Estimating the Prevalence, Characteristics and Predictors of Colorectal Neoplastic Lesions in Young Patients Undergoing Colonoscopy

MAYO CLINIC

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INTRODUCTION

- Colorectal cancer (CRC) is the third leading cause of cancer and the second most common cause of cancer death in the United States.

- Incidence of colorectal neoplasia (CRN) in patients < 50 years of age, however, has been increasing.

- Causes for the rising trend in CRN in < 50-year-olds is unclear; environmental and dietary factors likely play a role.

- Although current guidelines recommend starting screening at age 45[1], data on the prevalence and characteristics of CRN in this cohort is still evolving.

- Prevalence of adenoma, advanced adenoma and CRC ranged from 13 – 51%, 1.6 -5.2 %, and 0.1 – 0.6% in some series.

AIM

- To evaluate the overall prevalence of CRN including adenomas, advanced adenomas (AAs), sessile serrated adenomas (SSAs), high grade dysplasia (HGD), and CRC in patients < 50 years of age, stratified by age groups.

- To identify predictors of adenoma detection in patients < 50 years of age.
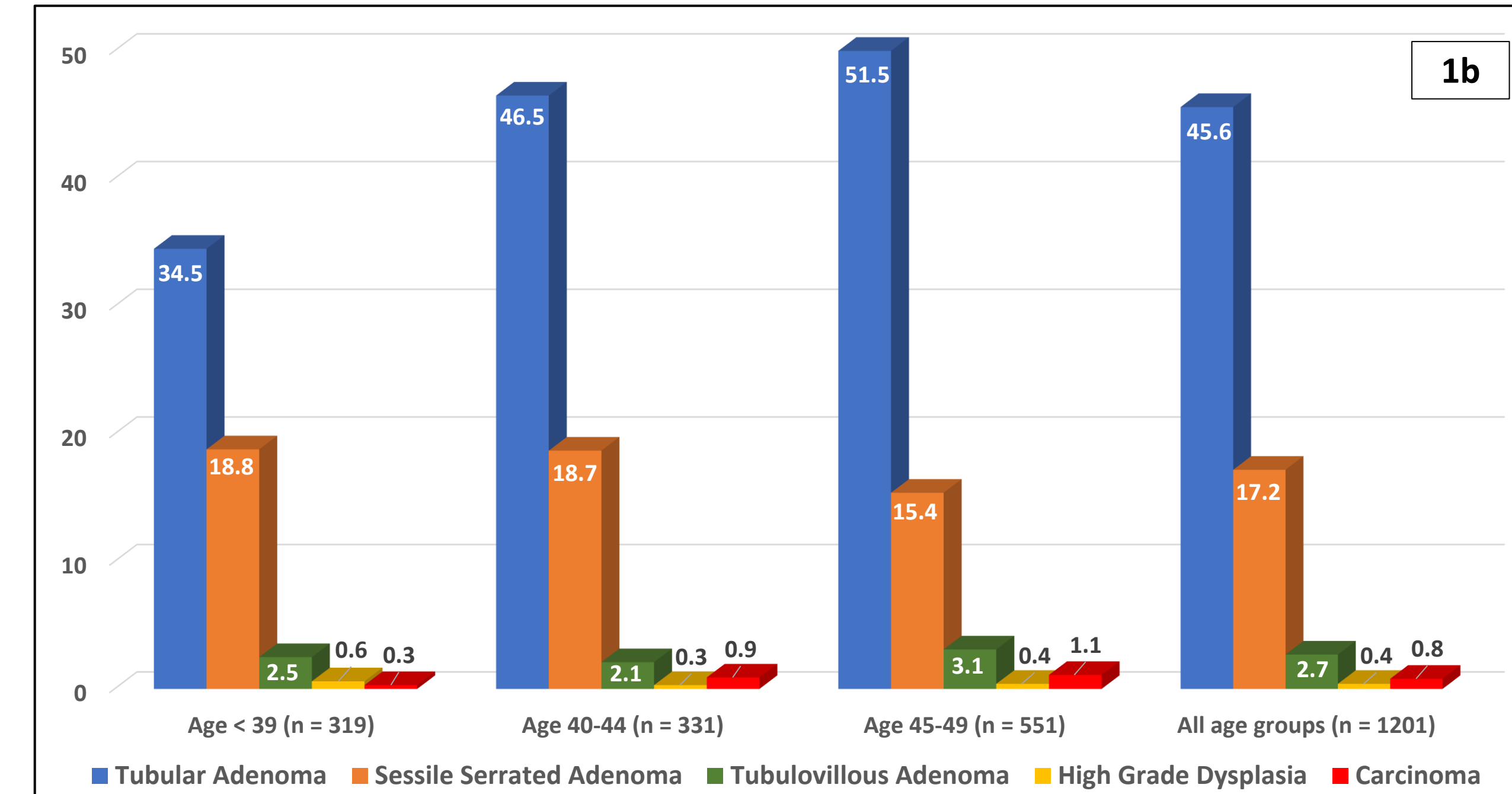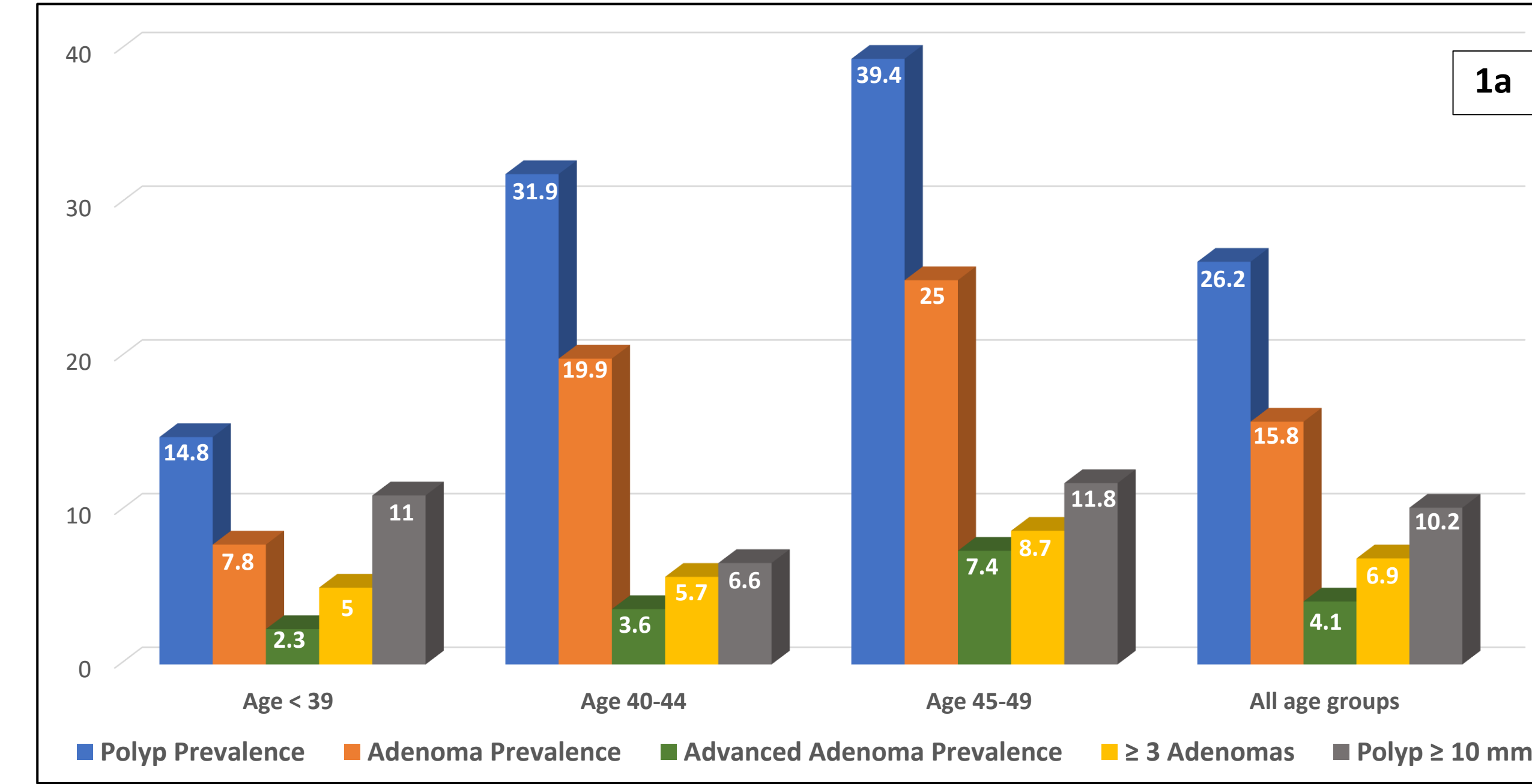
METHODS

