

## **A pilot, randomized controlled trial of telementorship: A useful tool during social distancing**

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Tele-Mentorship: A Useful tool during Social Distancing

Journal of Clinical and Translational Research

Dear Dr. Caruso,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. If you are prepared to undertake the work required, I would be pleased to reconsider my decision.

For your guidance, reviewers' comments are appended below.

The editors ask you to pay particular attention to the commentary of reviewer 1, who generally feels that there is insufficient data to support the conclusions. This is a chief obstacle in the study that is hampering publication. This should be solved inasmuch as both reviewers do deem the study timely and interesting. Please let us know if you struggle with potential solutions.

If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Also, please ensure that the track changes function is switched on when implementing the revisions. This enables the reviewers to rapidly verify all changes made.

Your revision is due by Nov 15, 2020.

To submit a revision, go to <https://www.editorialmanager.com/jctres/> and log in as an Author. You will see a menu item call Submission Needing Revision. You will find your submission record there.

Yours sincerely

Michal Heger  
Editor-in-Chief  
Journal of Clinical and Translational Research

Reviewers' comments:

Reviewer #1: This manuscript describes the results of a randomized, prospective cohort study examining the impact of mentors and mentees meeting via video versus face-to face. Results suggest that mentors and mentees met at similar frequency regardless of their mode of meeting.

The premise of this study is interesting especially given the current context which is forcing many mentoring relationships to happen at a distance. Better understanding of the barriers and affordance of mentoring at a distance is an important contribution to the science of mentorship. Unfortunately, as presented, this submitted manuscript would require extensive additions and revisions before it would be suitable for publication in JCTS. While the data is interesting, much more is needed to understand the impact of the mode of mentoring engagements.

Some specific suggestions for consideration are noted below:

The entire article would be greatly improved by a more extensive literature review in three areas:

1. The introduction would benefit from incorporation of information shared and cited in the recently released National Academies report on "The Science of Effective Mentorship in STEMM". This report specifically defines the term "mentorship", the benefits of mentorship and even has a section on mentorship in medicine.
2. The introduction would also be improved by deeper review of the literature on mentorship at a distance. This might include descriptions of tele-mentoring, e-mentoring and remote mentoring. All of these approaches have similarities however there are some important differences. Describing what is meant specifically by tele-mentoring in the context of the described study is necessary. For example, in this study the mentors and mentees meet face to face and engage in some activities prior to moving to online engagements. This distinguishes it from fully online mentoring approaches. At a minimum, this should be discussed in the discussion section of the manuscript.
3. The section on mentorship curricula could be grounded much more extensively in the literature. For example, were the seminars and engagements based upon published approaches? If so, what parts were used? In addition, this section needs a more detailed description of the activities in which the study participants engaged beyond their one-on-one relationship. The current description suggests that mentors and mentees participated in a series of in-person activities. It is unclear whether any of these occurred after randomization thereby providing opportunities for mentors and mentees to engage in-person, regardless of which study group they were in.

While the results comparing the frequency or face-to face versus video mentoring meeting is interesting, the study lacks investigation of many additional factors which would be needed to advance understanding of the impact of meeting mode. Below are several examples of data which would strengthen the manuscript:

1. Data which would speak to the quality of the mentoring relationships. For example, did mentees meeting face-to-face with their mentors rate the quality of their interactions any more effective than those meeting via video?
2. Data which would address the length of mentoring meetings. Currently the results only speak to the frequency of meeting, not their duration. Without these data, it impossible to know whether those meeting face-to-face had longer meetings and thus had higher engagement than those meeting via video.
3. Data which would indicate if mentor and mentee engaged asynchronously. While mentors and mentees had similar frequencies of meetings regardless of format, it may be that those who met via video engaged in more frequent email or text communication and thus had higher engagement than those meeting face-to-face.
4. Data which address why frequency of meetings decreased over time. These data could help explain the reasons for decreased meetings. It may be that there was less need for mentoring as time went on. A lack of need was not one of the barriers assessed in the survey.

The results section needs careful review for edits. For example, the survey questions shown in Table 1 indicate a different scale than the one described in the analysis section - with the table indicating a frequency scale and the text indicating an effectiveness one.

