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NAPLES, FLORIDA

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ACG
2023

OCTOBER
20-25, 2023
VANCOUVER, CANADA

VANCOUVER

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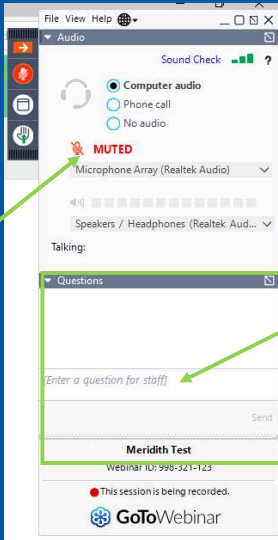
Be sure your passport is up to date!



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Participating in the Webinar



All attendees will be muted and will remain in Listen Only Mode.

Type your questions here so that the moderator can see them. Not all questions will be answered but we will get to as many as possible.

Meridith Test
Webinar ID: 998-221-123
This session is being recorded.
GoToWebinar

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How to Receive CME and MOC Points

LIVE VIRTUAL GRAND ROUNDS WEBINAR

ACG will send a link to a CME & MOC evaluation to all attendees on the live webinar.

ABIM Board Certified physicians need to complete their MOC activities by December 31, 2023 in order for the MOC points to count toward any MOC requirements that are due by the end of the year. No MOC credit may be awarded after March 1, 2024 for this activity.

6

MOC QUESTION

If you plan to claim MOC Points for this activity, you will be asked to: Please list specific changes you will make in your practice as a result of the information you received from this activity.

Include specific strategies or changes that you plan to implement.
THESE ANSWERS WILL BE REVIEWED.

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ACG Virtual Grand Rounds

Join us for upcoming Virtual Grand Rounds!



Week 6 – Thursday, February 9, 2023
Liver Cancer Update and Review for the Gastroenterologist
Faculty: Ayse Aytaman, MD, FACP
Moderator: Janice Jou, MD
At Noon and 8pm Eastern



Week 7 – Thursday, February 16, 2023
Post-COVID-19 Disorders of Gut-Brain Interaction/Functional Gastrointestinal Disorders
Faculty: Max L. Schmulson, MD
Moderator: Sarah K. McGill, MD, MSc, FACP
At Noon and 8pm Eastern

Visit gi.org/ACGVGR to Register

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Save the Date!

Be sure your passport is up to date!

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Disclosures



Asmeen Bhatt, MD, PhD, FACC
Dr. Bhatt has no relevant financial relationships with ineligible companies.



Millie D. Long, MD, MPH, FACC
AbbVie: Consultant; BMS: Consultant; Calibr: Consultant; Janssen: Consultant; Lilly: Consultant; Pfizer: Consultant, Grant/Research Support; Prometheus: Consultant; Takeda: Consultant, Grant/Research Support; Target PharmaSolutions: Consultant; Theravance: Consultant



Allison R. Schulman, MD, MPH
Apollo Endosurgery: Consultant; Boston Scientific: Consultant; GI Dynamics: Grant/Research Support; MicroTech: Consultant; Olympus America, Inc.: Consultant

**All of the relevant financial relationships listed for these individuals have been mitigated*

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Promoting Gender Diversity in Non-Clinical Realms: Engaging Women in Research and Authorships

Millie D. Long, MD, MPH, FACG
Professor of Medicine
Director, Gastroenterology and Hepatology Fellowship
University of North Carolina at Chapel Hill



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Outline: Engaging Women in Research and Authorships

- Describe current state of women in GI
- Identify challenges for women in GI
- Identify methods to overcome challenges for women in GI
- Review the current state of publishing for women in academic gastroenterology journals
- Example of prominent female physician scientists in GI
- Review high impact publications led by female physician scientists
- What can we do to enhance the position of women in clinical research in GI?

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Women in Gastroenterology and Hepatology

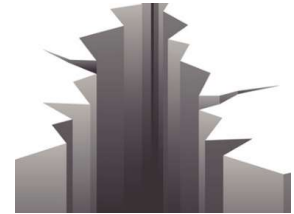
As of 2019, only 18.9% of gastroenterologists are women

More recently 40-50% of new GI fellows have been women; which may lessen the gender gap over the next decade

Women comprise 37% of full-time associate professors and 25% of full professors

Women comprise 19% of fellowship PDs

Only 29% of division or section chief positions are held by women, 18.9% of department chairs and 18% of medical school deans



JAMA Intern Med 2021 Jul 12.
 Pallardy C. Beckers GI & Endoscopy 2015
 Colleges AoAM. 2018-2019
 Jamorabo DS, et al. Ann Gastroenterol. 2021; 34(3): 316-322.

