

## Peer Review File

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### Reviewer A

**Comment 1: Please provide an overview of the approach and preliminary results used in the manuscript as opposed to describing what the authors propose to discuss in the manuscript.**

Reply 1: We appreciate Reviewer A's feedback and have expanded the Abstract section to include preliminary results.

Changes in text: The following piece of text was added to the abstract after line 48. "Specifically, we report that telemedicine has the potential to streamline and improve patient care in gastroenterology and hepatology. Additionally, we noted the importance of tele-education for training the next generation of physicians. Furthermore, we identified barriers to telemedicine care and potential solutions to achieving digital health equity."

**Comment: The authors should provide a clear definition of telemedicine vs. telehealth in the introduction.**

Reply: The authors agree that the two terms telemedicine and telehealth have similar definitions and should be introduced earlier in the manuscript. As such, we have provided definitions for the two in the introduction.

Changes: Please see lines 56-60 for changes in the text. We have removed lines 98-102 which included a definition of telehealth. The definition for telehealth is now included in the introduction, as suggested by the reviewer.

**Comment: To clarify the definition of telemedicine and telehealth, it might be helpful to make a figure that would differentiate between the terms telehealth, telemedicine, ehealth, mHealth, etc . As the authors acknowledge, there remains considerable confusion on the meanings of these terms. I would also recommend using a more authoritative source for the definition than a book. The CDC has interesting references CDC | Public Health Law Anthologies: Telehealth and Telemedicine or HRSA/HHS What is telehealth? | Telehealth.HHS.gov that might be helpful.**

Reply: The authors appreciate the feedback regarding definitions and have created a new figure (Figure 3) which includes definitions for the suggested terms. We hope that this figure will provide more insight to readers regarding the various terms used in

telehealth. Additionally, we have incorporated the author's source in our text and references (Reference #1).

Changes: Please find the new figure, entitled "Figure 3: Telehealth and related definitions" at the end of the manuscript along with the rest of the figures. In addition, a definition for eHealth was also provided in the text. Lastly, we have included the author's suggested citation as a new reference in our text (reference #1) and another reference for the definition of eHealth (Reference #9). For changes, please see lines 109-111.

**Comment: Methods: An enhanced description of the methodology used for the search and data extraction would be helpful.**

- a. How was the search performed, what was the time frame for the articles used, what terms are used, what were the sources of the search.**
- b. Did the authors develop inclusion and exclusion criteria?**
- c. How many of the authors reviewed the articles?**
- d. How were discrepancies resolved amongst the authors?**

Reply: The authors appreciate the reviewer's suggestions and have adjusted the manuscript accordingly. For point A, we have added the sources of the search, and the terms used. There was no time frame for the articles. All articles regarding telemedicine and gastroenterology and hepatology were searched from inception until this date. For point B, because this article was intended to serve as a narrative review, specific search methods were not developed. For points C and D, two of the authors, CT and VA reviewed the articles and drafted the manuscript and the authors discussed any discrepancies together. We hope that the following responses were insightful for the reviewer.

Changes: The authors included the words that were used during the search and mentioned the time frame that was used during the literature searches. Please see line 67.

**Comment:**

**III) Results:**

- a. Lines 108-110: I thought that the discussion of terms was particularly insightful and could serve as the source of words to be defined in the figure of telemedicine definitions mentioned above.**

Reply: The authors appreciate the suggestion and have developed a new figure (Figure 3) that takes into account the reviewer's recommendation for definitions. Within the figure, we include definitions for telehealth, telemedicine, telecare, mHealth, and eHealth.

Changes: Please see Figure 3 toward the end of the manuscript.

**Comment: b. Lines 119-121-please include more recent data to illustrate if this trend has continued.**

Reply: The authors searched and found recent data that suggests that the trend has went down. We have adjusted the manuscript accordingly to include the current trend and have included a new citation (#13) to support this.

Changes: Please find the suggestions in line 121.

