43; 95%CI [1.16-1.72]) experience in psychiatric treatment ($\eta2$ = 0.065; 95%CI [0.03- 0.105]).
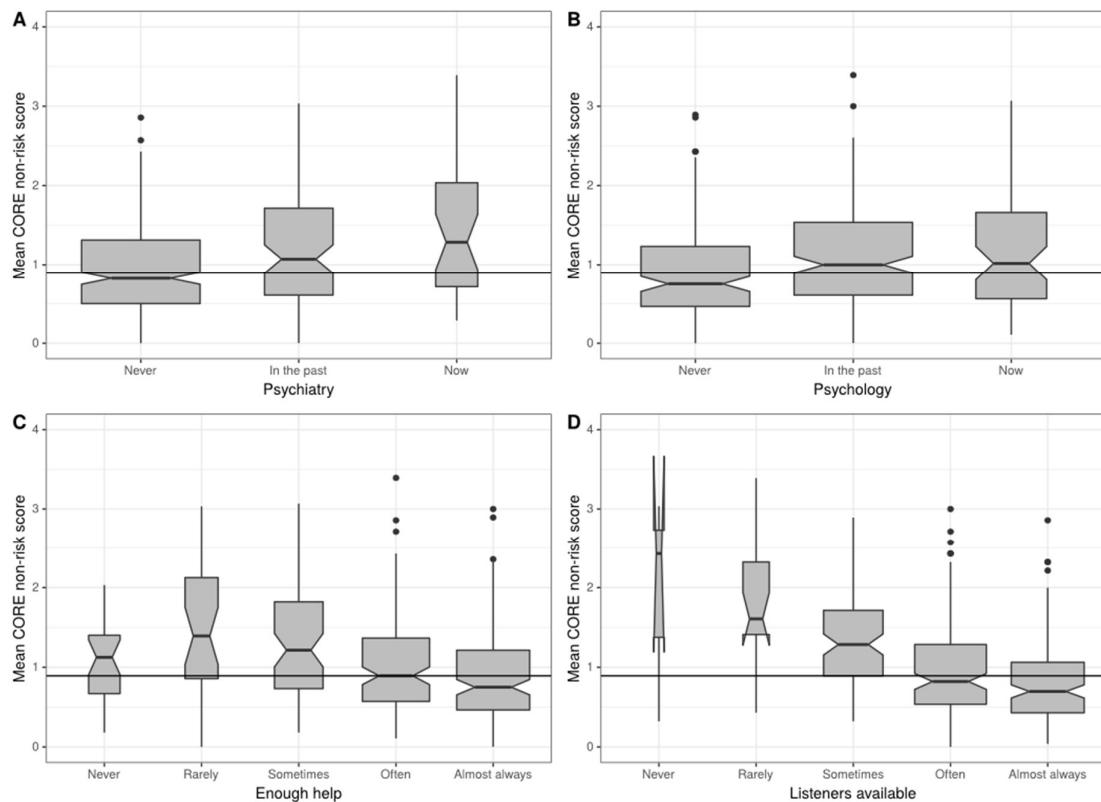

Figure 3 Relationship between general support and professional support with CORE-OM NR score