- All patients < 50 years who underwent colonoscopy for any indication between Jan 2012 and Dec 2018 were identified.

- Basic demographic information, data on comorbidities and risk factors including family history of polyps or colon cancer, indications was obtained.

- Procedural data on number of polyps, polyp characteristics was collected.

- Patients with inadequate preparation, personal history of colon polyps or cancer and inflammatory bowel disease were excluded.

- Logistic regression analysis was used to determine predictors of adenoma detection.

RESULTS

Demographic Characteristics	Age <39 (n =319)	Age 40-44 (n =331)	Age 45-49 (n = 551)	All Age Groups (n = 1201)	P-value
Female, n (%)	176 (55.2)	169 (51.1)	280 (50.8)	625 (52.0)	0.4247
White, n (%)	265 (83.1)	272 (82.2)	474 (86)	1011 (84.2)	0.3642
Clinical Characteristics, Comorbidities and Risk Factors					
Mean BMI (+/- SD)	32.0(10.1)	32.4 (9.5)	32.7 (9.4)	32.4 (9.6)	0.3128
Diabetes, n (%)	16 (5)	29 (8.8)	42 (7.6)	87 (7.3)	0.1591
Hypertension, n (%)	37 (11.6)	55 (16.7)	146 (26.6)	238 (19.9)	<.0001
Tobacco use, n (%)	112 (35.2)	107 (32.4)	180 (32.9)	399 (33.4)	0.7137
NSAIDS use, n (%)	76 (23.9)	73 (22.3)	128 (23.3)	277 (23.2)	0.8904
Statin use, n (%)	7 (2.2)	20 (6.1)	67 (12.2)	94 (7.9)	<.0001
Indications for Colonoscopy					
F/H colon cancer, n (%)	52 (17.6)	94 (31.2)	183 (35.3)	329 (29.5)	<.0001
F/H colon polyps, n (%)	33 (11.3)	36 (12.2)	75 (14.9)	144 (13.2)	0.2891
Abdominal pain, n (%)	149 (49.7)	109 (36.2)	140 (27.7)	398 (36)	<.0001
Anemia, n (%)	27 (8.5)	32 (9.7)	46 (8.3)	105 (8.7)	0.7814
Weight loss, n (%)	34 (11.8)	22 (7.5)	14 (2.8)	70 (6.4)	<.0001
Rectal Bleeding, n (%)	101 (31.7)	83 (25.1)	125 (22.7)	309 (25.7)	0.0134
Constipation, n (%)	73 (25.1)	68 (22.9)	91 (17.9)	232 (21.2)	0.0417
Diarrhea, n (%)	137 (42.9)	102 (30.8)	113 (20.5)	352 (29.3)	<.0001
Abnormal Imaging, n (%)	5 (1.6)	9 (2.7)	5 (0.9)	19 (1.6)	0.1131
Other, n (%)	98 (33.1)	96 (32.3)	161 (31.7)	355 (32.2)	0.9173
Polyp Characteristics					
Polyps, n	2152	1036	1399	4587	
Patients with ≥ 1 polyp, n	319	331	551	1201	
Mean adenomas +/- SD	0.7 +/- 0.90	0.9 +/- 0.91	1.0 +/- 1.01	0.9 +/- 0.96	0.0005
Polyp Size ≥ 10 mm, n (%)	35 (11)	22 (6.6)	65 (11.8)	122 (10.2)	0.0423
≥ 3 Adenomas, n (%)	16 (5)	19 (5.7)	48 (8.7)	83 (6.9)	0.072