**Comment: c. Lines 19-160: References 24 to 26 should be limited to those for GI.**

Reply: The authors have adjusted the references to include studies specific for GI and have removed the non-GI studies.

Changes: Please find the new studies (#26-28) cited in the manuscript. These studies are specific to GI.

**Comment: d. Line 222 to 230-Project ECHO is a telementoring program as opposed to a telemedicine program as indicated according to the definition provided earlier in the manuscript.**

Reply: The authors thank the reviewer for catching this discrepancy and have modified the text accordingly to ensure that ECHO is explicitly stated as a tele-mentoring program.

Changes: We have slightly modified the text to include ECHO as a tele-mentoring program as opposed to a telemedicine program. We also removed the line “patients who utilized ECHO” and changed it to “patients treated at ECHO sites.” We believe that the modified text will assure readers that ECHO is a tele-mentoring platform as opposed to a telemedicine platform.

**Comment: i. One 311-317: This section should also represent Project Echo as a telementoring project.**

Reply: As noted above, the authors appreciate the suggestion and agree with the reviewer that Project ECHO will be better suited in another section since it is a tele-mentoring/ tele-education platform.

Changes in text: We and have included Project ECHO as a tele-mentoring program under the section entitled “Physician Education.”

**Comment: e. Line 249: Please include reference to another telemedicine study**

**Talal AH, Andrews P, Mcleod A, Chen Y, Sylvester C, Markatou M, Brown LS. Integrated, Co-located, Telemedicine-based Treatment Approaches for Hepatitis C Virus Management in Opioid Use Disorder Patients on Methadone. Clin Infect Dis. 2019 Jul 2;69(2):323-331. doi: 10.1093/cid/ciy899. PMID: 30329042., which also presents a 93% sustained viral response for HCV using a telemedicine approach in an opioid treatment program.**

Reply: The authors found the suggested article to be very interesting and pertinent to the text discussed in the manuscript. As such, we have decided to include it as a reference in our narrative review.

Changes in text: Please find the suggested citation added as reference #60 in the “References” section.

**Comment: f. Line 307: Do the authors believe that this study is readily generalizable or is further investigation needed to apply these lessons to gastroenterology.**

Reply: The authors are not sure if this study will be readily generalizable and have decided to remove it from manuscript.

Changes in text: Please see line 307, as the authors have excluded reference #69 from the manuscript.

**Comment g. Line 248: please also include reference to telehealth studies of nonalcoholic steatohepatitis.**

Reply: Although the authors agree that nonalcoholic steatohepatitis is a relevant topic of discussion, we believe that including references to the nonalcoholic steatohepatitis would not be relevant in the “Hepatitis C virus” section. In this section, we discussed many telehealth and telemedicine platforms that are specific to HCV (i.e Project ECHO). We do agree that nonalcoholic steatohepatitis is a concerning issue and that discussing literature involving telemedicine and nonalcoholic steatohepatitis would be relevant.

Changes in text: If the reviewer would like, please let us know and we would be more than happy to include a new section devoted to nonalcoholic steatohepatitis and telemedicine.

**Comment: IV) Line 206: Please include a section entitled, “Equity in Telehealth”. It is referred to in various places throughout the manuscript, and I believe it would be useful to have its own section.**

Reply: The authors thank the reviewer for this feedback and agree that a section

discussing digital health equity is pertinent to the manuscript. As such, we have added a section entitled “Achieving health equity in telemedicine” where we further discuss methods to dismantling barriers in telemedicine usage and implementation.

Changes in text: Please find the new section “Achieving health equity in telemedicine” in the “Integrating telemedicine in GI: where we need to be” section.

**Comment: a. The equity section should also include and expand on the discussion in line 294 and include references to telemedicine satisfaction by underserved populations.**

Reply: The authors appreciate the feedback and believe that references to telemedicine satisfaction by underserved populations is important to discuss. As such, we have added new references in the “Achieving health equity in telemedicine” section.