Figure 4 shows the effect sizes (ES) for the various predictor variables as predictors of CORE-OM NR score. Rules of thumb levels for the ES are shown by the horizontal reference lines and the vertical lines are the parametric 95% confidence intervals for each predictor's effect. The black points and CI lines are the raw effects and the predictors have been ordered by raw ES. It can be seen that ES range from zero for the participant's work being essential up to a large effect size for rating of having listeners. The blue points are effect sizes after partialling out gender, red after partialling out age and purple after partialling out both gender and age. It can be seen that the effects of partialling out gender are small, the biggest being a slight increase in the ES for the association of days per week eating unprocessed food. By contrast, the effects of partialling out age are more marked and increase the ES for days of alcohol per week, don't much affect some ES, e.g. gender, number of children; and they reduce other effect sizes (social status, being in a CV-19 high risk group and days of exercise per week).
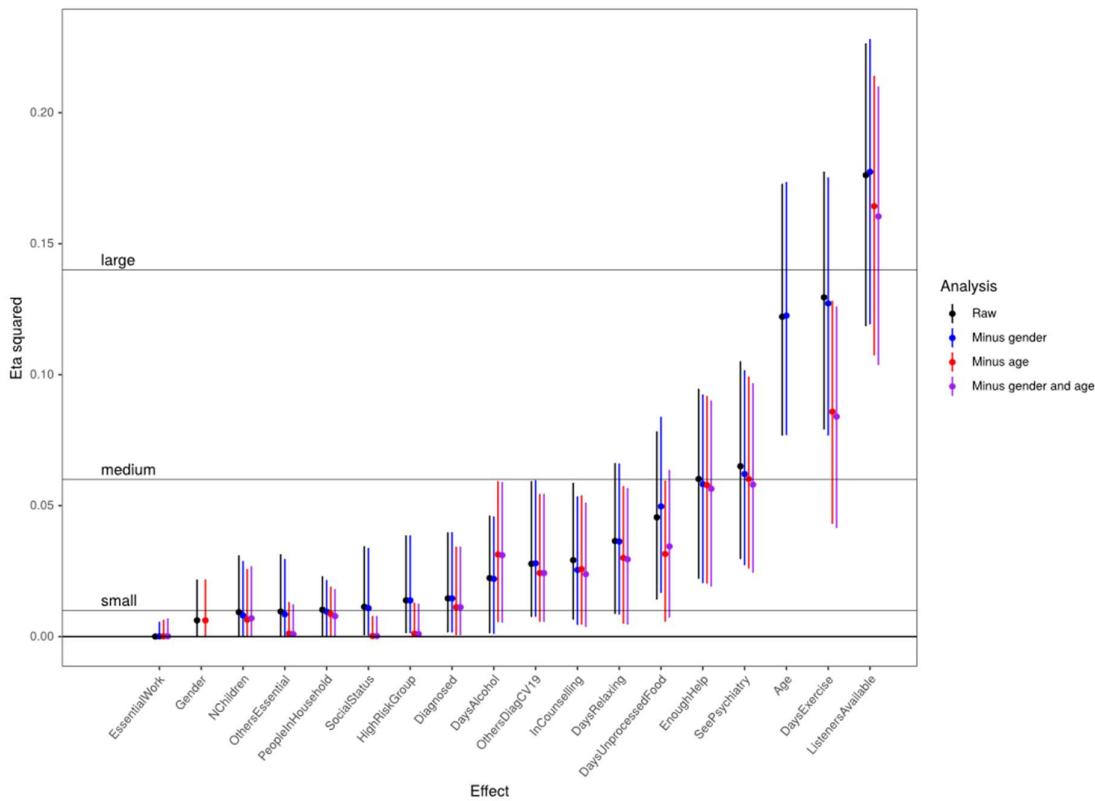
Figure 4 Effects sizes of relationships between predictors and CORE-OM NR score

4. Discussion

This study was developed to investigate mental distress during the COVID-19 pandemic with a primary goal to provide information to develop psychological interventions to promote mental health in different levels, targeting a population of university workers. Therefore, we considered that a hybrid approach was essential to access the complex subjective dimension of distress. Although our sample is a pragmatic sample, the complementary types of data, qualitative and quantitative, provide an accurate and broad picture of how the pandemic can negatively affect people´s life and mental health, allowing the formulation of grounded-on-experience hypotheses of the impact of pandemic on the general population. As we expected, our approach to the problem led to a multifaceted and complex picture of the consequences of pandemic not only mental health (as an outcome) but also in psychological experience (as a process of existing, perceiving and giving meaning to experiences).

Mental health is supposedly more vulnerable now than before coronavirus not only because anyone can be infected and therefore have a potential traumatic experience of being severely ill, but also because of multiple parallel factors, like social deprivation, reduction of liberty, economic losses and higher exposure to adverse home environments [25]. This collective trauma exposure need to be understood in order to be cared and mitigated [26].

It is noteworthy that the vast majority of participants answered the open-ended question about current stressor or major concern. Although our qualitative results find correspondence with the thematic axes capturing social representations in the pandemic in Brazil identified by Do Bú and collegues [18], the scope of our health domain is relatively narrower and most of our categories could be understood in relation to their psycho-affective and social implications of the pandemic and our findings corroborate the argument that multiple elements parallel to contagion are potentially harmful to psychological health [25].

