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# Patient Centered Outcomes Regarding Telemedicine Prior to Endoscopy During the Coronavirus Disease 2019 Pandemic

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## Introduction

Telemedicine has become an important avenue for gastrointestinal patient care during the Coronavirus Disease 2019 (COVID-19) pandemic. Multiple guides and articles have shown the benefit from a physician viewpoint,<sup>1–3</sup> but there is limited knowledge on the perception of telemedicine from a patient standpoint. We sought to understand how patient satisfaction of telemedicine compares to traditional care prior to gastrointestinal endoscopy.

## Methods

In order to help understand patient satisfaction with telemedicine, we performed a quality improvement (QI) study that compared overall patient satisfaction among those who had advanced endoscopic preprocedure consultation visits by telemedicine, traditional in-person visits, or a direct access procedure (instructions and procedure explained by a nurse practitioner or physicians assistant by phone). Prior to COVID-19 our institution offered the latter two services. The study was determined to be exempt from the institutional board review. To assess satisfaction, we called a total of 322 consecutive patients who had undergone an advanced endoscopic procedure at our tertiary care center from May 2020 to August 2020 and asked them to complete a modified version of a validated patient satisfaction survey<sup>4</sup> (Table). The survey was designed not only to assess overall patient satisfaction among the three groups, but also to assess patient satisfaction in their preprocedure, intraprocedure, and post procedure experiences.

## Results

Of the 322 patients that were called, 123 agreed to participate (38%). The mean age was  $60 \pm 32$  years. There were 26 (21%) who had in-person visits, 32 (26%) who had telemedicine visits, and 65 (52%) who had direct access procedures. The overall mean satisfaction scores among the three groups did not reveal a statistically significant difference (4.51 vs 4.55 vs 4.63,  $P = 0.79$ ). Subanalysis of the preprocedure, intraprocedure, and postprocedure experiences did not show statistically significant differences among the three groups. (4.50 vs 4.28 vs 4.50,  $P = 0.88$ , 4.65 vs 4.77 vs 4.79,  $P = 0.24$ , 4.27 vs 4.5 vs 4.37,  $P = 1.00$ , respectively). Further subanalysis of overall mean satisfaction scores among telemedicine visits compared to direct access procedures also did not show a statistically significant difference (4.55 vs 54.58,  $P = 0.95$ ). However, among the 14 patients diagnosed with a new gastrointestinal cancer, there was a statistically significant higher mean satisfaction score in those who had telemedicine visits with the endoscopists compared to those who had direct access procedures (5.00 vs 4.65,  $P = 0.01$ ). In addition to the questionnaire, supplementary questions found that there was no statistically significant difference among the three groups in whether patients felt that they understood the risk, benefits, and alternatives to their procedure (1.96 vs 1.92 vs 1.94,  $P = 1.00$ ). Finally, we also found that there was no difference in whether the participants would have their procedure done again by the same physician (1.96 vs 1.94 vs 1.98,  $P = 1.00$ ).

## Discussion

To our knowledge, this is the first study to compare patient satisfaction among those who had advanced

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**Table.** Modified Group Health Association of America Patient Satisfaction Survey

Item		Rating scale				
	Preprocedure	A	B	C	D	E
1	How long you waited to get an appointment	<input type="checkbox"/> Excellent	<input type="checkbox"/> Very good	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor
2	I understood the preprocedure preparation instructions clearly (NPO, hold medications, prep)	<input type="checkbox"/> Very clear	<input type="checkbox"/> Somewhat clear	<input type="checkbox"/> Somewhat unclear	<input type="checkbox"/> Very unclear	<input type="checkbox"/> Poor
3	Overall rating of the preprocedure experience.	<input type="checkbox"/> Excellent	<input type="checkbox"/> Very good	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor
	<b>Intraprocedure</b>					
4	The personal manner (courtesy, respect, sensitivity, friendliness) of the physician who performed your procedure	<input type="checkbox"/> Excellent	<input type="checkbox"/> Very good	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor
5	The technical skills (thoroughness, carefulness, competence), of the physician who performed your procedure	<input type="checkbox"/> Excellent	<input type="checkbox"/> Very good	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor
6	My comfort level during the procedure	<input type="checkbox"/> Very comfortable	<input type="checkbox"/> Somewhat comfortable	<input type="checkbox"/> Somewhat uncomfortable	<input type="checkbox"/> Very uncomfortable	<input type="checkbox"/> Poor
7	The personal manner (courtesy, respect, sensitivity, friendliness) of the nurses and other support staff	<input type="checkbox"/> Excellent	<input type="checkbox"/> Very good	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor
	<b>Postprocedure</b>					
8	After your procedure, the adequacy of explanation of what was done for you-all your questions answered	<input type="checkbox"/> Excellent	<input type="checkbox"/> Very good	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor
	<b>Supplementary</b>					
9	I understood the risks/benefits, and alternatives	<input type="checkbox"/> Yes	<input type="checkbox"/> No			
10	Would you have the procedure done again by this physician?	<input type="checkbox"/> Yes	<input type="checkbox"/> No			

This survey was derived from the Groups Health Association of America-9 survey.<sup>4</sup> A score of 1 to 5 was assigned to each response (A=5, B=4, C=3, D=2 E=1) with 5 indicating the highest degree of satisfaction. For supplementary questions a score of 2 was assigned for an answer of yes and a score of 1 for an answer of no.

preprocedure consultation by telemedicine visits, traditional in-person visits, or by a direct access procedure. We have found that there is no statistically significant difference in patient satisfaction among the three different visit modalities, suggesting that telemedicine could be an effective and widely used tool for these subgroup of patients.

There are several limitations to our study. As our data was collected retrospectively, it was difficult to determine how patients were selected for in-person preprocedure visits, telemedicine preprocedure visits, or direct access. However, it should be noted that most of our advanced pre-procedure visits proceed as direct access. If a patient requested to speak with a physician, then they are offered the choice of an in-person or telemedicine visit, suggesting the possibility of selection bias. Another limitation is the small sample size due to the low participation rate. This study calls for a prospective and larger study as telemedicine is increasingly being integrated into our healthcare delivery system.

These findings show that telemedicine has an acceptable patient satisfaction rating, when counseling patients prior to endoscopy, compared to traditional consults and

direct access care. It may also be superior to direct access care for patients with gastrointestinal cancers. In addition to patient satisfaction, telemedicine offers reduced traveling burden and safety of minimizing COVID-19 exposure during the ongoing pandemic .

## REFERENCES

1. Keihanian T, Sharma P, Goyal J, et al. *Gastroenterology* 2020;159:1598–601.
2. Mejia Perez LK, Sharma N. *Gastroenterology* 2020 online ahead of print. doi:10.1053/j.gastro.2020.09.061
3. Shah ED, Amann ST, Karlitz JJ. *Am J Gastroenterol* 2020;115:1371–5.
4. Harewood GC, Yacavone RF, Locke GR, et al. *Am J Gastroenterol* 2001;96:3312–7.

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**Authors' Contributions**

Conception and design (AJT); Analysis and interpretation of the data (DW, AJT, XL, KS); Drafting of the article (DW, AJT, XL, KS); Critical

revision of the article for important intellectual content (DW, AJT, XL, KS); Final approval of the article (DW, AJT, XL, KS).

**Conflicts of Interest**

AJT: Consultant for Pentax Medical; Research Support from Ninepoint Medical; All other authors have no COI.