

Psychological well-being and symptoms of depression and anxiety across age groups during the second wave of the COVID-19 pandemic in Denmark





Research Letter

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Introduction

At the time of writing, there have been more than 180 million confirmed cases of COVID-19 worldwide and more than 3.9 million COVID-19-related deaths (Johns Hopkins University, 2020). Furthermore, there is now a substantial body of literature reporting that the COVID-19 pandemic has also taken a substantial toll on the mental health of the affected populations Loades *et al.*, 2020; Xiong *et al.*, 2020). Accordingly, our studies based on the COVID-19 Consequences Denmark Panel Survey 2020 (CCDPS 2020) have documented co-variation between the pandemic pressure (positive cases of coronavirus infection/COVID-19-related deaths/societal restrictions and lockdowns) and the psychological well-being of the Danish population (Sønderskov *et al.*, 2020a; Sønderskov *et al.*, 2020b; Sønderskov *et al.*, 2021).

It has been suggested that the negative psychological impact of the COVID-19 pandemic may not have affected individuals equally across age groups, with young people potentially having been affected the most (Pieh *et al.*, 2020; Fancourt *et al.*, 2021). Here, we investigate this question using data from the CCDPS 2020. Specifically, we conducted age-stratified comparisons of the development in the level of psychological well-being and symptoms of depression and anxiety from wave 2 of the CCDPS 2020 (conducted towards the end of the first wave of the pandemic in Denmark) to wave 4 of the CCDPS 2020 (the most recent survey of psychological aspects fielded towards the end of the second wave of the pandemic in Denmark). See Panel A in Fig. 1 for an illustration of the course of the COVID-19 pandemic in Denmark in terms of the number of positive cases of coronavirus infection, the number of COVID-19-related deaths, and the societal restrictions/lockdowns.

Methods

Wave 2 of the CCDPS 2020 was fielded from April 22 to April 30, 2020 and is described in detail in Sønderskov *et al.* (2020b). The results from wave 2 represent the peak of psychological well-being of the three first CCDPS 2020 waves (Sønderskov *et al.*, 2020b; Sønderskov *et al.*, 2021), and was therefore used as a reference in this study. Wave 4 of the CCDPS 2020 was fielded from February 4 to February 21, 2021. All waves of the CCDPS 2020 were collected by the survey agency *Epinion* (on commission). The fourth wave targeted the same people as waves 1–3 and collected the same measures of psychological well-being, i.e. the five-item World Health Organization well-being index (WHO-5) (Topp *et al.*, 2015), and six questions on the severity of symptoms of depression/anxiety experienced over the past 2 weeks—reported on a scale going from 0 (not present) to 10 (present to an extreme degree). Wave 4 was completed by 1572 respondents, who had also responded to wave 2 of the survey ($n = 2149$ respondents), resulting in a retention rate of 73%. After weighting (applied in all analyses), the sample is representative of the Danish population on key demographic and political variables (age, gender, education, region, and political party choice in the last election).

The analyses were equivalent to those reported in prior studies of the CCDPS 2020 panel (Sønderskov *et al.*, 2020a; Sønderskov *et al.*, 2020b; Sønderskov *et al.*, 2021). In brief, we compared the following indicators of psychological distress/well-being between wave 2 and wave 4 amongst the individuals who had participated in both of these waves of the CCDPS 2020: the mean WHO-5 scores, the fraction of respondents with a WHO-5 total score <50 (indicative of depression (Topp *et al.*, 2015)), the individual WHO-5 item scores, and the level of reported symptoms of anxiety and depression (all paired sample t-test). Finally, we investigated the correlation (Pearson's) between changes in each of the six anxiety/depression symptom levels and



