PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	A positive impact of the Covid-19 pandemic? A longitudinal study on the impact of the Covid-19 pandemic on physicians' work experiences and employability
AUTHORS	Leeuwen, Evelien; Taris, Toon; van Rensen, Elizabeth; Knies, Eva; Lammers, Jan-Willem

VERSION 1 – REVIEW

REVIEWER	Julien Tiete Hopital Erasme, Psychology
REVIEW RETURNED	02-May-2021

GENERAL COMMENTS	My comments: The authors investigated an interesting and key concept in the context of the COVID-19 pandemic. The study has a number of strengths including longitudinal design gathered self-reported measures before and during the pandemic. However, there are also few weaknesses that need to be addressed to improve the manuscript: Abstract: 1) In Objective sub-heading, I would directly refer to the problematic condition as "the COVID-19 pandemic" instead of "crisis" in "[…] the impact of a crisis […]". Check for the same occurrences in the rest of the text. 2) In Design sub-heading, be more specific when explaining the design (e.g., "A longitudinal comparative design was used" as medical specialties were compared). 3) I would rephrase "Data were compared in repeated-measures […]" as "Time effect was tested in repeated-measures […]". Introduction: 1) 1st paragraph, authors stated "Crises may for instance result in stress, illness, insomnia, fear of becoming infected […]". As my previous comment, authors should focus on the COVID-19 pandemic. Introduction could benefit from adding references of systematic reviews and meta-analysis on psychological impact of the COVID-19 on healthcare workers, and physicians specifically (e.g., Luo et al., Pappa et al., Wu et al.). As the majority of the reported studies were conducted in Asia, you may also provide references of European studies conducted in Netherlands or Belgium (e.g., Tiete et al.). 2) 3rd paragraph, authors stated that "The COVID-19 pandemic is examined as a case to study this question". I fully understand the intellectual construct behind this idea, but in my view, participants did not consider the COVID-19 as a thought experiment in the context of this survey. In T2 and T3, items have been centered on the COVID-19 pandemic, a demanding condition for everyone, as they aimed to directly measure its impact on physicians' actual work

	and employability. The study aimed to examine the impact of the COVID-19 pandemic on physicians with varying specialties. The text can be shortened slightly by going straight to the point. 3) Last paragraph, the longitudinal design rationale could be shortened. It appears to be slightly repetitive. Also, even in a longitudinal design, there may be a recall bias. Few items in this survey could generate recall bias (e.g., “Do you encounter emotionally demanding events in your work?”). 4) Hypothesis on the evolution of the outcomes over time is missing. (regarding the sentence in the Discussion, “This goes contrary to our expectations since other studies […]) Methods 1) How was sample size determined? Please discuss power considerations even if no a priori power calculation was performed. 2) Please provide attrition rate in order to improve clarity for readers. A flow chart could be useful and is recommended in longitudinal reports. 3) Please move sentences related informed consent and confidentiality at the beginning of the 2nd paragraph as appropriate. 4) Table 1 could be move to the Results section in order to lighten the Methods section. Also, provide clarification for “Functional tenure” and “Organizational tenure” in the text. Results 1) Authors stated that Table 2 reported RM ANOVAs for employability. However, F and p-values seem to have been calculated for each time separately, and comparing groups. Is this correct? If yes, they are not RM ANOVAs but one way-ANOVAs. If no, authors have to reversed columns and rows. It is more intuitive to read the medical specialties as “Groups” and the repeated-measurement times as “Conditions” and put conditions in columns. 2) In line with the previous comment, no Group-by-Time Effect was provided as stated in Data analysis section, “A series of 3 (Time) x 3 (Group) repeated-measures analyses of variances (RM ANOVA) was performed […]”. If none Group-by-Time Effect was calculated (Two way-ANOVA), please rephrase in Data analysis to improve consistency and precision. Discussion 1) Authors gave a narrative of their findings. I would move the 3rd paragraph to the 2nd. Contextual explanation of the results is more relevant than the design explanation (See comment #3 in Introduction). 2) In the 2nd paragraph, authors stated that “Recall biases are inherent to cross-sectional studies using retrospective techniques to understand a change in experience over time”. The issue is the retrospective technique, not the cross-sectional design. Longitudinal design may use retrospectives techniques and generate recall biases, too. The majority of psychological scales assessing psychological outcomes as anxiety or depression use time recall period (e.g., symptoms in the last week) and generate recall bias. Be more specific to emphasize the actual strength of your study. 3) In Limitations, authors stated that their study sample limiting the generalizability of their findings to other countries. In my view, regarding their high attrition rate, the generalizability of the results needs further studies on larger sample with lower attrition rate.

