Factors associated with delayed corticosteroid treatment for patients with acute flares in Inflammatory Bowel Disease and hospital outcomes

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OBJECTIVE

- Patients with inflammatory bowel disease (IBD) flares can suffer from abdominal pain, diarrhea, and hematochezia that may lead to hospitalization.[1]
- Acute management of IBD flares includes steroids to alleviate symptoms and control inflammation.[2]
- However, steroids cause immunosuppression and their administration is often delayed until infectious processes are ruled out.[3]
- We investigated the factors that most often lead to delayed steroid administration and how the timing of administration affects the outcomes of hospitalized patients with IBD flares.

METHODS AND MATERIALS

- We conducted a retrospective chart review of 257 adult patients with IBD not on chronic steroids who were who had an emergency department (ED) visit and were hospitalized for an IBD flare from April 1st, 2015 to December 31th, 2019, at a private, not-for-profit acute care hospital located in the southeastern New England area.
- We defined the timing of steroid administration as the time from the initial encounter with a healthcare provider to the first dose of a steroid.
- We compared mortality, length of stay (LOS), infections, and need for colonoscopy between patients who were started on steroids within 24, 24-48, 48-72, and >72 hours.
- Chi-square, Fisher exact test, and Student's t-tests were performed for descriptive analysis to report demographics and other health-related measurements. The multivariable logistic regression models were adjusted for age, Charlson Comorbidity Index score (CCI), abnormal labs, and chief complaints.

RESULTS

- One hundred fifty-eight patients (61.5%) received steroids within 24h, 51 (19.8%) 24-48h, 26 (10.1%) 48-72h, and 22 (8.6%) >72h.
- Of the 257 patients, 46.7% were males, mean age was 44.5 years, 50% were never smokers, and 66% had Crohn's disease.
- Fever, diarrhea, and elevated ESR and CRP were more prevalent in patients who received steroids within 48-72h (p= 0.0208, 0.0367, 0.0117, and 0.0163, respectively) compared to those who received steroids within 24h, but not any other time frame.
- In secondary outcome analysis, patients started on steroids >72h resulted in more days on opioid in-hospital but less GI bleeding compared to <24h.

Table 1: Baseline characteristics of IBD patients with an ED visit and were admitted with an IBD flare.

Patient characteristics	Steroid initiation study groups							
	Within 24 hours (n=158, 61.5%)	24-48 hours (n=51, 19.8%)	P-value	48-72 hours (n=26, 10.1%)	P-value	More than 72 hours (n=22, 8.6%)	P-value	Overall (n=257)
Male gender, no. (%)	73 (46.2)	28 (54.9)	0.2797	10 (38.5)	0.4623	9 (40.9)	0.6404	120 (46.7)
Caucasian race, no. (%)	134 (84.8)	47 (92.2)	0.1817	17 (65.4)	0.0182	17 (77.3)	0.4913	215 (83.7)
Age at admission, mean (SD)	44.2 (18.1)	44.2 (21.5)	0.9799	44.4 (17.9)	0.9529	47.7 (19.7)	0.3991	44.5 (18.9)
Chief of complaint at ED								
Abdominal pain	97 (61.4)	28 (54.9)	0.4111	11 (42.3)	0.0670	12 (54.6)	0.5381	148 (57.6)
Diarrhea	6 (3.8)	5 (9.8)	0.1416	4 (15.4)	0.0367	3 (13.6)	0.0820	18 (7.0)
Bleeding	11 (7.0)	4 (7.8)	0.7635	0 (0.0)	0.3681	1 (4.6)	1.0000	16 (6.2)
Nausea/vomiting	2 (1.3)	1 (2.0)	0.5700	0 (0.0)	1.0000	0 (0.0)	1.0000	3 (1.2)
Fever	2 (1.3)	2 (3.9)	0.2506	3 (11.5)	0.0208	2 (9.1)	0.0737	9 (3.5)
Other	41 (26.0)	11 (21.6)	0.5292	10 (38.5)	0.1866	4 (18.2)	0.4305	66 (25.7)
Rectal bleeding[a]	102 (64.6)	32 (62.8)	0.8146	17 (65.4)	0.9348	14 (63.6)	0.9326	165 (64.2)
Lab at admission, mean (SD)								
Albumin	3.6 (0.6)	3.5 (0.6)	0.3269	3.6 (0.5)	0.7003	3.6 (0.6)	0.6057	3.6 (0.6)
CRP	67.0 (70.8)	79.6 (72.8)	0.3207	105.9 (82.5)	0.0163	101.6 (61.3)	0.0518	77.3 (72.9)
Sed rate	46.2 (28.0)	50.9 (34.5)	0.3988	68.8 (37.9)	0.0117	55.2 (36.6)	0.2309	50.7 (32.0)
GI Consult	17 (10.8)	7 (13.7)	0.5635	6 (23.1)	0.1045	5 (22.7)	0.1551	35 (13.6)
CCI, mean (SD)	0.7 (1.7)	1.4 (3.0)	0.1094	1.4 (3.0)	0.1094	1.0 (2.2)	0.4899	0.8 (2.1)