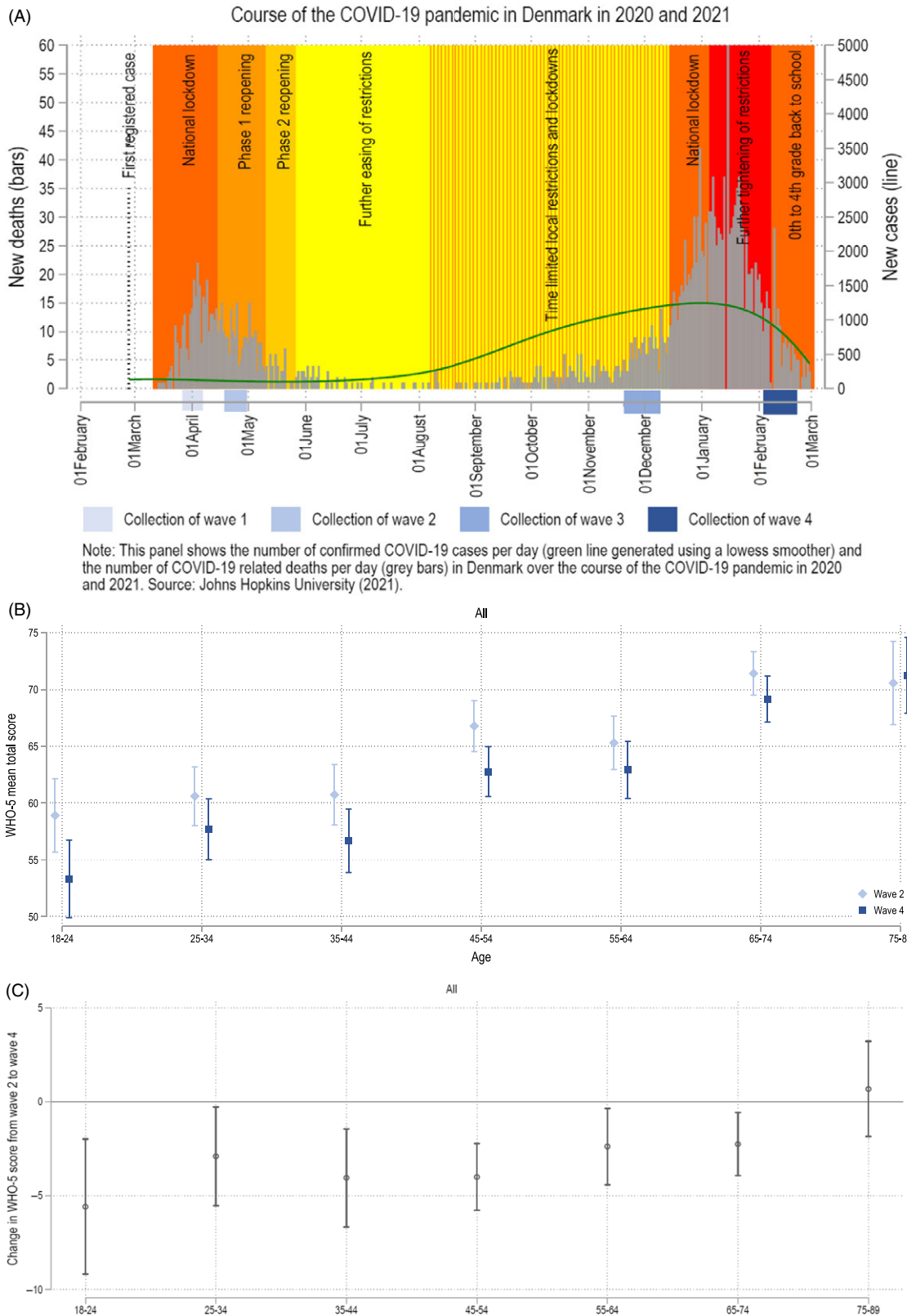


Figure 1. (A) Confirmed cases of COVID-19, COVID-19-related deaths, and societal restrictions/lockdowns (colour schematic with yellow colour representing mild restrictions and red colour representing more severe restrictions) in Denmark during the pandemic. (B) Psychological well-being (WHO-5 total scores with 95% CI) at survey waves 2 and 4, stratified by age. (C) Changes in psychological well-being (WHO-5 total scores with 95% CI) from survey waves 2 to wave 4, stratified by age. Sources: The COVID-19 Consequences Denmark Panel Survey 2020 and Johns Hopkins University.

changes in the WHO-5 total scores from wave 2 to wave 4. All analyses were stratified by the age at wave 1 (using the following strata: 18–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–89). *p*-values <.05 were considered statistically significant throughout.

Results

The 1572 respondents had a mean age of 49 years (range: 18–89 when responding to wave 1), and 51% were females (weighted mean/proportion). Fig. 1 shows the level of psychological well-being (the WHO-5 total score) at wave 2 and wave 4, respectively, stratified by age (panel B), as well as the change in psychological well-being from wave 2 to wave 4, stratified by age (panel C). The results are indicative of an age-conditioned relationship, where being younger is associated with a negative development in psychological well-being from wave 2 to wave 4 (F-test: $F(7, 1571) = 7.90$, $p < 0.001$). Gender- and age-stratified analyses (Supplementary Figure 1) show that this pattern is predominantly driven by reductions in well-being amongst the youngest women (aged 18–24) and middle-aged men (aged 35–54).

The results of the remaining analyses are available in the Supplementary Material. Briefly, I) the results regarding WHO-5 scores <50 are equivalent to those observed for the WHO-5 total scores, as young adults were particularly prone to report poor psychological well-being at wave 4 compared to wave 2 (Supplementary Figure 2). II) Furthermore, we found that the reduced psychological well-being from wave 2 to wave 4 was predominantly driven by feeling less relaxed, less vigorous, less rested, and less occupied with things of interest (Supplementary Figure 3). III) In accordance with the results regarding well-being, it was only amongst the young adults that some levels of anxiety/depression symptoms (nervousness and hopelessness amongst those aged 18–24, and guilt amongst those aged 25–34) had increased statistically significantly from wave 2 to wave 4 (Supplementary Figure 4). IV) Finally, we generally observed statistically significant correlations between changes in the symptom severity of anxiety/depression and the changes in psychological well-being (Supplementary Table 1).

Discussion

The take-home message from this study based on the CCDPS 2020 is that the unfolding of the COVID-19 pandemic seems to have had a particularly negative impact on young adults compared to older adults, although alternative explanations (e.g. seasonal changes) can of course not be ruled out due to the observational design (for a discussion of this aspect see Sønderskov *et al.* (2021)). These results are compatible with those obtained in similar studies from other countries (Pieh *et al.*, 2020; Fancourt *et al.*, 2021; Varga *et al.*, 2021). That it is the young adults (and the youngest females in particular) that appear to be most adversely affected by the enduring COVID-19 pandemic is notable and should receive due attention in studies designed to investigate the mechanisms underlying the psychological impact of the pandemic. Identifying these mechanisms will be vital to provide effective means to resolve this problem. Relatedly, there is some evidence to suggest that children and adolescents have also been adversely affected by the pandemic (Jefsen *et al.*, 2021; Meherali *et al.*, 2021). Taken together, there is an urgent need to focus on the mental health and well-being of children, adolescents, and young adults during the protracted course and aftermath of the COVID-19 pandemic.

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Supplementary material. To view supplementary material for this article, please visit <https://doi.org/10.1017/neu.2021.21>

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