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1. BACKGROUND

- Nonalcoholic fatty liver disease (NAFLD) is rapidly emerging as one of the most common causes of chronic liver disease worldwide and in the United States (US), primarily due to the obesity epidemic, rising prevalence of diabetes mellitus, and an aging population.
- Although peptic ulcer disease (PUD) is commonly seen in patients with liver cirrhosis, there is a lack of data on PUD in patients with NAFLD. In this study, we aimed to identify trends of PUD in NAFLD hospitalizations in the US.

2. METHODS

- This retrospective study utilized the National Inpatient Sample to identify all NAFLD hospitalizations with PUD in the US from 2009 to 2019. Trends of hospitalization characteristics and clinical outcomes were highlighted. P-values ≤ 0.05 were considered statistically significant.

3. RESULTS

- Overall, the total number of NAFLD hospitalizations with PUD increased from 3,745 in 2009 to 3,805 in 2019, after an initial peak from 2009 to 2014 and a decline until 2016 (Table 1).
- NAFLD hospitalizations with PUD were primarily at **large urban teaching hospitals**.
- The **mean age** of the study cohort increased from 56 years in 2009 to 63 years in 2019 (p-trend < 0.001).
- Additionally, only the 65–79 age group with NAFLD had a rising trend of PUD from 26% in 2009 to 46% in 2019 (p-trend < 0.001) [Figure 1].

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	P-trend
Total hospitalizations	3,745	4,563	5,230	5,655	5,759	6,885	5,745	2,880	3,070	3,430	3,805	
Female(%)	55	48	57	58	56	56	55	64	60	50	61	0.01
Mean age (years)	56.0	57.1	56.7	57.1	57.1	57.4	57.5	62.4	62.8	63.7	63.0	<0.001
Race (%)												
White	72	73	70	71	72	71	70	74	76	76	75	
Black	10	8	9	10	9	11	10	6	5	5	5	
Hispanic	11	13	14	13	12	11	13	14	15	15	15	
Native American	1	<1	1	1	1	1	1	2	1	1	2	
CCI \geq 3	39	44	43	47	46	47	44	86	86	86	86	<0.001
Hospital status (%)												
Large Hospital	67	64	67	59	63	52	55	61	59	56	56	
Urban Teaching Hospital	46	40	44	49	53	67	66	73	75	81	80	
Upper Endoscopy(%)	60	59	62	58	59	59	62	20	22	18	19	<0.001
H. Pylori(%)	5	4	4	3	5	4	3	3	2	1	1	<0.001
Mean LOS (days)	5.5	5.7	5.7	5.5	5.5	5.5	5.9	6.1	6.8	6.5	7.2	<0.001
Mean inpatient charge (USD)	41,474	45,135	47,816	50,169	51,775	52,679	63,746	64,253	83,963	78,156	92,354	<0.001
Inpatient mortality(%)	2	1	2	2	2	2	1	4	4	5	5	<0.0001

Table 1: Trends of peptic ulcer disease in non-alcoholic fatty liver disease (NAFLD) hospitalizations in the United States from 2009–2019.

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Increase in PUD in NAFLD hospitalizations, and inpatient mortality

