



# Adenoma Detection Rate on Colonoscopy: an Argument for Focused Screening?

N. Brant<sup>1</sup> · D. Apple<sup>2</sup> · M. Downs<sup>2</sup> · R. Stadler<sup>2</sup> · D. Rohan Jeyarajah<sup>1,3</sup>

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## Introduction

Adenoma detection rate (ADR) is defined as the percentage of patients aged 50 and older undergoing screening colonoscopy who have one or more precancerous polyps detected. There is limited data on ADR in patients under or over screening guidelines. The aim of this study was to see if ADR changes with age and sex of the patient, in groups outside standard screening criteria.

## Methods

All individuals undergoing an elective colonoscopy from August 1, 2017, through September 30, 2020, were pulled by International Classifications of Diseases, Ninth and Tenth Revision, Clinical Modifications (ICD-9-CM and ICD-10-CM) diagnostic codes. The recommended age range for screening colonoscopy was  $\geq 50$ –75 years. Colonoscopies were performed at 46 different clinical sites by the 18 different colorectal surgeons. The equipment varied by clinical site, but all were FDA-approved endoscopic devices that were cleaned and maintained by a standard, industry-approved protocol. All patients included were undergoing their first colonoscopy. If a patient needed a subsequent

colonoscopy, that data was not included. Patients were organized into age bands based on their age for simplicity and to improve cohort sample size. All adenomatous polyps were included while incomplete pathology reports were excluded. The relative risk was based on the Altman method<sup>1</sup> and was calculated based on young patients (aggregately, the subpopulation under 34 years of age) as the baseline standard of risk.

## Results

Ten thousand one hundred and ninety-five patients had elective colonoscopies—4493 (44%) were men and 5702 (56%) were women. The median age was 57 years, while the age range was 18–92 years. Most patients were in the 45–54 years age band (36.72%), while 4% ( $n = 408$ ) of patients were under the age of 45 years. The results of ADR based on age and gender are described in Table 1 and Fig. 1. The average ADR was 41.80%. The data demonstrate the ADR increased with age and was higher in men than women, but there was a large increase in ADR in females  $> 85$  years of age and from 18–34 years of age. The relative risk of ADR based on age and gender showed that the reduced female relative risk was statistically significant ( $p < 0.05$ ) for females 55–85+ years of age and 25–44 years of age; while there was a statistically significant increased relative risk for men in the 35–85+ years of age bands.

## Discussion

ADR is a well-known surrogate marker for the quality of colonoscopy and has been shown to increase more in males and with the age of the patient.<sup>2</sup> Uniquely, we found that the ADR was higher in female patients in the 18–34 and 85+ age

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✉ D. Rohan Jeyarajah  
rohanjeyarajah@gmail.com

