

Reviewer #1:

Scientific Quality: Grade B (Very good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Major revision

Specific Comments to Authors: I would like to thank the authors for their work.

Thank you very much for taking time to review our article.

Overall: The manuscript needs language polishing, as some sentences are not clear or contain grammatical errors.

Manuscript has been revised by a native english speaker to make the sentences more clear and to limit the grammatical errors.

Title:

Title is confusing, indicating geographical research rather than clinical one. Could the authors modify and include the type of clinical study (cross sectional, case control, retrospective cohort) and the country in question (best the urban areas and rural areas they meant), and years (from when to when the study data were included since it is written later that it is a retrospective cohort).

Due to the 18 word limit imposed on the title of the manuscript, We are unfortunately unable to comply with all these requests but we changed the title according to the suggestions. In order to include the dates written as "...in the USA from 2010-2016" would put us over the limit. Also to include the type of clinical study would put us over the 18 word limit and take away from delivering a concise title emphasizing the purpose of the research.

Abstract:

• The abstract does not follow the guidelines of the journal. No core tip is written as per the journal's guidelines.

Abstract has been edited to the best to follow guidelines and the Core tip has been added.

• The background statement is incorrect, there are RCTs for this topic of research, e.g. o van Rongen I, Thomassen BJW, Perk LE. Early Versus Standard Colonoscopy: A Randomized Controlled Trial in Patients With Acute Lower Gastrointestinal Bleeding: Results of the BLEED Study. J Clin Gastroenterol. 2019 Sep;53(8):591-598. doi: 10.1097/MCG.0000000000001048. PMID: 29734211. o Laine L, Shah A. Randomized trial of urgent vs. elective colonoscopy in patients hospitalized with lower GI bleeding. Am J Gastroenterol. 2010 Dec;105(12):2636-41; quiz 2642. doi: 10.1038/ajg.2010.277. Epub 2010 Jul 20. PMID: 20648004. o Roshan Afshar I, Sadr MS, Strate LL, Martel M, Menard C, Barkun AN. The role of early colonoscopy in patients presenting with acute lower gastrointestinal bleeding: a systematic review and meta-analysis. Therap Adv Gastroenterol. 2018 Feb 19;11:1756283X18757184. doi: 10.1177/1756283X18757184. PMID: 29487627; PMCID: PMC5821297.

Background statement is now rewritten and the incorrect statement is omitted.

- **The number of included patients in this study or the areas that the data were collected from is not mentioned clearly in the abstract, kindly add.**

157,748 patients aged 18 and older in the NIS. It is now included in the abstract

- **The results in the abstract does not answer the main research question i.e. discrepancies between urban and rural management of lower GI bleeding, please add or clarify.**

We included the data in the results section of the abstract

- **Conclusion: needs to be rewritten, as it is grammatically incorrect.**

We have re-written the conclusion for clarity

- **It is not clear whether the authors are only including acute lower GI bleeding, or acute and chronic GI bleeding, please clarify.**

Unfortunately there is no way to distinguish this in the NIS data; the data encompasses all lower gastrointestinal bleed diagnoses in the NIS data.

Relevant Methods:

Logistic regression was used to analyze utilization of colonoscopy and mortality, Generalized linear model was used to analyze length of stay and cost.

- **Could the authors clarify if all patients were acute lower GI bleeding or acute and chronic cases?**

Unfortunately there is no way to distinguish this in the NIS data; the data was based on ICD codes and encompasses all lower gastrointestinal bleed diagnoses in the NIS data.

Results:

- **Could the authors explain why patients with lower GI bleeding were not considered for colonoscopy in the first place, were they diagnosed by other measures as occult blood in stool, CT abdomen, CT virtual colonoscopy, MR enterography, etc?. This is a very important point to clarify in the discussion too.**

Limited due to data provided in the NIS

- **There is no mention of the specific geographical locations included in this study, please add. Could you add a bar chart for each geographical area and the number of patients included?**

The data is based on ICD codes and specifies only general regions as shown in table 1. Northeast, Midwest, South, and West.

Discussion:

- **The authors stated in the first paragraph “Colo-rectal cancer accounts for the second leading cause of cancer deaths in the United States even with effective screening techniques (16).” > this introduction deviates from the aim of the topic, please modify or omit.**

This sentence has been removed

- **This study shows that there is a tendency to overall decrease in the cost of the management of patients, is this related to an update in the insurance policy in the USA or the more decline in the number of specialists in the rural areas, both are unrelated to medical decisions or guidelines, could the authors kindly explain, and is this comparable to international variations and what is the feedback from the medical professionals in USA to policy makers?**

Our study says colonoscopy increases costs. Rural hospitals had lower associated costs with colonoscopies than urban hospitals, but the overall costs were higher when compared to not receiving the colonoscopy regardless of whether the colonoscopy was performed in a rural or urban hospital.