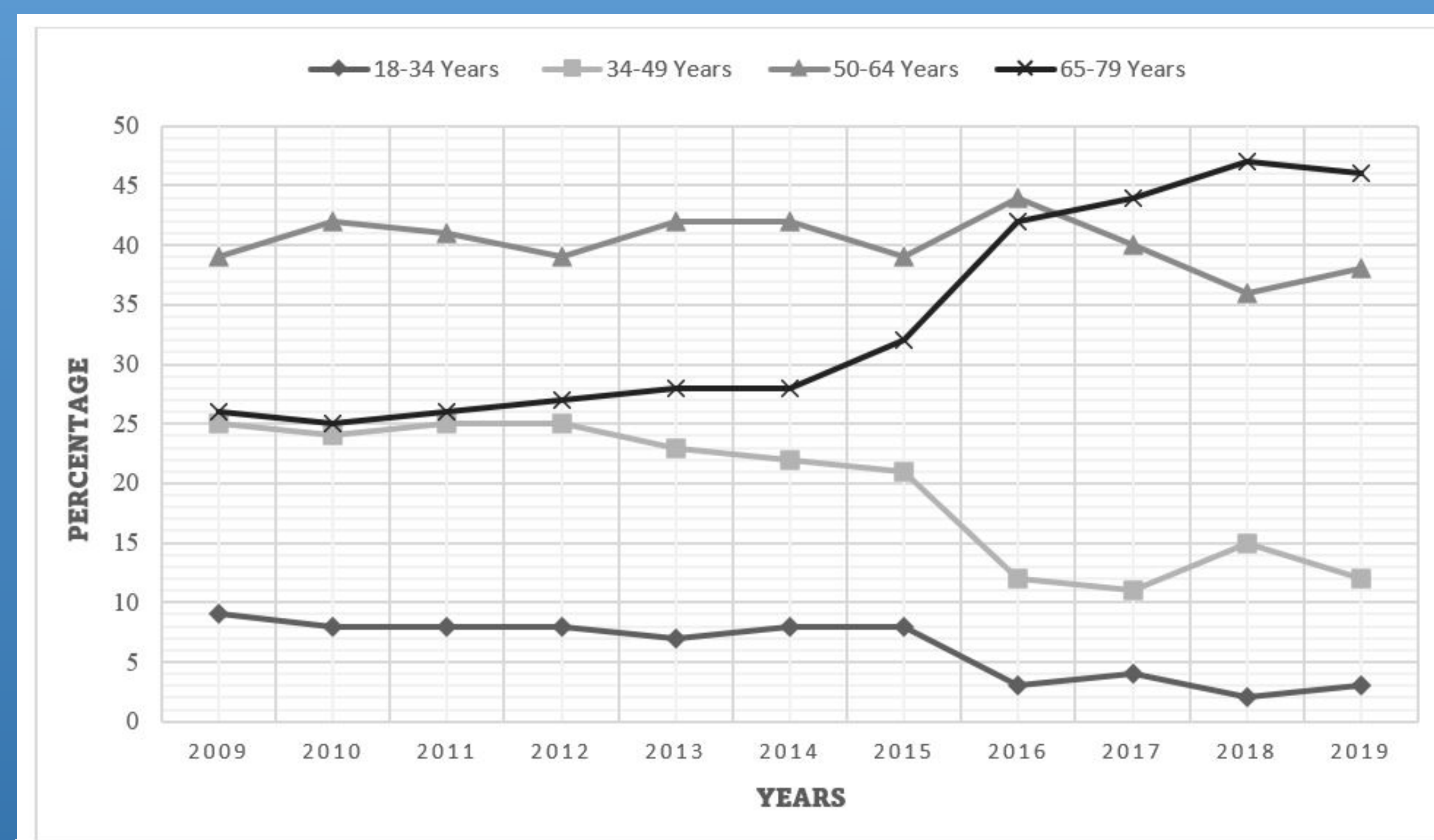


Figure 1: Trends of age for peptic ulcer disease in non-alcoholic fatty liver disease (NAFLD) hospitalizations in the United States from 2009-2019.

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Decrease in H. pylori infection and upper endoscopy for NAFLD hospitalizations with PUD

- **Racial differences** were also prevalent as we noted a rising trend of White and Hispanic NAFLD hospitalizations with PUD; however, a decline was observed for Blacks and Asians (Table 1).
- Trends of **H. pylori infection** and **upper endoscopy** decreased from 5% in 2009 to 1% in 2019 (p-trend < 0.001) and 60% in 2009 to 19% in 2019 (p-trend < 0.001), respectively.
- Inpatient mortality increased from 2% in 2009 to 5% in 2019 (p-trend < 0.001).
- The **mean LOS** increased from 5.5 days in 2009 to 7.2 days in 2019 (p-trend < 0.001), and the **mean inpatient charge** from \$41,474 in 2009 to \$92,354 in 2019 (p-trend < 0.001).

4. CONCLUSION

- Literature reports a decrease in the incidence, prevalence, and hospitalization rates of PUD in the US.
- This study noted an overall increase in PUD in NAFLD hospitalizations.
- **Inpatient mortality** also increased to 5% in 2019, the exact reason for which is currently known.
- However, we noted a decrease in the trends of *H. pylori* infection and upper endoscopy for NAFLD hospitalizations with PUD.
- Additional prospective studies are needed to fully understand PUD trends in NAFLD populations.

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