From qualitative analysis, we learned that most of people have to deal with major concerns related to the pandemic. Almost one third of responses indicated more than one area of vulnerability. For some, the fear of contamination co-occurs with loneliness and feelings of imprisonment due to social isolation. For others, changes in work (e.g. more demands and more online tasks and interactions) are exhausting and co-exist with sense of loss of personal time, or depressive symptoms, for example. Within each domain, many responses also fell in multiple categories (e.g. a respondent was worried about someone´s health, but also mentioned having developed insomnia). This findings show that the pandemic produces broad concerns and affects many different aspects of life and that the combination of impacts varies across individuals. Therefore, researchers and mental health professionals providing support should avoid addressing only simple and direct relationship between factors and distress.

First, we explored the relationship between physical and mental health. Up to the time of data collection, essentially none of the participants or their families had had a diagnosis confirmed by a COVID-19 exam, reflecting the fact that he state of Rio Grande do Sul started social distancing early. However, the perception of COVID-like symptoms, both in themselves and in close people, is linked to greater psychological distress showing in CORE-OM scores. Qualitative data shows that a significant stress factor is the fear of becoming seriously ill or even dying and thereby leaving significant others helpless or, alternatively, being responsible for the contagion of loved ones. This type of fear, specific and uncontrolled, is one of the most common reactions in relation to pandemic exposures [1].

However, people who reported being part of a risk group had less distress, contrary to findings of others [17,26]. Although this result could be spurious, alternatively, it could reflect a tendency of people who do not consider themselves be in major biological risk to feel more deprived in quarantine. Our qualitative data reinforces that isolation is an important factor of vulnerability for mental health in the pandemic not only because of loss of personal contact with others but also due to loss of freedom to come and go and to decide on relationships. Diverging recommendations, even among health authorities, supposedly contribute to ambivalence towards social distancing measures to prevent COVID-19 infection, as we can infer from our qualitative data.

Our questionnaire included some lifestyle behaviors because its relevance to mental health, as well as to its cardiovascular comorbidities [27] and because supposedly compulsory social isolation can prevent people from sustain previous healthy habits (e.g. exercising regularly) as well as increase risk behaviors (e.g. alcohol consumption). A Chinese survey found mixed effects of isolation in healthy behaviors, with increase in eating quality but less physical activity [28]. As expected, in our sample associations between these predictors and mental health were found, with a moderate effect of exercise routine. Therefore, results are align with research findings indicating that exercise regularly can alleviate mental distress by COVID-19 [29] and that eating quality food has a protective effect of on subjective well being [30].

Regarding non COVID-19 demographic variables in relation to mental health, the potentiating effect of age and the absence of a significant gender effect are notable. In our sample, older individuals tend to exhibit less psychological distress. Similar result was found in a national survey conducted in the USA in the early pandemic in which older age was also associated with less financial concern and less perception of risk of infection and of need for quarantine [31]. The absence of a significant gender effect, although unexpected, was also reported by others in China [29]. Our results suggest, however, that men and women may have somewhat different reactions depending on the characteristics of their environment during isolation, as having more people in the household was associated with greater suffering in women. This possibly reflects the fact that, in our culture, women traditionally assume more of the household chores and childcare, which could result in greater overload of activities in the home office situation. Our qualitative findings about the excess of

domestic activities and the need to reconcile multiple activities that, although present in both genders, were more prevalent in women, corroborate this hypothesis.

In addition, our findings indicate that while receiving help with household chores is also important, having someone who listens to self has a greater protective effect on the mental health of both men and women. Thus, to mitigate anxiety and distress during and after this crisis it deem necessary to help people to interact and connect with each other. Recommendations of physical distancing should no longer be confounded with recommendations of social distancing [32].

Finally, as expected, either current or past experience of receiving mental health assistance by relates positively with psychological suffering. General practitioners and other health professionals must pay special attention for individuals with preexisting mental and behavioral problems, as well as to emerging complaints. As already noted by many others both immediate and long lasting psychosocial effects of pandemics are not to be neglected [1, 2, 25, 32] and mental health preventive programs should be encouraged [32].