REVIEWER	Anish Arora McGill University Faculty of Medicine, Family Medicine

REVIEW RETURNED	26-May-2021

GENERAL COMMENTS	Review for BMJ Open "A positive impact of crisis? A longitudinal study on the impact of the Covid-19 pandemic on physicians' work experiences and employability" Overall Comments: Dear authors, this was an interesting study, and one that may be quite important in guiding how physician working conditions should be remodelled beyond the pandemic. Though an important piece, I had several concerns with this manuscript (see below for detailed comments broken-down by section). Introduction: - Page 4, Line 13 to 18: "… a search on Google Scholar shows that research on this is lacking behind, both in quantity as well as in timing, in contrast to the large number of research examining the medical consequences of the Covid-19 pandemic." – (1) a Google scholar search may not present the most recent studies on a particular topic, e.g. indexing can be a slow process; (2) when thinking about these issues in terms of equity and timing, it makes sense that less research would be present in terms of impacts of the pandemic on physician employability and work experiences. With these points in mind, I suggest that the authors either exclude or revise this statement. Method: - This study is heavily context-dependant. As such, I recommend the authors provide more information about the context in the clinic/hospital that the surveys were administered in. For example, when the second and third surveys were administered, what were the rules/regulations surrounding healthcare access in the hospital/clinic in which this work was conducted (i.e., were in-patient rooms available? Were non-emergency related surgeries/visits postponed? Etc.) - Was the survey that was administered validated, standardized, and/or reliability-tested? - Table 1, it is noted that only 24 physicians were 24 physicians were involved in caring for covid-19 patients in T2 and 19 in T3. Can these numbers be broken down by specialty (i.e., how many medical physicians cared for the COVID-19 patients as compared to surgical?)? Results: - Was a sub-analysis comparing those physicians that cared for Covid-19 patients compared to those that did not care for Covid-19 patients completed? If not, why? Discussion: - Globally, the COVID-19 pandemic has most 'negatively' impacted those people and patient groups that account for the most vulnerable and marginalized in society. It is therefore an incredible finding that physicians, who can generally be considered among the working/professional-elite in high-income countries, found some form of 'positivity' coming from this pandemic. I would ask that the authors highlight and possibly speak more to this point in their discussion.

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1
Dr. Julien Tiete, Hopital Erasme, Université Libre de Bruxelles
Comments to the Author:
My comments: The authors investigated an interesting and key concept in the context of the COVID-19 pandemic. The study has a number of strengths including longitudinal design gathered self-reported measures before and during the pandemic. However, there are also few weaknesses that need to be addressed to improve the manuscript:
Thank you for these compliments and helpful and constructive feedback. Please find below how we adjusted the manuscript according to your feedback.

Abstract:
1) In Objective sub-heading, I would directly refer to the problematic condition as "the COVID-19 pandemic" instead of "crisis" in "[…] the impact of a crisis […]". Check for the same occurrences in the rest of the text.

We agree with you that this is more to the point than 'crisis'. We have changed this throughout the manuscript.

2) In Design sub-heading, be more specific when explaining the design (e.g., "A longitudinal comparative design was used" as medical specialties were compared).

Thank you for this suggestion, we have changed this.

3) I would rephrase "Data were compared in repeated-measures […]" as "Time effect was tested in repeated-measures […]".
We have changed this.

Introduction:
1) 1st paragraph, authors stated "Crises may for instance result in stress, illness, insomnia, fear of becoming infected […]". As my previous comment, authors should focus on the COVID-19 pandemic. Introduction could benefit from adding references of systematic reviews and meta-analysis on psychological impact of the COVID-19 on healthcare workers, and physicians specifically (e.g., Luo et al., Pappa et al., Wu et al.). As the majority of the reported studies were conducted in Asia, you may also provide references of European studies conducted in Netherlands or Belgium (e.g., Tiete et al.).