Table 1 : Demographics, Clinical and Polyp Characteristics

Image 1 : Polyp Characteristics

Table 2 : Logistic Regression (n=1602; 801 cases and 801 matched controls)

4587 patients had diagnostic colonoscopy during the study period. Mean age was 38.1 years, with 61.2% females, 84% white. Abdominal pain (36%), family h/o CRC (29.5%), diarrhea (29.3%), hematochezia (25.7%) and constipation (21.2%) were the most common indications. Information on clinical characteristics based on age groups are shown in Table 1. 26.2% (n=1201) had at least one polyp; 14.8%, 31.9% and 39.4% were <39, 40-44 and 45-49 years of age respectively. Overall adenoma prevalence was 15.8%; 7.81% , 19.9% and 24.9% were <39, 40-44 and 45-49 respectively. ≥ 3 adenomas were observed in 6.9%; prevalence increased with age (Image 1a). Majority of the polyps were tubular adenomas (45.6%), followed by sessile serrated adenomas (17.2%); tubulovillous adenomas were the least common (2.7%). High-grade dysplasia and carcinoma were observed in 0.4% and 0.8% (Image 1b). On multivariate analysis of 1602 patients (801 with polyps and 801 age-sex matched controls), female sex (OR 0.79) and age < 39 (OR 0.63) were associated with lower odds, while family h/o polyps (OR 1.76) and BMI (1.04) were associated with higher odds of adenoma detection (Table 2).

RESULTS

Univariate Analysis				
Predictor	Reference	OR	95% CI (UL, LL)	p Value
Age, years				
40 – 44	45 – 49	0.75	0.62, 0.91	< 0.001
≤ 39	45 – 49	0.26	0.21, 0.31	
Gender	Male	0.56	0.48, 0.66	< 0.001
BMI	Per each unit ↑	0.98	0.97, 0.99	< 0.001
Comorbidities				
Diabetes	No	0.66	0.48, 0.91	0.012
Hypertension	No	0.86	0.7, 1.05	0.14
Statin Use	No	1.05	0.76, 1.45	0.75
Risk Factors				
Smoking	No	1.11	0.92, 1.34	0.28
NSAID Use	No	0.96	0.78, 1.19	0.73
Family History of..				
Colon Cancer	No	1.42	1.16, 1.74	< 0.001
Colon Polyps	No	1.93	1.45, 2.56	< 0.001
Indications				
Hematochezia	No	2.68	2.20, 3.25	< 0.001
Anemia	No	2.93	2.12, 4.03	< 0.001
Weight Loss	No	1.08	0.74, 1.57	0.7
Abdominal Pain	No	1	0.83, 1.2	0.98
Multivariate Analysis				
Age				
40 – 44	45 – 49	0.49	0.75, 1.18	0.59
≤ 39	45 – 49	0.63	0.5, 0.79	<0.001
Gender	Male	0.79	0.65, 0.95	0.011
BMI	Per each unit ↑	1.04	1.03, 1.05	<0.001
Diabetes	No	0.81	0.56, 1.19	0.29
Hematochezia	No	0.96	0.77, 1.19	0.71
Anemia	No	1.22	0.87, 1.71	0.25
Family h/o ...				
Colon Polyps	No	1.76	1.03, 1.05	< 0.01
Colon Cancer	No	1.18	0.94, 1.48	0.15

CONCLUSIONS

- There was an increasing trend in the prevalence of polyps, adenomas, advanced adenomas and CRC with increasing age; our rates were similar to other published studies[2,3,4].

- Prevalence rates for all the above doubled between age groups < 39 and 40-44, but with a smaller proportion of increase between 40-44 and 45-49.

- Large population studies needed to confirm this observation.

- ♂ gender, ↑ age, obesity and family h/o colon polyps were independent predictors of adenoma detection in our cohort.

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