This study helps to understand the psychological impact of COVID-19 outbreak on individuals. However, one must remember that Mental Health disciplines are soft sciences and people are not as predictable as natural phenomena. Thus, We agree with the idea that interpretations of all epidemiological study must be limited and cautious, since results are always complex and need to be interpreted carefully and with aid of cognitive science, i.e., considering cognitive bias, especially when numbers and quantities are unnecessarily dichotomised or in other ways simplified [33]. We believe that choosing a mixed methods survey strengthens this study and helps avoid oversimplified interpretations. More studies are needed to analyze the main effects of social distancing and COVID-19 crisis on mental health.

5. Conclusions

With the pandemic many dimensions hitherto relatively stable in people's lives have changed radically: work, relationships, personal life and routines. Listening to respondent´s major concerns we found out that these changes produce not only psychological symptoms and health preoccupations but also loneliness and a sense of helplessness. Social, political and economic insecurity contribute to the scenario. Our quantitative analysis showed several factors associated with psychological suffering. Real relationships appear to be complex by number of potential predictors and interactions. It is noteworthy that the strongest effect was to having someone to confide and seek help to personal issues, associated with less distress, reinforcing the relevance of personal, intimate and supportive relationships in psychological well-being. Sharing thoughts, needs and preoccupations can be a powerful antidote to pandemic negative effect in mental health. Therefore, current public policies outlined to promote population health should include provision of remote psychological support to isolated, and more vulnerable, individuals.

References

1. Serafini, G.; Parmigiani, B.; Amerio, A.; Aguglia, A.; Sher, L.; Amoré, M. The psychological impact of COVID-19 on the mental health in the general population. *QJM* 2020, 113, 531-535. https://doi.org/10.1093/qjmed/hcaa201

2. Ho, C.S.; Chee, C.Y.; Ho, R.C. Mental Health Strategies to Combat the Psychological Impact of COVID19 Beyond Paranoia and Panic. *Ann Acad Med Singap* 2020, 49, 1-3.

3. Ornell, F.; Schuch, J.B.; Sordi, A.O.; Kessler, F.H.P. "Pandemic fear" and COVID-19: mental health burden and strategies. *Braz J Psychiatry* 2020, 42, 232-235. http://dx.doi.org/10.1590/1516-4446-2020-0008

4. Wang, C.; Pan, R.; Wan, X.; Tan, Y.; Xu, L.; Ho, C.S. et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (covid-19) epidemic among the general population in China. *Int J Environ Res Public Health 2020*, 17, pii: E1729. http://10.3390/ijerph17051729

5. Qiu, J.; Shen, B.; Zhao, M.; Wang, Z.; Xie, B.; Xu, Y. A nationwide survey of psychological distress among Chinese people in the COVID19 epidemic: implications and policy recommendations. *Gen Psychiatr* 2020, *33,* e100213. http://dx.doi.org/10.1136/gpsych-2020-100213

6. Enumo, S.R.F.; Weide, J.N., Vicentini ECC, Araujo MF, Machado WL. Enfrentando o estresse em tempos de pandemia: proposição de uma cartilha. *Estud Psicol* (Campinas) 2020, 37, e200065. http://dx.doi.org/10.1590/1982

7. Faro, A.; Bahiano, M.A.; Nakano, T.C.; Reis, C.; Silva, B.F.P.; Vitti, L.S. COVID-19 e saúde mental: a emergência do cuidado. *Estud Psicol* (Campinas) 2020, 37, e200074. Available online: https://www.scielo.br/pdf/estpsi/v37/1982-0275-estpsi-37-e200074.pdf (accessed on 25 September 2020)

8. Oliveira, W.A.; Oliveira-Cardoso, E.A.; Silva, J.L.; Santos, M.A. Impactos psicológicos e ocupacionais das sucessivas ondas recentes de pandemias em profissionais da saúde: revisão integrativa e lições aprendidas. *Estud Psicol* (Campinas) 2020, 37, e200066. https://doi.org/10.1590/1982-0275202037e200066