Following your comments, we have focused on the Covid-19 pandemic, instead of crises in general. In addition, we have referred to several studies on the impact of the Covid-19 pandemic on health care workers.

We have added the discussion of the systematic reviews and meta-analysis to the first paragraph of the introduction describing the possible consequences of the Covid-19 pandemic on health care workers mental health, please see: "*Evidence from earlier studies on the impact of the Covid-19 pandemic on health care workers, including meta-analyses and systematic reviews shown that the Covid-19 pandemic results in stress [6], illness, insomnia [1,7], fear for becoming infected [8], hesitation to work [9] or a lack of motivation to work [10] in the short-run*." (page 3).

Further, we have added the reference of Wu et al. (2020) and Tiete et al. (2020) to the paragraph that describes possible differences between physicians with different specialties. These references, in combination with the findings of Naushad et al. (2019), show that different outcomes are found regarding the impact of Covid-19 on the mental health of health care workers working in different departments. Please see the following part in the manuscript on page 4: *"This study examines the impact of the Covid-19 pandemic on physicians with varying specialties. Previous studies have found mixed outcomes for the impact of the Covid-19 pandemic on health care workers working in different departments [20,21,22]. Some studies have shown that the impact of pandemics varies for health care workers working in different departments [20,21,22]. For instance, one study found that those who work in emergency departments, intensive care units, and isolation wards have a greater risk of developing adverse psychiatric outcomes than those working in other departments [21]. Another study found the opposite, physicians and nurses who worked in the frontline had a lower frequency of burn-out and were less worried about being infected with the Covid-19 virus compared to those working in usual wards [22]. And another study found no differences in mental health outcomes for physicians and nurses working in Covid-19 care units, non Covid-19 care units or in both units [23]."*

2) 3rd paragraph, authors stated that "The COVID-19 pandemic is examined as a case to study this question". I fully understand the intellectual construct behind this idea, but in my view, participants did not consider the COVID-19 as a thought experiment in the context of this survey. In T2 and T3, items have been centered on the COVID-19 pandemic, a demanding condition for everyone, as they aimed to directly measure its impact on physicians' actual work and employability. The study aimed to examine the impact of the COVID-19 pandemic on physicians with varying specialties. The text can be shortened slightly by going straight to the point.

Thank you for this suggestion. We have removed this sentence and rewritten the next sentence into: *"Understanding the impact of the Covid-19 pandemic on physicians' work is important (…)"*

3) Last paragraph, the longitudinal design rationale could be shortened. It appears to be slightly repetitive. Also, even in a longitudinal design, there may be a recall bias. Few items in this survey could generate recall bias (e.g., "Do you encounter emotionally demanding events in your work?").

We agree with you that this paragraph was a bit repetitive. We have now shortened this paragraph. Furthermore, we added the limitation of a possible recall bias in the limitations of our study, please see the following paragraph: "*Second, some questions in this study might generate a recall bias as they ask for past situations, for instance in the items measuring emotional workload asking for the existence of emotionally demanding past situations. We believe that this bias is limited, as we did not use retrospective questions in this study. Further, research has shown that people are usually able to remember long-term periods or specific events, such as the Covid-19 pandemic [29]."*

4) Hypothesis on the evolution of the outcomes over time is missing. (regarding the sentence in the Discussion, "This goes contrary to our expectations since other studies […])
We have now ended the introduction with a paragraph that mentions this study hypotheses, please see: "*Based on prior studies into the impact of health crises on health care workers, together with early evidence on the impact of the Covid-19 pandemic on health care workers, we expect that physicians experience their work more negatively during the Covid-19 pandemic compared to the situation prior to this pandemic, which will be reflected in a higher emotional, physical and quantitative workload. Furthermore, we expect that physicians are more negative about their employability during*

the pandemic, compared to the situation prior to the Covid-19 pandemic, and have a lower job and career satisfaction during the pandemic."