- **The authors wrote “With a reduction in out of pocket costs for colonoscopies, the rate of colonoscopies increased suggesting that financial hardships play a notable role in screening and use of colonoscopies. “ this is not clear, does the authors means that the cost of colonoscopy decreased thus availability increased lately? But there is a noticeable trend towards decrease in utilization of colonoscopy as shown in this study?**

We don't have a reference for the out of pocket costs. We removed this line.

- **The authors stated “This study did not show any significant difference in mortality among patients with LGIB who are admitted in rural hospitals compared to those who are admitted to urban hospitals. This may be due to other confounding factors.”>> Please elaborate on those confounding factors.**

While this may be due to confounding factors, we do not believe this to be the case. Most likely this is because in the US rural areas tend to be underserved areas with fewer doctors. We don't have all the data we can control for morbidities and demographics, only the data provided in the NIS Database . We partially controlled for confounding with the Charlson comorbidity index.

- **Also another statement by the authors contradict the previous one “This study also suggests that patients with LGIB who underwent colonoscopy had significantly lower mortality compared to the patients with LGIB who did not undergo colonoscopy.” Could the authors explain the reason behind this discrepancy?**

Even Though there is no statistically significant difference in the mortality benefit between rural and urban hospitals, in all the patients that underwent colonoscopy for lower gastrointestinal bleed there is still a benefit of mortality in both urban and rural hospitals. We are saying that it is beneficial for you to receive a colonoscopy in urban and rural hospitals and there is equal benefit to mortality regardless whether you get a colonoscopy done in an urban or a rural hospital

- **Could the authors discuss the cost-effectiveness of colonoscopy in lower GI bleeding as a separate entity in the discussion?**

In our paper we state that the primary benefit of colonoscopy is reduction in mortality rather than cost-effectiveness. We have put a reference for cost-effectiveness.

Conclusions: Good References: Good

Reviewer #2:

Scientific Quality: Grade C (Good)

Language Quality: Grade B (Minor language polishing)

Conclusion: Major revision

Specific Comments to Authors:

1. How was lower gi bleed confirmed in those who did not undergo colonoscopy?

This is a limited data set and based on ICD diagnoses. It was most likely a heme-occult test, the standard of care which came back positive and earned them the diagnosis of lower gastrointestinal bleed.

2. Would a day care model of colonoscopy reduce the in patient cost?

We have been unable to find any information on what a day care model is. We have tried looking it up online and it is not something we are familiar with.

3. Is there a bias per se in the classification of rural vs urban where obvious differences in utilization exist?

There is no bias because this is based purely on classification data by zip code.

4. The results do not include the final diagnosis and treatment which could quantify the actual need for colonoscopy

The specific findings of the colonoscopy are not reported in NIS data set.

Colonoscopy is a diagnostic procedure, a final diagnosis is never available until the procedure is done.

Limited data set and data not available. ICD9 diagnosis codes were used to identify

5. Not analyzing the reason for the disparities is a significant limitation

We have addressed this. It is based on access, longer distance to travel, lack of insurance. We don't have data stating the percentage of people that have limitations with each.

6. "In spite of differences in colonoscopy utilization, this study did not show any significant difference in mortality between rural and urban patients with LGIB." Does this go against the plea for increase in colonoscopy utilization in the rural pts?

No. Colonoscopy decreased mortality in both rural and urban areas.

Although there is no statistically significant difference in mortality between rural and urban areas, there was a statistically significant difference in mortality between those who received and did not receive colonoscopy in both rural and urban areas. Meaning there is a benefit to receiving colonoscopy in both rural and urban settings.

Reviewer #3:

Scientific Quality: Grade C (Good)

Language Quality: Grade A (Priority publishing)

Conclusion: Major revision

Specific Comments to Authors: The purpose of this retrospective study as the authors state was to examine whether there were rural disparities in the utilization of colonoscopy in hospitalized patients with lower GI bleeding. They used data from the National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP). They included all lower GI bleeds admitted between 2010 and 2016. My comments

1. The data analyzed was from a decade ago.

It usually takes at least two years to gather and format data in any large database. COVID has increased the time frame of this process. Later data was not available at this time and we mentioned it as one of the limitations.

2. Although their purpose was to analyze possible rural disparities in the utilization of colonoscopy they also analyze the effect of colonoscopy on the clinical outcome of patients. However this was not a randomized prospective study.

RCTs are not necessary to analyze outcomes. A great example of this is the studies that analyzed the birth defects of diethylstilbestrol - which were all retrospective.

3. The results and conclusion of the abstract should be reconstructed.

Results and conclusion has been rewritten.

Dear Editor,

I hope you are doing well.

We already submitted the revision on the website and it's updated.

We are unable to find the place to put the new revision.

I have attached the updated manuscript with the reviewers' points answered.

Thank you

Have a blessed day