

# Lack of sex bias in the referral letters for patients with inflammatory bowel disease: a mixed methods evaluation

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#### **Abstract**

**Introduction:** Women with inflammatory bowel disease (IBD) experience greater delays and misdiagnosis than men. Data from other conditions suggest that sex and/or gender bias in the process of referral to speciality care may contribute.

**Methods:** We undertook a mixed methods analysis of 120 referral letters to gastroenterology for people ultimately diagnosed with IBD in Calgary, Alberta. Letters were masked for patient sex and gender prior to analysis. Gastroenterologists who were masked to the objective of the study rated the quality of referral letters and triaged letters for urgency. Two study team members performed a Framework analysis to identify agentic (masculine) and commensal (feminine) adjectives, mentions of caregiving and work roles, and psychosocial history. After analysis, letters were unmasked and findings were compared by patient sex.

**Results:** There were 116 referral letters included in the analysis (n = 59, 50.9% for male patients). There were no differences in letter quality or triage urgency between male and female patients (median quality 4 [IQR 4-7] and 5 out of 10 [IQR 4-6], respectively, higher scores represent better quality; P = .37, and P = .44 for triage category). There was no difference in the use of adjectives and mention of caregiving or work roles, psychiatric history, or social history between letters for female and male patients.

**Conclusions:** This mixed methods analysis identified no difference in referral letter language, contents, or quality for female and male patients with IBD. Masked letters were triaged similarly to unmasked letters, suggesting an absence of sex and/or gender bias in the gastroenterology triaging process in our setting.

Key words: discrimination; referral letters; inflammatory bowel disease; sex based discrimination.

## Introduction

Patient sex and gender influence the diagnosis of inflammatory bowel disease (IBD). Women experience delays in diagnosis and more common misdiagnosis of Crohn's disease and ulcerative colitis. <sup>1,2</sup> The reason for these delays is unknown; however, greater delays in referral for specialist care have been seen for women in multiple settings, <sup>3</sup> including cardiology, <sup>4,5</sup> neurology, <sup>6,7</sup> and orthopaedic surgery. <sup>8</sup> Evidence suggests that part of these delays may be attributable to the sex or gender bias of the referring physician. <sup>9</sup> For example, healthcare providers assess the severity of pain as less in women than in men<sup>10</sup> and more often evoke functional diagnoses for unexplained symptoms in women. <sup>11</sup> These possible mechanisms of sex and gender bias are notable because symptoms of IBD may mimic disorders of the brain-gut axis such as irritable bowel syndrome (IBS).

Referral to a gastroenterologist for the evaluation of unexplained gastrointestinal symptoms is a key step where sex and gender bias could influence the time to diagnosis for female patients. Appropriate triaging of incoming referral letters requires referring healthcare providers to accurately describe a patient's symptoms and red flag features of IBD. Differences in the description of symptoms or patient characteristics may lead to inappropriate less acute triaging and delays in diagnosis for female patients. The objective of this study was to assess referral letters for sex and gender bias in the length or content of letters, including a description of a patient's risk factors for IBD, gastrointestinal symptoms, social history, or psychiatric history. The secondary objective was to understand if sex and gender bias influenced triage decisions.

#### Methods

This retrospective mixed methods study used qualitative and quantitative assessment to understand differences in referral letter quality and composition by patient sex. The study was approved by the University of Calgary's Conjoint Health Research Ethics Board (REB20-1637).

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## Referral letter identification

People in Calgary who need specialist gastroenterology care require a referral from a primary care provider or emergency physician. Referrals are accepted and triaged centrally for all adult gastroenterology clinics in Calgary based on information provided by the referring healthcare provider. There are no templates or checklists for referral letters to gastroenterology in Calgary; referral letters are typically narrative letters describing the patient's presentation and pertinent information as determined by the referring healthcare provider. The triage category, which includes urgent clinic, urgent direct to procedure (DTP), routine clinic, or closed referral, is assigned by a gastroenterologist based on a weekly rotating schedule. The urgent clinic is intended for patients who have severe symptoms (including suspected IBD), urgent DTP is for patients who have rapidly progressive symptoms with few comorbidities that would increase the risk of endoscopic evaluation, and the routine clinic is for patients with gastrointestinal symptoms that are not suspected of leading to severe morbidity or increased mortality. At the time that the letters were triaged, the average wait times for each triage category were 6.1-14.0 weeks for urgent clinic, 6.1-8.5 weeks for urgent DTP, 21.1-89.9 weeks for routine clinic, and >80 weeks for routine DTP.