<sup>1</sup> Texas Christian University School of Medicine, Fort Worth, TX, USA

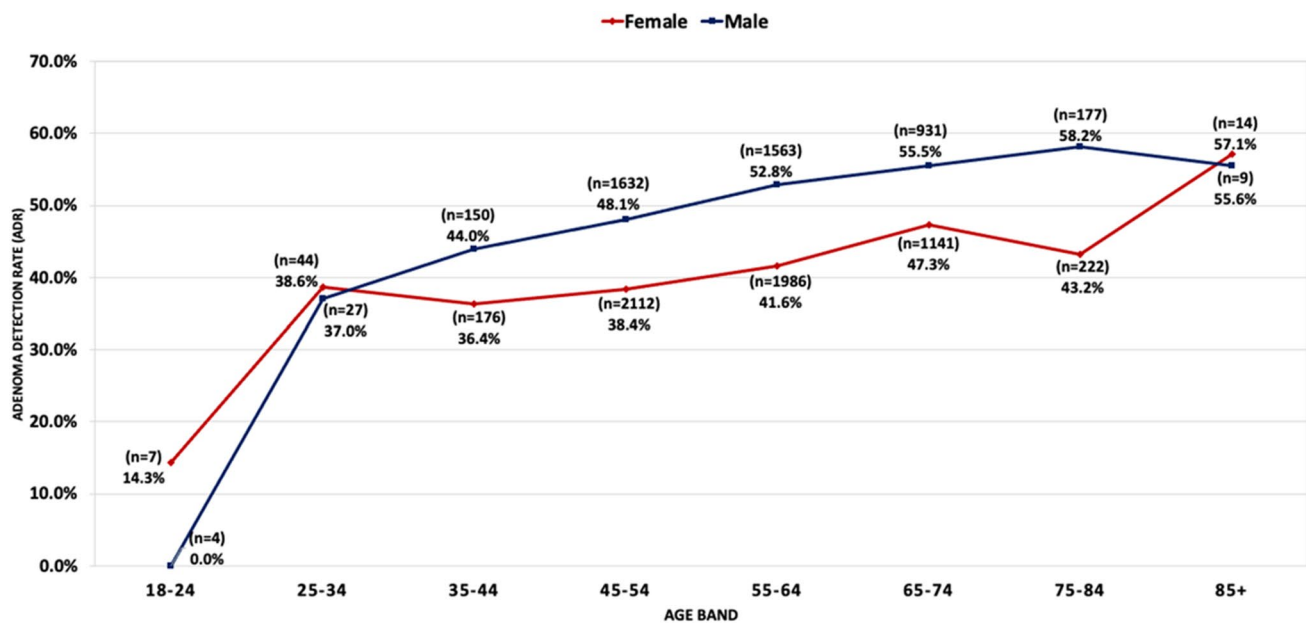
<sup>2</sup> Texas Colon & Rectal Specialists, Dallas, TX, USA

<sup>3</sup> Richardson, TX, USA

**Table 1** ADR by age band and gender

	Female		Male	
	# Screened (% total)	# Adenoma (% total)	# Screened (% total)	# Adenoma (% total)
Total	5702	2363	4493	2312
Age band (years)				
18–24	7 (0.1%)	1 (14.3%)	4 (0.1%)	0 (0.0%)
25–34	44 (0.8%)	17 (38.6%)	27 (0.6%)	10 (37.0%)
35–44	176 (3.1%)	64 (36.4%)	150 (3.3%)	66 (44.0%)
45–54	2112 (37.0%)	811 (38.4%)	1632 (36.3%)	785 (48.1%)
55–64	1986 (34.8%)	826 (41.6%)	1563 (34.8%)	826 (52.8%)
65–74	1141 (20.0%)	540 (47.3%)	931 (20.7%)	517 (55.5%)
75–84	222 (3.9%)	96 (43.2%)	177 (3.9%)	103 (58.2%)
85+	14 (0.2%)	8 (57.1%)	9 (0.2%)	5 (55.6%)

Numbers in parenthesis represent percentages of total



**Fig. 1** Data collected from August 1, 2017, through September 30, 2020, showing adenoma detection rate by age band and gender ( $n = 10,195$ )

cohorts. Moreover, the ADR was still relatively high in both male and female patients starting in age bands that are under the current colonoscopy screening guidelines. Further, our average ADR was 41.80%, which is notably higher than the minimum standards suggested by the American Society for Gastrointestinal Endoscopy (ASGE) in 2015.<sup>3</sup> There has been much debate about the quality of colonoscopies amongst different physicians<sup>4,5</sup> and specialists,<sup>6</sup> but these results underscore that surgeons in a large private practice group perform colonoscopy at a high-quality level.

Limitations of this study include the small sample sizes and a lack of data pertaining to the quality of the colonoscopy (i.e., bowel preparation, etc.) Despite these limitations, this work adds an important perspective on

previously unaddressed cohorts and solidifies that surgeons perform high-quality colonoscopies in a “real world” clinical setting. The clinical implications of these findings translate to potentially targeting patients that are traditionally outside population-based screening guidelines.

**Author Contribution** All authors have read and complied with author guidelines. All authors have made substantial contributions to the design, acquisition, analysis, and interpretation of the data for this manuscript. All authors have contributed drafting the work or revising it critically for important intellectual content and all authors approved the final version to be published. Lastly, all authors agree to be accountable for all aspects of the work in ensuring that questions related to

the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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## Declarations

**Conflict of Interest** The authors declare no competing interests.

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