Methods

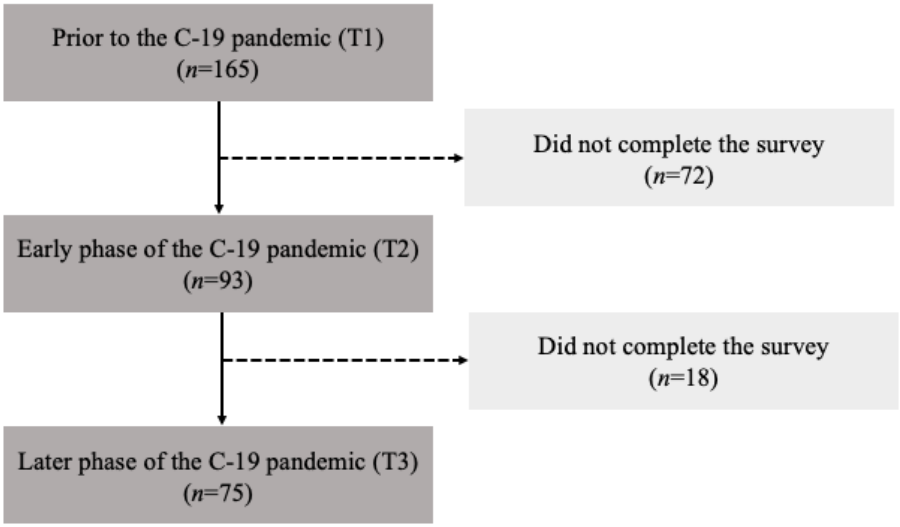
1) How was sample size determined? Please discuss power considerations even if no a priori power calculation was performed.

The sample size of this study was not calculated a priori, as we relied in this study on the data that we had about the situation prior to the pandemic. This part of the data was part of another study, referred to as 'the first survey' in this manuscript. By that time, we were unaware of the possibility of using this data for another purpose, as the Covid-19 pandemic only emerged after this study had finished. Therefore, we could not use power calculations to determine this study sample. We have now clarified how the sample size was determined in the manuscript, please see: "*The first survey was sent as part of another study [27]. The sample size of this study was therefore predetermined by the sample of the prior study that was calculated according to a power analysis."*

2) Please provide attrition rate in order to improve clarity for readers. A flow chart could be useful and is recommended in longitudinal reports.

We have clarified this by adding information in the manuscript on the response rate on page 6. At T2, the response rate was 56% and at T3 45%. The manuscript now includes the following*: "Participants were recruited through promotional presentations and through an internal mailing list. 165 physicians participated in this study at T1. These 165 physicians were invited by e-mail to complete a second and third survey. 93 physicians completed the survey at T2 (response rate: 56%), and 75 physicians completed all three surveys (response rate: 45%). A flowchart of the participants in this study is presented in figure 1."*

Further, based on your recommendation we have added a flow chart to the manuscript on page 7. Please see:



3) Please move sentences related informed consent and confidentiality at the beginning of the 2nd paragraph as appropriate.

We have changed this.

4) Table 1 could be move to the Results section in order to lighten the Methods section. Also, provide clarification for “Functional tenure” and “Organizational tenure” in the text.
We have followed both of your suggestions.

We have changed ‘functional tenure’ into ‘occupational tenure’ in order to be consistent throughout the manuscript. Further, the method now includes a description of ‘occupational tenure and organizational tenure’ on page 7, please see the following part in the manuscript: *“The questions addressed sociodemographic characteristics (gender, age), job characteristics (specialism, autonomy, workload, occupational tenure referring to the years working as a medical specialist and organizational tenure referring to the time working in their current hospital) and (…)”*

Results
1) Authors stated that Table 2 reported RM ANOVAs for employability. However, F and p-values seem to have been calculated for each time separately, and comparing groups. Is this correct? If yes, they are not RM ANOVAs but one way-ANOVAs. If no, authors have to reversed columns and rows. It is more intuitive to read the medical specialties as “Groups” and the repeated-measurement times as “Conditions” and put conditions in columns.

Thank you for noticing. Indeed, this was unclear. For employability we did a RM ANOVA and we did one way-ANOVAs to examine work experiences and to compare groups (physicians with surgical, medical or another specialty). We have rewritten the ‘data analysis’ paragraph in the method, into:

“To examine physicians employability, a repeated measures analyses of variance (RM ANOVA) was performed with planned contrasts on Time (Helmert contrasts T1 vs. T2/T3) and with Time as a within-subject factor and Group as a between-subject factor.

Furthermore, one-way ANOVAs were performed to compare groups (physicians with surgical, medical or another specialty) and work experiences over time (T1, T2 and T3).”