Figure 2: Colonoscopy and gastrointestinal bleeding by timing of steroid among patients with an IBD flare.
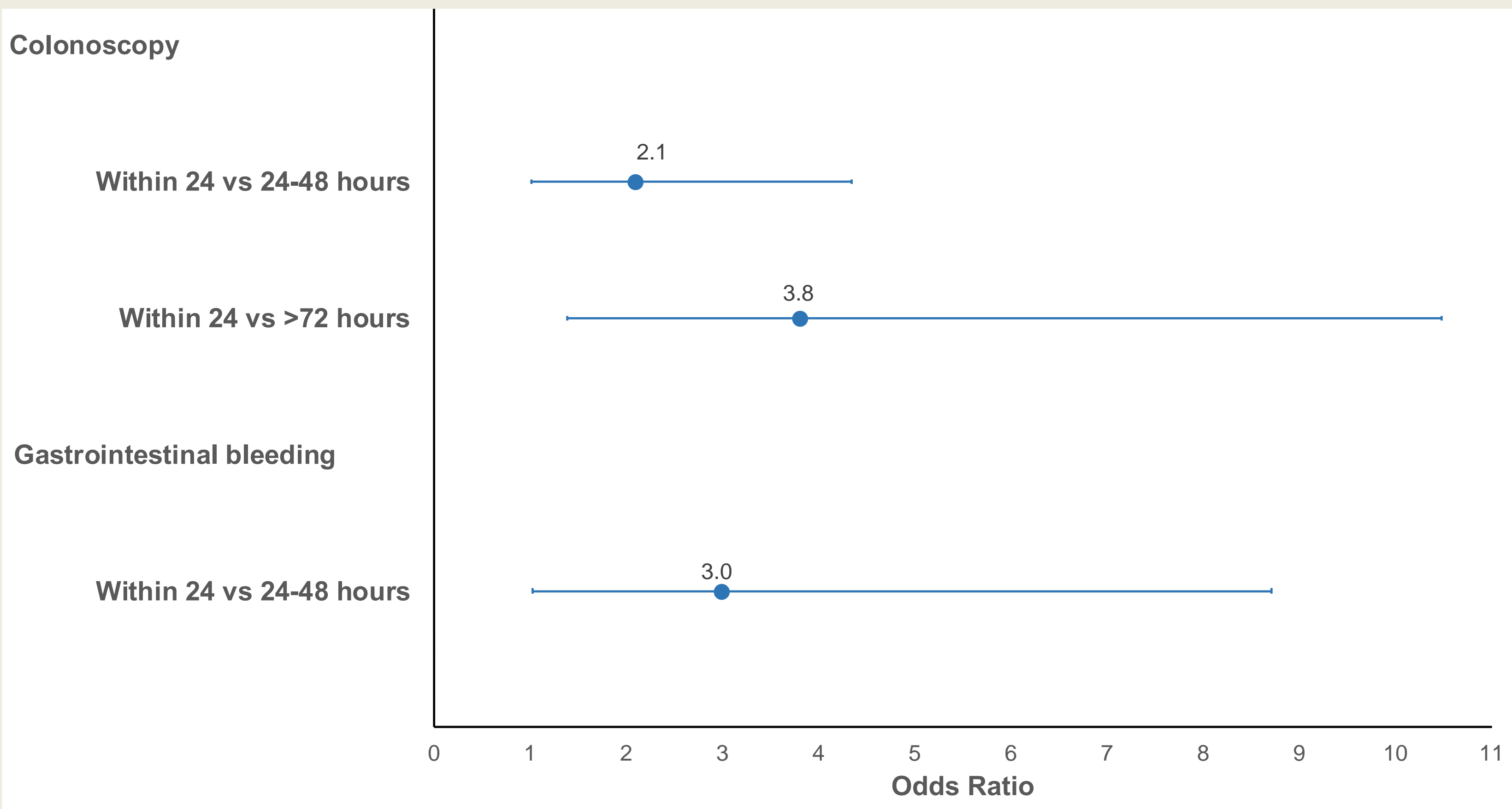
- Patients started on steroids within 24-48h and >72h were 2- and 4-folds more likely to have a colonoscopy, when compared with patients started on steroids within 24h, with OR 95% CI 2.1 (1.02-4.35), 3.8 (1.386-10.48), respectively. Gastrointestinal bleeding are 3 folds more likely 3.0 (1.02-8.7) to happen among patients started on steroids within 24-48h than within 24h.