9. Crepaldi, M.A.; Schmidt, B.; Noal, D.S.; Bolze, S.B.A.; Gabarra, L.M. Terminalidade, morte e luto na pandemia de COVID-19: demandas psicológicas emergentes e implicações práticas. *Estud Psicol* (Campinas) 2020, 37, e200090. Available online: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-166X2020000100508 &lang=em (accessed on 02 October 2020)

10. Linhares, M.B.M.; Enumo, S.R.F. Reflexões baseadas na Psicologia sobre efeitos da pandemia COVID-19 no desenvolvimento infantil. *Estud Psicol* (Campinas) 2020, 37, e200110. https://doi.org/10.1590/1982-0275202037e200089

11. de Humerez, D.C.; Ohl, R.I.; Silva, M.C.N. Saúde mental dos profissionais de enfermagem do brasil no contexto da pandemia covid-19: ação do conselho federal de enfermagem. *Cogitare Enf* 2020, 25, e74115. https://doi.org/10.1590/0102-311X00063520

12. Saidel, M.G.B.; Lima, M.H.M.; Campos, C.J.G.; Loyola, C.M.D.; Esperidião, E.; Rodrigues, J. Intervenções em saúde mental para profissionais de saúde frente a pandemia de coronavírus. *Rev Enfermagem UERJ* 2020, 28, 1-6. Available online: https://www.epublicacoes.uerj.br/index.php/enfermagemuerj/article/view/49923/33859 (accessed on 25 September 2020)

13. Bizarro, L.; Peuker, A.C.; Miyazaki, C.; Modesto, J.G.N.; Almondes, K.M.; Soares, M.R.Z.; Teodoro, M.L.M. *Orientações técnicas para o trabalho de psicólogas e psicólogos no contexto da crise COVID-19*. Available online: https://www.sbponline.org.br/2020/03/grupode-trabalho-gt-de-enfrentamento-da-pandemia-sbp-covid-19 (accessed on 20 September 2020).

14. Melo, B.D.; Pereira, D.R.; Serpeloni, F.; Kabad, J.F.; Souza, M.S.; Rabelo, I.V.M. et al. *Saúde mental e atenção psicossocial na pandemia COVID-19: recomendações para gestores.* Fiocruz: Rio de Janeiro, Brazil, 2020. Available online: https://portal.fiocruz.br/sites/portal.fiocruz.br/files/documentos/cartilha_recomendacoes_gerais_06_04_0.pdf (accessed on 20 September 2020).

15. Greff, A.P.; Melo, B.D.; Lima, C.C.; Pereira, D.R.; Alves, E.G.; Cornejo, E.R.; ... Cescon, L.F. Saúde mental e atenção psicossocial na pandemia COVID-19: suicídio na pandemia COVID-19. Fiocruz: Rio de Janeiro, Brazil, 2020. Available online: https://www.arca.fiocruz.br/bitstream/icict/41420/2/Cartilha_PrevencaoSuicidioPandemia.pdf (accessed on 20 September 2020).

16. Dal'Bosco, E.B.; Floriano, L.S.M.; Skupien, S.V.; Arcaro, G.; Martins, A.R.; Anselmo, A.C.C. A saúde mental da enfermagem no enfrentamento da COVID-19 em um hospital universitário regional. *Rev. Bras. Enferm* 2020, 73(Suppl 2), e20200434. https://doi.org/10.1590/0034-7167-2020-0434.

17. Duarte, M.Q.; Silva Santo, M.A.; Lima, C.P.; Giordani, J. P.; Trentini, C.M. COVID-19 e os impactos na saúde mental: uma amostra do Rio Grande do Sul. *Cien Saude Colet* 2020, 25, 3401-3411. https://doi.org/10.1590/SciELOPreprints.507

18. Do Bú, E.A.; Alexandre, M.E.S.; Bezerra, V.A.S.; Sá-Serafim, R.C.N.; Coutinho, M.P.L. Representações e ancoragens sociais do novo coronavírus e do tratamento da COVID-19 por brasileiros. *Estud Psicol* (Campinas) 2020, 37, e200073. https://doi.org/10.1590/1982-0275202037e200073