Using the gastroenterology central access and triage database, we identified a sample of 120 adult patients (60 female and male) who had a new diagnosis of IBD between 2016 and 2019. The study sample was restricted to patients with an ultimate diagnosis of IBD so that differences in outcome (triage status) could be attributed to the exposure (patient sex). At the time of the data pull, there were only binary options for sex in the health system database with no option for intersex, nonbinary gender, or transgender people. The original digitized referral letters were obtained for analysis. People who had an established diagnosis of IBD and were being re-referred to a gastroenterologist were excluded. A study team member reviewed all referral letters and removed any sex or genderidentifying data (G.G.; eg, pronouns, names, references to pregnancy or menstruation) before analysis. Masking was tested by having 2 gastroenterologist study team members (Y.N. and L.T.) attempt to guess the sex of the patient based on the masked referral letter.

### Quantitative analysis

Letter length, triage outcome, and referring physician speciality and sex were abstracted from all masked referral letters. Referring physician sex was determined using the College of Physicians and Surgeons of Alberta public registration information, which recorded physician sex as female or male with no non-binary options at the time of this analysis.

Two gastroenterologists (Y.N. and L.T.), who were masked to the patient sex and who were not told that all patients had a final diagnosis of IBD, read all letters and scored letter quality (from 1 to 10, with 1 representing low quality and 10 representing highest quality) and assigned a triage category (urgent clinic, urgent direct to procedure (DTP), routine clinic, routine DTP, or closed referral), similar to methods described by Eskeland et al.<sup>12</sup> The official triage category was compared to the sex-masked triage category to estimate whether patient sex had influenced the original triage decision.

Descriptive statistics are presented for quantitative data. Mann–Whitney *U* test was used to compare medians between

populations, Chi-square tests were used to compare count data between categorical outcomes, and Kruskal–Wallis test were used to compare non-parametric continuous outcomes between groups. Agreement between the 2 gastroenterologist reviewers and the original triage decision was compared using a weighted Cohen's kappa coefficient. Data analysis was performed by Stata (version 18.5).

#### Qualitative analysis

After masking, referral letters were uploaded into NVivo (version 12, QRS International) for Framework analysis by 2 study team members (S.S. and S.M.R.). The initial codebook was informed by a literature review of differences in how physicians describe female and male patients<sup>13</sup> and trainees. The codebook included adjectives or descriptors used to describe patients, symptom characteristics, references to roles or occupations, and references to lifestyle factors such as smoking or alcohol use (Appendix 1). Adjectives/descriptors were coded as agentic, commensal, or neutral. Agentic adjectives are stereotypically applied to men and include words that describe task functioning (eg, competent and leader) and commensal adjectives are stereotypically applied to women and include words that describe social functioning (eg, caring and trustworthy). If

The codebook was then applied independently and in duplicate by 2 study team members (S.S. and S.M.R.). Disagreements in coding were resolved through discussion. After coding, patient sex was unmasked, and the frequency and content of codes were compared between female and male patients by 2 study team members (S.S. and S.M.R.) who presented their conclusions to the entire study team for agreement. S.S. is a man resident physician who practised as a general surgeon prior to residency and S.M.R. is a woman physician with experience in mixed methods and qualitative analysis.

#### Results

There were 116 referral letters included in the final analysis (n = 59, 50.9%) for male patients) written by 109 unique referring physicians (Table 1; eTable 4). Most referral letters were written by family (n = 84, 71.6%) and emergency physicians (n = 12, 10.3%) (eTable 1). There were more female referring physicians than male referring physicians (n = 61, 53.0%) compared to n = 54, 46.6%, 1 physician sex was not identified) (Table 1). Most referrals were triaged as an urgent consult (n = 75, 64.7%). Masking was adequate (eTable 2).

Interrater agreement about letter quality was fair (kappa 0.22, 95% confidence interval [CI] 0.07-0.37) (eTable 3). Median letter quality did not differ between female and male patients (4 [IQR 4-7] and 5 [IQR 4-6], respectively, P = .37) (Table 1) or female and male referring physicians (6 [IQR 3-7] and 5 [IQR 4-6], respectively, P = 1.00) (eTable 4) for either rater. Letters written for female patients were longer than those written for male patients (median 12 lines of text [IQR 6-24] and 8 lines [IQR 5-13], respectively, P = .01) (Table 1) and there was no difference in letter length by primary care provider sex (eTable 4). There was no difference between female and male patient triage categories using original referral letters (P = .44) or sex-masked referral letters (P = .44) (Table 1).