Figure 2: LOS by timing of steroid among patients with an IBD flare.
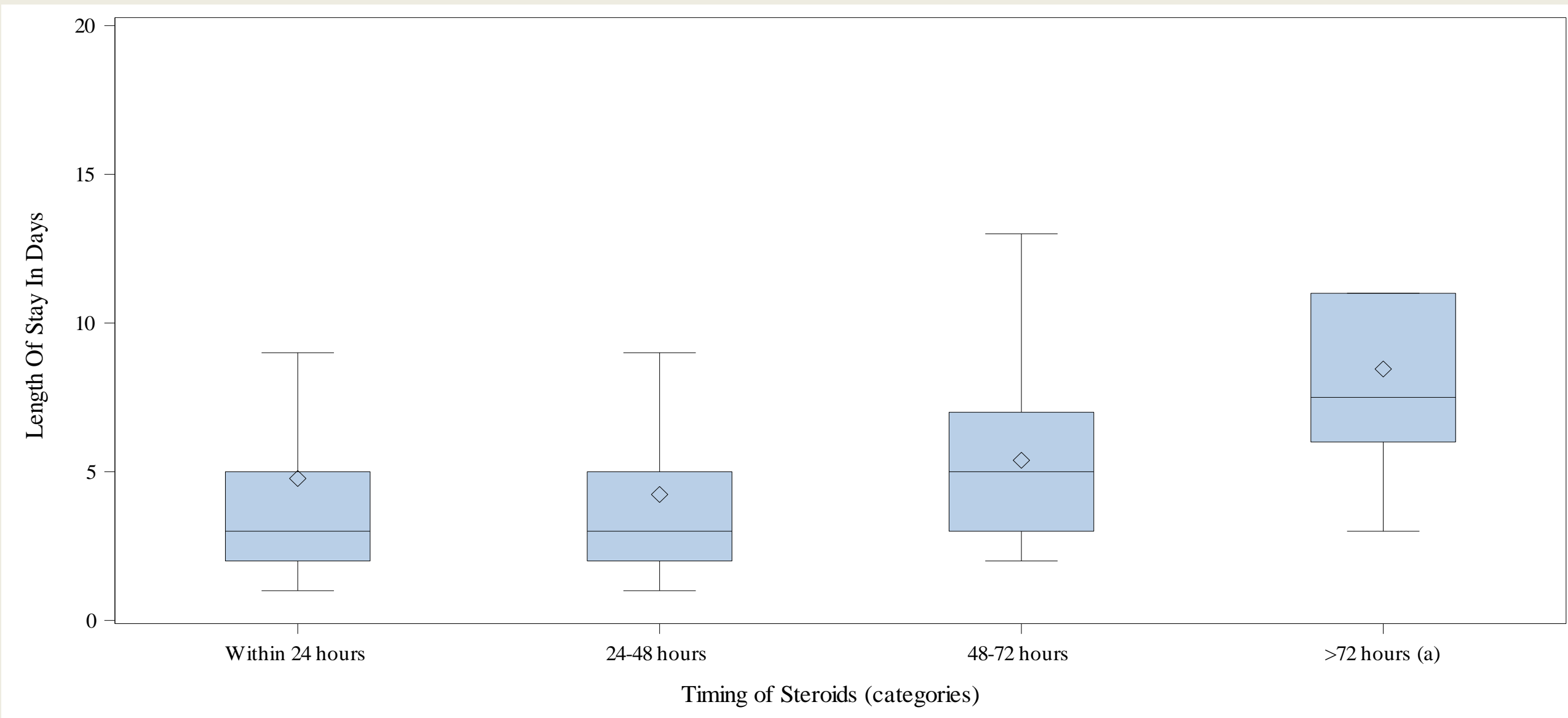
- The average LOS among patients that were initiated on steroid after 72 hours was higher (8.5 days), when compared with those that were initiated on steroids within 24 hours (4.8 days), 24-48 hours (4.2 days), 48-72 hours (5.4 days), with adjusted p-value= 0.0345, <0.0001, 0.0111, respectively.

DISCUSSION AND CONCLUSIONS

- There were no symptoms nor lab abnormalities that reliably affected timing of steroids.
- Fever and diarrhea inconsistently delayed steroid administration, likely for concern that the immunosuppressive effect of steroids may worsen an existing infection.
- However, there was greater GI bleeding on early initiation of steroids.
- While steroid timing does not affect mortality or readmission rate, early recognition of IBD flare and prompt initiation of steroids may shorten hospital stay and days on inpatient opioids and limit invasive procedures.
- Ultimately, in our study, steroid timing for IBD flares did not affect mortality or readmission rate.

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