Changes in text: New references (#84 and 85) have been added to the manuscript in the “Achieving health equity in telemedicine” section.

**Comment b. This section should describe the digital divide and should discuss how models of facilitated telehealth can overcome the digital divide.**

Reply: The authors have discussed the digital divide in further detail in the new section and have discussed different techniques and models for narrowing the gap in health equity.

Changes in text: Please refer to the “Achieving health equity in telemedicine” section where we included issues pertaining to the digital divide and potential solutions.

**Comment: V) Minor comments**

**a. Please include location for Royal Brisbane and Women’s Hospital. I assume it is in Australia, but it would be good to substantiate.**

Reply: The authors have included the location for the Royal Brisbane and Women’s Hospital, which is in fact in Australia.

Changes in text: Please find the location in line 152.

**Comment b. The authors may find the following reference useful for Figure 3. Talal AH, Sofikitou EM, Jaanimägi U, Zeremski M, Tobin JN, Markatou M. A framework for patient-centered telemedicine: Application and lessons learned from vulnerable populations. J Biomed Inform. 2020 Dec;112:103622. doi: 10.1016/j.jbi.2020.103622. Epub 2020 Nov 10. PMID: 33186707.**

Reply: The authors thank the reviewer for the following study and found it to be very

insightful. As such, we have decided to cite it in the “Barriers to telemedicine” section as reference #78. The study does effectively discuss a variety of problems and potential solutions for integrating telemedicine in vulnerable populations.

Changes in text: Please find the study cited in “Barriers to telemedicine” as reference #78.

Overall, we immensely thank Reviewer A for their constructive and kind feedback and found their input to be very insightful for our manuscript revisions. We greatly appreciate the time spent to provide feedback and the supplemental studies that were provided.

### **Reviewer B**

**Comment 1: There is an imbalance in the depth of review of the specific conditions covered. For example, IBD is awarded four substantial and effective paragraphs in the review. Celiac disease is awarded three, much shorter paragraphs, and liver transplantation, arguably a much more complex condition than IBD, celiac, or hepatitis C, is given only limited attention. In reviewing this article, I performed a simple literature review for celiac disease and telemedicine, and identified several pertinent articles that might merit inclusion. Two are listed below, and they are both RCTs for telemedicine/celiac disease management.**

**<https://www.hindawi.com/journals/ijta/2022/8027532/> Title: Smartphone Application for Celiac Patients: Assessing Its Effect on Gastrointestinal Symptoms in a Randomized Controlled Clinical Trial**

**[https://www.sciencedirect.com/science/article/pii/S0022347617313768?casa\\_token=OL15Re4-](https://www.sciencedirect.com/science/article/pii/S0022347617313768?casa_token=OL15Re4-)**

**YDMAAAAA:2RxFNGm3bGcKYnqbNOR2oe7W6oRE22d6rd16p9KKCECzCW6SJgd9dQxOJbxQZn2Wj8FVcy6mXAA Title: E-Healthcare for Celiac Disease—A Multicenter Randomized Controlled Trial**

**I would suggest increasing the depth of the materials reviewed for celiac disease and liver transplantation to be more in line with hepatitis C, and if space allows, to be more in line with the IBD portion.**

Reply: We greatly appreciate the constructive feedback provided by Reviewer B. After looking through the manuscript, we agree that the Celiac disease paragraph could benefit from more studies. As such, we have expanded the paragraph to include more information. We want to thank the reviewer for providing us with studies that are relevant to the Celiac disease section.

Changes in text: We have added three new studies to the Celiac disease section (References 40-42) and References 62 and 63 for liver transplant. The new text included in the Celiac disease and Liver transplant sections discusses the benefits of utilizing telehealth in managing those diseases.