Table 1. Characteristics of referral letters to gastroenterology for patients who had a final diagnosis of inflammatory bowel disease by patient sex.

Characteristic	All letters	Male patients	Female patients	P-value
Total ( <i>n</i> , %)	116	59 (50.9)	57 (49.1)	_
Referring physician sex <sup>a</sup>				
Male ( <i>n</i> , %)	54 (46.6)	30 (50.8)	24 (42.1)	
Female ( <i>n</i> , %)	61 (52.6)	28 (47.5)	33 (57.9)	
Letter quality <sup>b</sup> (median, IQR)	5 (4-7)	5 (4-6)	6 (4-7)	.37
Letter length (median lines of text, IQR)	9 (5.75-19)	8 (5-13)	12 (6-24)	.01
Triaging				
Original triage				
Close consult	0	0	0	
Routine clinic consult	75 (64.7)	35 (59.3)	40 (70.2)	.44
Urgent clinic consult	11 (9.5)	7 (11.9)	4 (7.0)	
Direct-to-procedure	30 (25.9)	17 (28.8)	13 (22.8)	
Masked triage				
Close consult	11 (9.5)	5 (8.5)	6 (10.5)	.29
Routine clinic consult	10 (8.6)	3 (5.1)	7 (12.3)	
Urgent clinic consult	54 (46.6)	26 (44.1)	28 (49.1)	
Direct-to-procedure	41 (35.5)	25 (42.4)	16 (28.1)	

Abbreviation: IQR, interquartile range.

Table 2. Qualitative characteristics of referral letters to gastroenterology for patients diagnosed with inflammatory bowel disease by patient sex.

Category	Male Patients		Female Patients	
	N letters (%)	Example	N letters (%)	Example
Adjectives and descriptors				
Agentic	0	-	0	_
Commensal	0	-	0	_
Neutral	8 (13.6)		9 (15.8)	
Positive	6 (10.2)	"Pleasant" $[n = 5]$ ; "Reasonable" $[n = 1]$	5 (8.8)	"Pleasant" [ <i>n</i> = 4]; "Compliant" [ <i>n</i> = 1]
Neutral	0	-	1 (1.8)	
Negative	3 (5.1)	"fired [their] last family doctor"	3 (5.3)	"[has] poor sleep hygiene"
Emotion	5 (8.5)	"tearful"; "anxious"; "concerned" $[n = 3]$	5 (8.8)	"worry"/"worried"/"worrisome" [n = 3]; "apprehensive"; "concerned"
Social history				
General	13 (22.0)	"continues to live at home with [their] parents"; "has a sedentary lifestyle"	18 (31.6)	"is a Christian, not sexually active"; "dances regularly"
History of trauma or abuse	1 (1.7)	-	0	_
Caregiving roles	4 (6.8)	"has teenaged children"	2 (3.5)	"is single and has no children"
Work roles	11 (18,6)	"works as a manager at [redacted"	9 (15.8)	"has not missed any work"
Smoking, drinking alcohol, or using other substances	20 (33.9)	"returned from a treatment facility"	18 (31.6)	"THC to sleep"
Travel or immigration	7 (11.9)	"recently moved from [province]"	9 (15.8)	"No recent travel"
Psychiatric history	13 (22.0)	"has depression"; "fibromyalgia"	14 (24.6)	"history of an eating disorder"; "[has] complex PTSD"

Abbreviations: PTSD, post-traumatic stress disorder; THC, delta-9-tetrahydrocannabino.

Adjectives and descriptors were uncommon in the sample of referral letters (n = 17, 14.7%) and occurred equally for male and female patients (n = 8/59, 13.6% of male patient letters and n = 9/57, 15.8% of female patient letters) (Table 2).

There were no agentic or commensal adjectives identified in the sample of referral letters. Most descriptors were positive (n = 10; eg, "pleasant" and "reliable") and the 6 negative descriptors were distributed equally between female and

<sup>&</sup>lt;sup>a</sup>Sex was not identified for 1 physician.