19. Evans, C.; Mellor-Clark, J.; Margison, F.; Barkham, M.; Audin, K.; Connell, J.; McGrath, G. CORE: Clinical Outcomes in Routine Evaluation. *J Ment Health* 2000, 9, 247–255. https://doi.org/10.1080/jmh.9.3.247.255

20. Evans, C.; Connell, J.; Barkham, M.; Margison, F.; McGrath, G.; Mellor-Clark, J.; Audin K. Towards a standardised brief outcome measure: Psychometric properties and utility of the CORE–OM. *BJPsych* 2002, 180, 51-60. https://doi.org/10.1192/bjp.180.1.51

21. Evans, C. The CORE-OM (Clinical Outcomes in Routine Evaluation) and its derivatives. *Integra Sci Pract.* 2012, 2, 12–14.

22. Santana, M.R.M.; Silva, M.M.; Moraes, D.S.; Fukuda, C.C.; Freitas, L.H.; Ramos, M.E.C. et al. Brazilian Portuguese version of the CORE-OM: cross-cultural adaptation of an instrument to assess the efficacy and effectiveness of psychotherapy. *Trends Psychiatry Psychother* 2015, 37,227-231. https://doi.org/10.1590/2237-6089-2015-0002.

23 Spangler, P.T.; Liu, J.; Hill, C.E. Consensual qualitative research for simple qualitative data: An introduction to CQR-M. In *Consensual qualitative research: A practical resource for investigating social science phenomena*; Hill, C.E. Editor; American Psychological Association: Washington, USA, 2012; pp. 269–283.

24. Hill, C.E. Introduction to consensual qualitative research. In *Consensual qualitative research: A practical resource for investigating social science phenomena*; Hill, C.E., Editor; American Psychological Association: Washington, USA, 2012; pp. 3-20.

25. Hotopf, M.; Bullmore, E.; O'Connor, R.C.; Holmes, E.A. The scope of mental health research in the COVID-19 pandemic and its aftermath. *BJPsych* 2020, 1-7.

26. Horesh, D.; Kapel Lev-Ari, R.; Hasson-Ohayon, I. Risk factors for psychological distress during the COVID-19 pandemic in Israel: Loneliness, age, gender, and health status play an important role. *Br J Health Psychol* 2020, 1-9. https://doi.org/10.1111/bjhp.12455

27. Balanzá-Martínez, V.; Atienza-Carbonell, B.; Kapczinski, F.; De Boni, R.B. Lifestyle behaviours during the COVID-19 - time to connect. *Acta Psychiatr Scand*, 41, 399-400. https://doi.org/10.1111/acps.13177

28. Wang, X.; Lei, S.M.; Le, S.; Yang, Y.; Zhang, B.; Yao, W. et al. Bidirectional influence of the COVID-19 pandemic lockdowns on health behaviors and quality of life among chinese adults. *Int J Environ Res Public Health* 2020, 17, 5575. https://doi.org/10.3390/ijerph17155575

29. Zhang, Y.; Zhang, H.; Ma, X.; Di, Q. Mental health problems during the COVID-19 pandemics and the mitigation effects of exercise: A longitudinal study of college students in china. *Int J Environ Res Public Health* 2020, 17, 3722. https://doi.org/ 10.3390/ijerph17103722

30. Hu, Z.; Lin, X.; Kaminga, A.C.; Xu, H. Impact of the COVID-19 epidemic on lifestyle behaviors and their association with subjective well-being among the general population in mainland China: Cross-sectional study. *J Med Internet Res* 2020, 22, e21176.

31. De Bruin, W. Age differences in COVID-19 risk perceptions and mental health: Evidence from a national U.S. survey conducted in March 2020. *J Gerontol B Psychol Sci Soc Sci* 2020, gbaa074. https://doi.org/10.1093/geronb/gbaa074

32. Ho, C.S.; Chee, C.Y.; Ho, R.C. Mental health strategies to combat the psychological impact of COVID19. Beyond paranoia and panic. *Ann Acad Med Singap* 2020, 49, 1-6.

33. Greenland S. Invited commentary: the need for cognitive science in methodology. *Am J Epidemiol* 2017, 186, 639-645. https://doi.org/ 10.1093/aje/kwx259