Finally, the data on the likelihood to maintain mentoring relationships is very weak. There is a difference reported for operation room-based practice versus high PGY level however it is not clear if this difference refers to meeting at all, initial meetings or meetings over time thus the results are difficult to interpret.

The discussion section needs significant work. There is only one paragraph discussing the results and this paragraph does not discuss the implications of the results. The second paragraph does a good job of describing limitations of the study but does not address the limitation noted in the review for interpretation of the results.

Reviewer #2: Thank you for the opportunity to review this article. It is a timely reflection in the current pandemic and rapid global change in communication style, and useful information for clinical mentoring programs.

I offer the following feedback:

1. Line 17, page 5: "Worsened by the recent social distancing guidelines" - please provide evidence if possible of this statement.
2. Line 15-25, page 6. "Establishment of mentoring relationships." Please outline more about this matching process, as it is interesting and relevant to those working in mentoring.
3. Line 41-43, page 6. "core foci of mentorship... wellness" - was this decision of mentoring focus made on the basis of any literature or evidence? If so, what?
4. Line 27, page 8. Female participants are higher in both groups - is this representative of the group overall? If not, any ideas why? Any literature here that addresses this?
5. Line 48, page 8. Had a mentor prior to study. It would be useful to know what form this

took, though it may be beyond the scope of this study.

6. Figure 1. There is extensive difference between the two modes in Q1, Q3 and Q4, but not Q2. I would like this addressed or discussed as to why that is, and a proposal on why Q2 is different. While the overall trend downwards is fairly consistent across the modes, there is over 20% difference in Q1 and Q3. Why? What is the reason behind this? I believe this is where the extensive editing should occur to address this.

Thanks.

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Authors' response

Response to Reviewers

Reviewer #1:

The entire article would be greatly improved by a more extensive literature review in three areas:

1. The introduction would benefit from incorporation of information shared and cited in the recently released National Academies report on "The Science of Effective Mentorship in STEMM". This report specifically defines the term "mentorship", the benefits of mentorship and even has a section on mentorship in medicine.

Thank you for the excellent recommendation. We have reviewed the report and added the citation to the Introduction, which has been expanded as well.

*In medical school, mentees experience professional development, psychosocial support, increased interest in research, and career counseling.2-4 Mentor benefits include improvement in leadership skills and enhanced academic productivity, which develops professionalism, increases students' interest in research, and supports personal growth.5-7*

2. The introduction would also be improved by deeper review of the literature on mentorship at a distance. This might include descriptions of tele-mentoring, e-mentoring and remote mentoring. All of these approaches have similarities however there are some important differences. Describing what is meant specifically by tele-mentoring in the context of the described study is necessary. For example, in this study the mentors and mentees meet face to face and engage in some activities prior to moving to online engagements. This distinguishes it from fully online mentoring approaches. At a minimum, this should be discussed in the discussion section of the manuscript.

Excellent suggestion. We added the following sentences to the Discussion section and in the limitations:

*This study evaluated tele-mentorship for professional mentorship of medical students, in contrast to most studies of tele-mentoring in medicine that evaluate the effectiveness of remotely training a particular skill or surgical technique.25-27*

*Fifth, this study enabled mentors and mentees to meet face-to-face and engage in activities prior to transitioning to a virtual relationship, which distinguishes our approach from fully online mentorship.*

3. The section on mentorship curricula could be grounded much more extensively in the literature. For example, were the seminars and engagements based upon published approaches? If so, what parts were used? In addition, this section needs a more detailed description of the activities in which the study participants engaged beyond their one-on-one relationship. The current description suggests that mentors and mentees participated in a series of in-person activities. It is unclear whether any of these occurred after randomization thereby providing opportunities for mentors and mentees to engage in-person, regardless of which study group they were in.