2) In line with the previous comment, no Group-by-Time Effect was provided as stated in Data analysis section, “A series of 3 (Time) x 3 (Group) repeated-measures analyses of variances (RM ANOVA) was performed […]”. If none Group-by-Time Effect was calculated (Two way-ANOVA), please rephrase in Data analysis to improve consistency and precision.
Please see our response to your question above to explain the changes that we have made.
Discussion
1) Authors gave a narrative of their findings. I would move the 3rd paragraph to the 2nd. Contextual explanation of the results is more relevant than the design explanation (See comment #3 in Introduction).

We agree with you that this is a better order and therefore changed it accordingly.

2) In the 2nd paragraph, authors stated that “Recall biases are inherent to cross-sectional studies using retrospective techniques to understand a change in experience over time”. The issue is the retrospective technique, not the cross-sectional design. Longitudinal design may use retrospectives techniques and generate recall biases, too. The majority of psychological scales assessing

psychological outcomes as anxiety or depression use time recall period (e.g., symptoms in the last week) and generate recall bias. Be more specific to emphasize the actual strength of your study.

We have made two changes. First, we have deleted the 'cross-sectional design' in the following sentence: *"Recall biases are inherent to studies using retrospective techniques to understand a change in experience over time"*

Second, we have emphasized this study strength of using real-time data collection, in the following sentence: *"This study strength is that it uses real-time data collection, instead of retrospective methods."*

3) In Limitations, authors stated that their study sample limiting the generalizability of their findings to other countries. In my view, regarding their high attrition rate, the generalizability of the results needs further studies on larger sample with lower attrition rate.
We agree with you that the high attrition rate is particularly limiting the generalizability of the results. We have therefore changed the second limitation of the study and added that future studies in larger samples with low attrition rate, in would enhance the generalizability of the findings.

Reviewer: 2
Mr. Anish Arora, McGill University Faculty of Medicine
Comments to the Author:
Review for BMJ Open
"A positive impact of crisis? A longitudinal study on the impact of the Covid-19 pandemic on physicians' work experiences and employability"

Overall Comments:
Dear authors, this was an interesting study, and one that may be quite important in guiding how physician working conditions should be remodelled beyond the pandemic. Though an important piece, I had several concerns with this manuscript (see below for detailed comments broken-down by section).
Thank you for these compliments and helpful and constructive feedback. Please find below how we adjusted the manuscript according to your feedback.

Introduction:
- Page 4, Line 13 to 18: "… a search on Google Scholar shows that research on this is lacking behind, both in quantity as well as in timing, in contrast to the large number of research examining the medical consequences of the Covid-19 pandemic." – (1) a Google scholar search may not present the most recent studies on a particular topic, e.g. indexing can be a slow process; (2) when thinking about these issues in terms of equity and timing, it makes sense that less research would be present in terms of impacts of the pandemic on physician employability and work experiences. With these points in mind, I suggest that the authors either exclude or revise this statement.
We have excluded this sentence.

Method:
- This study is heavily context-dependant. As such, I recommend the authors provide more information about the context in the clinic/hospital that the surveys were administered in. For example, when the second and third surveys were administered, what were the rules/regulations surrounding

healthcare access in the hospital/clinic in which this work was conducted (i.e., were in-patient rooms available? Were non-emergency related surgeries/visits postponed? Etc.)

We agree with you that contextual information is highly relevant in interpreting this study results. Therefore, we have now included more information on the situation in the hospitals during T2 and T3.

Both surveys at T2 and T3 were sent after a peak in the number of Covid-19 infections, we have now mentioned the number of infected patients with Covid-19 at this time in the manuscript, please see: *"During the first and second peak of the number of Covid-19 infections, there were 60 patients infected with the Covid-19 virus in the academic hospital (20 on the intensive care and 40 in the Covid-19 clinic) and 30 in the general hospital (8 on the intensive care and 22 in the Covid-19 clinic)."*

We further added specific contextual information about T2 and T3.

About T2: "*At this time, both hospitals had established a Covid-19 clinic and an Intensive Care unit for patients with the Covid-19 virus that were separated from other departments in the hospital. Furthermore, in both hospitals non-emergent care and surgeries were postponed. Physicians and health care workers from different departments were requested to support on the Covid-19 department. Health care professionals were supported with volunteers from "outside" who were not employed by the hospitals.."*

About T3: *"In the two hospitals where this study took place, waiting lists for patients were higher at T3 than at T2 due to non-emergent care that was still being postponed."*

- Was the survey that was administered validated, standardized, and/or reliability-tested?