<sup>&</sup>lt;sup>b</sup>Scale from 1 to 10, with 1 being worst quality and 10 being best.

male patient letters (eg, "[has] poor sleep hygiene"). Similarly, emotions were mentioned equally in male and female patient referral letters (n = 5, 8.5% of male patient letters and n = 5, 8.8% of female patient letters). Emotions were exclusively used to describe patient worries about their symptoms (eg, "tearful", "anxious", and "concerned").

Psychiatric medications, diagnoses, and/or history were mentioned equally in letters for male (n = 13/59, 22.0%) and female (n = 14/57, 24.6%) patients (Table 2). A specific history of trauma or abuse was reported in only 1 letter, for a male patient. Caregiving and work roles were uncommonly mentioned in referral letters for all patients (n = 6, 5.2% and n = 20, 17.2%, respectively) and there was no difference in mention of these roles in letters written for male and female patients (Table 2).

#### **Discussion**

This mixed methods evaluation did not identify evidence of sex bias in the quality, triage category, or patient descriptions in referral letters to gastroenterology central triage for patients who were ultimately diagnosed with IBD in a single Canadian centre. The letters written for female patients were longer than those for male patients, though the importance of this finding is uncertain. There was no difference in the triage urgency between the original referral letters and sexmasked letters. In addition, we did not identify a difference in the quality or length of letters written by female or male referring physicians. These reassuring results suggest that referring physicians do not intentionally or unintentionally contribute to less urgent triaging of female or male patients with symptoms suggestive of IBD in our setting.

Based on this analysis, the content and triaging of referral letters for patients with IBD do not explain the observed sex or gender differences in time-to-diagnosis for female patients with IBD in our setting.<sup>1,2</sup> This difference may be explained by other factors; for example, we were unable to identify if there was a difference in the likelihood of referral to gastroenterology by a primary care physician for symptoms of IBD between female and male patients. This type of sex bias has been identified among women with cardiovascular disease, who are less often appropriately referred to cardiac rehabilitation programs,4 among women with knee osteoarthritis, who are less often appropriately referred for knee replacement,8 and women with movement disorders, who are less often referred for surgery.6 Further study is needed to understand if and where sex and gender bias may lead to delays in diagnosis for female patients.

Notably, the majority of referral letters included in this sample were judged as medium to low quality by the study team gastroenterologists. While referral letter quality may not influence triaging decisions, <sup>12,17</sup> including for Canadian patients with IBD, <sup>18</sup> poorer quality referral letters may increase the workload for specialists. <sup>19</sup> Efforts to improve the content of referral letters are ongoing, <sup>12,20</sup> including in our setting. <sup>21</sup> The effect of standardization on potential sex bias in referral letters could be measured as part of the evaluation of these quality improvement projects.

The strengths of this evaluation are the masking of patient sex prior to analysis with an assessment of the quality of masking and the independent, parallel assessments for bias. However, due to limitations in the dataset, we were only able to examine for associations by patient and physician binary sex. Diagnostic delays and possible bias in referral letters for intersex, non-binary gender, and transgender people are not known. Further, the influence of patient gender, gender expression, and gender concordance<sup>22</sup> on bias in referral letters cannot be assessed by our methods. Lastly, Calgary gastroenterology is accessible only through a central triaging procedure which reduces the generalizability of these results to centres that use group-based or individual physician referral practices.

This mixed methods evaluation of narrative referral letters demonstrates a novel approach to examining sources of bias in the outpatient referral process. Investigators could apply similar approaches to understanding the documented sex and/or gender bias in referrals for other medical issues. The lack of sex and/or gender bias in referral letters for patients ultimately diagnosed with IBD allows us to focus resources on other aspects of access and equity for people with IBD in our setting.

## Supplementary material

Supplementary material is available at Journal of the Canadian Association of Gastroenterology online.

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#### **Author contributions**

S.M.R., L.T., and Y.N. conceived the study design, supervised trainees, analyzed data, and wrote the first draft of the manuscript. S.M.R., S.S., G.G., L.T., Y.N., and H.N. contributed to data collection and analysis. All authors provided revisions to the final draft of the manuscript.

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None declared.

## **Conflicts of interest**

Conflict of interest disclosure forms (ICMJE) have been collected for all co-authors and can be accessed as supplementary material here.

#### Data availability

Due to the sensitive nature of the data, the raw data (referral letters) for this study are not available.

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