Thank you for this excellent comment. We have added the following to the Methods section:

*Curriculum components included online learning, in-person interactive seminar, online just-in-time (JIT) modules, and experiential learning. Resident mentors initially completed an online module distributed by the University of Minnesota.<sup>19</sup> The module uses text, audio, and interactive activities to engage learners in understanding mentoring models and strategies to address common mentorship challenges. Resident mentors and medical student mentees were also invited to an hour-long, in-person interactive seminar which discussed techniques for successful mentorship relationships.<sup>20-22</sup> Resident mentors and medical student mentees met quarterly. Prior to each mentorship meeting, residents completed JIT learning modules consisting of readings from a mentorship review article with comprehension questions.<sup>23</sup> JIT module topics included advocacy, role modeling, race/ethnicity in mentorship, and the natural course of a mentorship relationship.*

While the results comparing the frequency or face-to face versus video mentoring meeting is interesting, the study lacks investigation of many additional factors which would be needed to advance understanding of the impact of meeting mode. Below are several examples of data which would strengthen the manuscript:

1. Data which would speak to the quality of the mentoring relationships. For example, did mentees meeting face-to-face with their mentors rate the quality of their interactions any more effective than those meeting via video?

Thank you for the recommendation. We have added data regarding the quality of the mentorship as perceived by the trainees and students.

*The percentage of residents who felt very or extremely confident in their mentorship skills increased from 37.5% at baseline to 56.3% ( $p=0.05$ ) by the midpoint of the program and remained unchanged at curriculum completion. Overall mentee satisfaction of their resident mentor increased significantly from 42.5% at baseline to 65.4% ( $p<0.05$ ) by the midpoint and remained unchanged at curriculum completion (Figure 2).*

*Medical students reported improved confidence in all professional domains regardless of group assignment (Figure 3). Confidence increased significantly over time for clinical knowledge ( $p<0.01$ ), career planning ( $p<0.001$ ), networking/exposure ( $p=0.01$ ), sponsorship ( $p<0.001$ ), and wellness/coping ( $p=0.02$ ).*

2. Data which would address the length of mentoring meetings. Currently the results only speak to the frequency of meeting, not their duration. Without these data, it is impossible to know whether those meeting face-to-face had longer meetings and thus had higher engagement than those meeting via video.

Excellent point. We agree that this would have been interesting to collect but unfortunately, this was out of scope of this pilot study. We have included this in the limitations sections:

*Second, as a pilot study, there were uninvestigated areas, including the length of the mentorship meetings between groups and additional meetings outside of the assigned quarterly meetings. Given the volunteered time of the mentors and mentees and number of other surveys being administered, we limited the number of outcomes measured in this pilot study. It is possible that unmeasured data, including meetings outside of the formal program, may have biased the results in unpredictable directions.*

3. Data which would indicate if mentor and mentee engaged asynchronously. While mentors and mentees had similar frequencies of meetings regardless of format, it may be that those who met via video engaged in more frequent email or text communication and thus had higher engagement than those meeting face-to-face.

As above.

4. Data which address why frequency of meetings decreased over time. These data could help explain the reasons for decreased meetings. It may be that there was less need for mentoring as time went on. A lack of need was not one of the barriers assessed in the survey.

We did not query the reason for attrition, but this is common among other similar studies: *As anticipated, there was a decline in mentorship meetings over time. However, participation rates in previously published mentorship studies have reported similar attrition.1, 30*

The results section needs careful review for edits. For example, the survey questions shown in Table 1 indicate a different scale than the one described in the analysis section - with the table indicating a frequency scale and the text indicating an effectiveness one.

Thank you for your astute observation. The results have been reviewed and we have corrected the following sentence:

*All surveys used a six-point, 1-6 Likert scale that ranged from 'not at all [1]' to 'extremely [6]' in regards to frequency or effectiveness.*

Finally, the data on the likelihood to maintain mentoring relationships is very weak. There is a difference reported for operation room-based practice versus high PGY level however it is not clear if this difference refers to meeting at all, initial meetings or meetings over time thus the results are difficult to interpret.

Thank you for this comment, we have clarified the sentence to read as follows:

*Residents working in operating room-based practices ( $p < 0.05$ ) and of higher PGY level ( $p = 0.02$ ) were less likely to meet with their mentee overall, while other factors were not significant predictors of meeting.*

The discussion section needs significant work. There is only one paragraph discussing the

results and this paragraph does not discuss the implications of the results. The second paragraph does a good job of describing limitations of the study but does not address the limitation noted in the review for interpretation of the results.

Thank you for your suggestion. We initially formatted this manuscript as a brief report. We have expanded the Discussion significantly.