The variables in this study were measured with previously validated scales. Work characteristics (emotional workload and quantitative workload) were measured with the validated scale 'VBBA 2.0' by Van Veldhoven et al. (2014). Physical workload was measured with one item that was used in a study into the job demands of nurses (Demerouti et al., 2009) and therefore fitted the context of this study well. Job autonomy was measured with a validated scale from the Work Design Questionnaire (Morgeson & Humphrey, 2006).

We conducted reliability analyses and added the cronbach's alphas of the work characteristics at T1, T2 an T3 on page 8 of the manuscript.

Short-scales were used in this study to measure employability, job and career satisfaction. This was done for practical reasons, to prevent the survey from becoming too long in order to decrease the possibility of drop-out. Job satisfaction was measured with one item, which wording was similar to the item measuring career satisfaction (only the work 'job' was changed into 'career'). Previous studies have shown that a single item measure of job satisfaction is appropriate especially when situational constraints limit or prevent the use of scales (Wanous, Reichers & Hudy, 1997, p.250; Nagy, 2002).

Employability was measured with three items from Oude Hengel et al. (2012). This scale was used as this is a common way to measure employability, which is also used in a big survey research among employees in the Netherlands called the NEA (Nederlandse Enquete Arbeidsomstandigheden, translation: Dutch Survey on Work conditions).

Moreover, employability was measured by asking for physicians' perceptions as it refers to a situation in the future. Measuring perceptions is argued to be important as people tend to act upon their perception rather than upon an objective reality (Van Emmerik et al., 2012).

Stress associated with the Covid-19 situation was not measured with a previously validated scale. As these items are highly context-specific and fitted to the covid-19 situation, there was no validated scale available. We based these items on the literature that was available on the possible stress factors caused by pandemics of infectious diseases and checked these items with health care professionals (physicians and a board member) to increase the fit with their work situation.

References

Demerouti E, Le Blanc PM, Bakker AB, *et al.* Present but sick: a three-wave study on job demands, presenteeism and burnout. *Career Dev Int* 2009;**14**:50–68. doi:10.1108/13620430910933574

Morgeson FP, Humphrey SE. The work design questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *J Appl Psychol* 2006;**91**:1321–39. doi:10.1037/0021-9010.91.6.1321

Nagy, M. S. (2002). Using a single-item approach to measure facet job satisfaction. *Journal of occupational and organizational psychology*, *75*(1), 77-86.

Van Emmerik, Hetty, I. J. *et al.* (2012) 'The route to employability: examining resources and the mediating role of motivation', *Career Development International*, 17(2), pp. 104–119. doi: 10.1108/13620431211225304.

Van Veldhoven, M., Prins, J., Van der Laken, P., Dijkstra L. *VBBA 2.0: Update van de standaard voor vragenlijstonderzoek naar werk, welbevinden en prestaties*. Enschede: Gildeprint 2014.

Wanous, J. P., & Lawler, E. E. (1972). Measurement and meaning of job satisfaction. *Journal of applied psychology*, *56*(2), 95.

- Table 1, it is noted that only 24 physicians were 24 physicians were involved in caring for covid-19 patients in T2 and 19 in T3. Can these numbers be broken down by specialty (i.e., how many medical physicians cared for the COVID-19 patients as compared to surgical?)?
We have broken these number down by specialty in table 1, please see the following cells in table 1:

Involved in care for Covid-19 patients at T2	Yes: *n*=24 (32%), of which *n*=6 (25%) had a surgical specialty, *n*=13 (54%) had a medical specialty and *n*=5 (21%) had another specialty

	No: *n*=51 (68%)
Involved in care for Covid-19 patients at T3	Yes: *n*=19 (25%), of which *n*=4 (21%) had a surgical specialty, *n*=10 (53%) had a medical specialty and *n*=5 (26%) had another specialty No: *n*=56 (75%)

Results:

- Was a sub-analysis comparing those physicians that cared for Covid-19 patients compared to those that did not care for Covid-19 patients completed? If not, why?