**Comment 2: The authors devote a paragraph to quite substantial barriers towards effective telemedicine implementation in the “Overcoming barriers to telemedicine” subhead (Line 280). This may be substantial enough to have its own subsection. Currently, it is quite thin on pertinent critiques or issues in telemedicine. I would suggest that this section have more substance to it. There are notable issues with regards to access to telemedicine, especially related to socioeconomic, racial/cultural, geographic, and language characteristics of patients. There is some superficial background the authors provide on this, but this is a critical area in need of a fix, and certainly qualifies as a substantial barrier.**

Reply: We thank the reviewer for their constructive feedback and have decided to further expand the “Overcoming barriers to telemedicine” section. Our reviewer mentions important points. Barriers to telehealth are complex. Oftentimes, one might have the time and money to use telehealth, but might lack the knowledge. As such, when revising our text, we made sure to discuss the various barriers that patients and physicians face.

Changes in text: The section is divided into two paragraphs that discuss the barriers for patients and physicians. Specifically, we have included barriers related to income, ethnic minorities, technological capacities, insurance coverages, licensures, and telehealth literacy. Please see the “Barriers to telemedicine” paragraph for all of the additions.

**Comment 3: The authors then go into a mix of fixes and problems that could benefit from either reorganizing or dividing more clearly into a Problems section and a Solutions section.**

Reply: The authors agree with the reviewers feedback and believe that clearly distinguishing between barriers to telemedicine and its solutions would be useful. As such, we have created a new section entitled “Achieving health equity in telemedicine” which serves as a “Solutions” section for the “Barriers to telemedicine” section. In the “Achieving health equity in telemedicine” section, we discuss pertinent concerns for barriers to telemedicine and their potential and current solutions.

Changes in text: The authors have included a new section entitled “Achieving health equity in telemedicine” which follows the “Barriers to telemedicine” section.

**Comment 4: The authors place a Physician Education section (Line 263) into the Telemedicine applications in GI larger section, but then put the “Increasing Telehealth education in medical school...” ((Line 297) in a completely different part of the manuscript. Are these not related somehow?**

Reply: We thank the reviewer for their feedback. After further thought, we agree and

believe that those two paragraphs should be merged together to serve as one paragraph under “Physician Education.” We believe that having two separate paragraphs could be redundant and confusing to readers, so we have combined them into one.

Changes in text: We have merged the two paragraphs into one, entitled “Physician Education.” In addition, we removed the study regarding ICU rotations and telehealth, as we were not sure if that would be relevant to increasing telehealth education among gastroenterologists.

**Comment 5: If space is an issue, the reader may find more utility in understanding what telemedicine/telehealth efforts are in place/have been trialed for GI/hep rather than the current focus on etymology of the terms or the historical timeline of telemedicine. Though those two latter portions are interesting, they do not seem as weighty or helpful as more guidance on how to fix barriers or what efforts were successful with the different diseases detailed in the piece.**

Reply: Our reviewer provides a useful suggestion. Throughout the manuscript we have mentioned various telemedicine/telehealth efforts that are currently being used or have been used in the past. These are found throughout the body of the results and not explicitly stated.

Changes in text: If the reader insists, we could provide a table list of the different platforms and their functions in telehealth.

**Comment 6: Line 209: Consider inadvertent instead of unconscious.**

Reply: We found that the word “inadvertent” is an appropriate substitute for the word “unconscious” and is more relevant for our text. As such, we have modified the manuscript accordingly.

Changes in text: See line 209. “Unconscious” was replaced with “inadvertent.”

**Comment 7: Line 329: Too small for what?**

Reply: The reviewer mentions an important point. We believe that the sample size of the study was too small to draw any conclusions that demonstrate the efficacy of the app in determining stool characteristics. Although promising, we believe that a larger sample size would be necessary to determine its effectiveness.

Changes in text: The authors have revised line 329 to the following, “Although the app determined stool characteristics with a high accuracy, more studies need to be conducted to determine its full potential.”

We want to thank Reviewer B for their kind and insightful suggestions. We have taken



their feedback into consideration and have revised the text accordingly. We want to thank the reviewer for their time and we appreciate their advice.