Reviewer #2:

1. Line 17, page 5: "Worsened by the recent social distancing guidelines" - please provide evidence if possible of this statement.

Great point, we have added the following citation:

*Frequently cited barriers to mentorship include time limitations and physical distance, which are exacerbated by medical school and residency training schedules, and likely worsened by the recent social distancing guidelines.8-11*

2. Line 15-25, page 6. "Establishment of mentoring relationships." Please outline more about this matching process, as it is interesting and relevant to those working in mentoring.

Thank you for your comment, we have expanded the detail in the section as follows:

*Mentor-mentee pairing was designed to be organic and mentee-driven.<sup>14</sup> The initial in-person seminar was followed by a networking event that encouraged resident and medical student mingling to identify compatible pairings. Prior to the seminar, medical students were also provided with a list of resident mentor profiles, which included educational background, department, research interests, and hobbies. Medical students identified a list of desired mentors and pairings were made according to medical student request. In the absence of a mentor request from a medical student, they were paired according to concordant professional interests and hobbies.*

3. Line 41-43, page 6. "core foci of mentorship... wellness" - was this decision of mentoring focus made on the basis of any literature or evidence? If so, what?

Excellent observation, we have added citations from the following references which have served as the evidence to create this curriculum:

- Weber-Main AM, El-Fakahany E, Shanedling J. Optimizing the Practice of Mentoring: An Online Curriculum for the Professional Development of Research Mentors. <https://www.ctsi.umn.edu/education-and-training/mentoring/mentor-training>.
- Detsky AS, Baerlocher MO. Academic mentoring--how to give it and how to get it. *JAMA* 2007;297(19):2134-2136.
- Pfund C, Byars-Winston A, Branchaw J, Hurtado S, Eagan K. Defining Attributes and Metrics of Effective Research Mentoring Relationships. *AIDS Behav* 2016;20 Suppl 2:238-248.
- Sambunjak D, Straus SE, Marusic A. A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine. *J Gen Intern Med* 2010;25(1):72-78.

4. Line 27, page 8. Female participants are higher in both groups - is this representative of the group overall? If not, any ideas why? Any literature here that addresses this?

Great observation. We hesitate to make gender-based hypotheses as to the reason why without some data to support or refute our thoughts. We have added the following sentence to the discussion:

*Interestingly, more female resident mentors n=27 (67.5%) and female medical student mentees n=27 (65.9%) participated in the study than males, which has not been well-documented in the literature. Further studies are needed to clarify if this was a local phenomenon or representative of a larger trend.*

5. Line 48, page 8. Had a mentor prior to study. It would be useful to know what form this took, though it may be beyond the scope of this study.

Excellent point. Unfortunately this data was outside the scope of this study.

6. Figure 1. There is extensive difference between the two modes in Q1, Q3 and Q4, but not Q2. I would like this addressed or discussed as to why that is, and a proposal on why Q2 is different. While the overall trend downwards is fairly consistent across the modes, there is over 20% difference in Q1 and Q3. Why? What is the reason behind this? I believe this is where the extensive editing should occur to address this.

Excellent observation. Even though the data show differences, they are insignificant differences. We have included this in the Discussion:

*Even though the type of meetings that occurred between each group was not significantly different over the year, the second quarter meeting frequency were nearly identical in occurrence. We attribute this to chance as there were no other external factors that influenced the participants more so during the second quarter. Additionally, because the differences in meetings each quarter were statistically insignificant, we believe the difference in meetings each quarter were due to chance.*

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2<sup>nd</sup> Editorial decision  
05-Nov-2020

Ref.: Ms. No. JCTRes-D-20-00092R1  
A Pilot, Randomized Controlled Trial of Tele-Mentorship: A Useful tool during Social Distancing  
Journal of Clinical and Translational Research

Dear authors,

I am pleased to inform you that your manuscript has been accepted for publication in the Journal of Clinical and Translational Research.

You will receive the proofs of your article shortly, which we kindly ask you to thoroughly review for any errors.



Thank you for submitting your work to JCTR.

Kindest regards,

Michal Heger  
Editor-in-Chief  
Journal of Clinical and Translational Research

Comments from the editors and reviewers:

Reviewer #2: Thank you for your hard work looking at the feedback and reviewing your article. Incorporating the comments has made this a better article.