Yes, these analyses were done but no significant differences were found between physicians who cared for Covid-19 patients and physicians who were not involved in taking care for Covid-19 patients. The following describes the outcomes of these analyses.

Physicians perceived ability to continue to work increased from T1 to T2 to T3 for both physicians who were involved in the care for Covid-19 patients (M_{T1}=3.60, SD_{T1}=0.97; M_{T2}=3.91, SD_{T2}=0.84; M_{T3}=4.11, SD_{T3}=0.71) as well as for physicians who were not involved in the care for Covid-19 patients (M_{T1}=3.68, SD_{T1}=0.89; M_{T2}=3.78, SD_{T2}=0.82; M_{T3}=3.87, SD_{T3}=0.98). A RM ANOVA showed no significant Time * Group interaction effects (F(2,67)=1.775, p=0.177).

A similar pattern was found for physicians perceived willingness to continue to work, which increased from T1 to T2 to T3 for both physicians who were involved in the care for Covid-19 patients (M_{T1}=2.88, SD_{T1}=1.24; M_{T2}=3.14, SD_{T2}=1.16; M_{T3}=3.52, SD_{T3}=0.99) as well as for physicians who were not involved in the care for Covid-19 patients (M_{T1}=2.98, SD_{T1}=1.22; M_{T2}=3.15, SD_{T2}=1.06; M_{T3}=3.29, SD_{T3}=1.23). A RM ANOVA showed no significant Time * Group interaction effect (F(2,65)=2.549, p=0.086).

Also for career satisfaction an RM ANOVA showed no significant Time * Group interaction effect (F(2,92)=0.710, p=0.494) and no significant differences between both groups were found for job satisfaction either (Time * Group interaction effect (F(2,72)=1.376, p=0.259)).

Similar outcomes were found for emotional workload, where no significant Time * Group interaction effect was found (F(2,69)=2.955, p=0.0.059), no significant Time * Group interaction effect was found for physical workload (F(2,71)=1.508, p=0.228), no significant Time * Group interaction effect was found for quantitative workload (F(2,61)=0.729, p=0.486) and no significant Time * Group interaction effect was found for job autonomy (F(2,62)=0.213, p=0.808).

The following was added to the manuscript to explain that there are no significant differences between physicians who were involved with Covid-19 related care and physicians who were not. On p. 11: "*Moreover, no significant differences were found in the employability, job and career satisfaction for physicians who were involved in taking care for patients infected with the Covid-19 virus and physicians that were not involved in Covid-19 related care*." and on p.13: "*There were no significant*

differences in the experiences of these work characteristics for physicians who were involved in Covid-19 related care and physicians who were not."

Discussion:

- Globally, the COVID-19 pandemic has most 'negatively' impacted those people and patient groups that account for the most vulnerable and marginalized in society. It is therefore an incredible finding that physicians, who can generally be considered among the working/professional-elite in high-income countries, found some form of 'positivity' coming from this pandemic. I would ask that the authors highlight and possibly speak more to this point in their discussion.

We have specified in the discussion that these outcomes hold for this specific group of professionals, namely physicians. As we do not have information on the impact of the Covid-19 pandemic on other groups in society, we could not report on the impact of the Covid-19 pandemic on them.

VERSION 2 – REVIEW

REVIEWER	Anish Arora McGill University Faculty of Medicine, Family Medicine
REVIEW RETURNED	28-Jul-2021

GENERAL COMMENTS	Thank you for responding to the previously provided comments. The authors may want to consider adding the response they provided to the scales reliability/validity question into their methods section - possibly in a summarized/condensed manner, maybe even a table.

VERSION 2 – AUTHOR RESPONSE

We have added the response that we have provided to the above comments in the methods section on page 8.

Specifically, in addition to the cronbachs alphas, we have added the following parts to the method section:

- Most variables were measured with validated scales, if available. Work characteristics were measured using validated scales from the popular surveys: 'VBBA 2.0' [33] and the Work Design Questionnaire [35].

- This is a common way to measure employability, which is also used in a big survey research among employees in the Netherlands called the NEA (abbreviation for 'Nederlandse Enquête Arbeidsomstandigheden', translation: Dutch Survey on Work conditions).

- Job satisfaction and career satisfaction were both measured with 1 item [38]. Previous studies have shown that a single item measure of job satisfaction is appropriate especially when situational constraints limit or prevent the use of scales [37].