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Challenges for Women in Gastroenterology and Hepatology

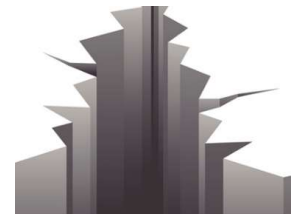
Many women (up to 40%) will reduce their commitment to part time or leave medicine within 6 years

Competing interests between work and home life

Bias, unequal wage, pregnancy and motherhood related discrimination

“Third shift” work at home

Lack of formal leadership training for women

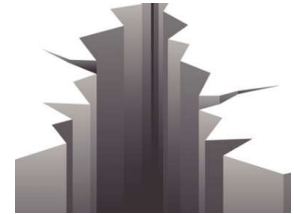


Rabinowitz LG, et al. Am J Gastro 2021L10.14309
 Frank E, et al. JAMA network open. 2019;2:e198340-e198340

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Overcoming the Gap for Women in GI

- Become involved at local institution or GI society
- Gain leadership experience and document on CV
- Build a national reputation (committee work, research output, presentations)
- Establish relationships, network, collaborate
- Communicate your goals and interests to enhance opportunities for sponsorship



Rotundo LC, Gaidos JK. Dis Dis Sci. 67, 397-399.

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Female authorship in major academic journals over 20 years

Of 5 major GI and Hepatology journals published in U.S., 5-year intervals were evaluated between 1992-2012

Gender of first and last author were determined by first name and confirmation strategies (web searches, institutional websites, etc.)

AMA data were used to determine proportion of women among active gastroenterologists for corresponding years

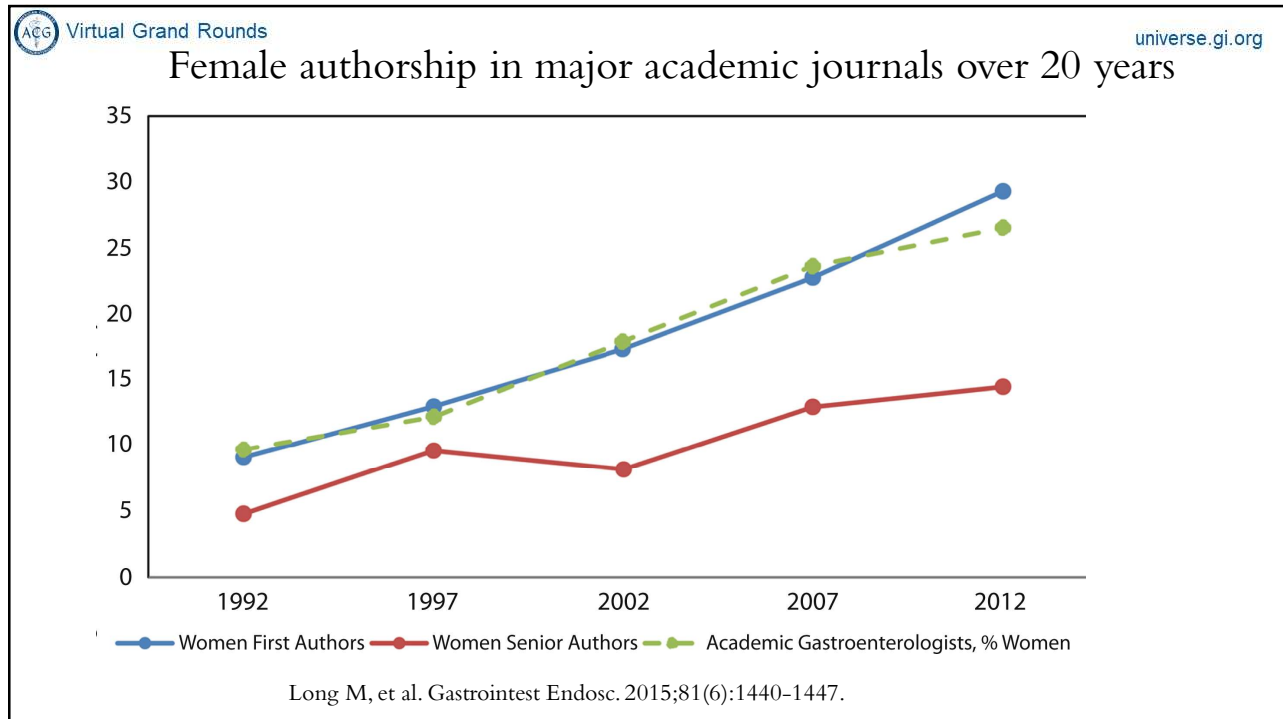
A total of 2275 articles were included

18% of first authors and 10.1% of senior authors were women

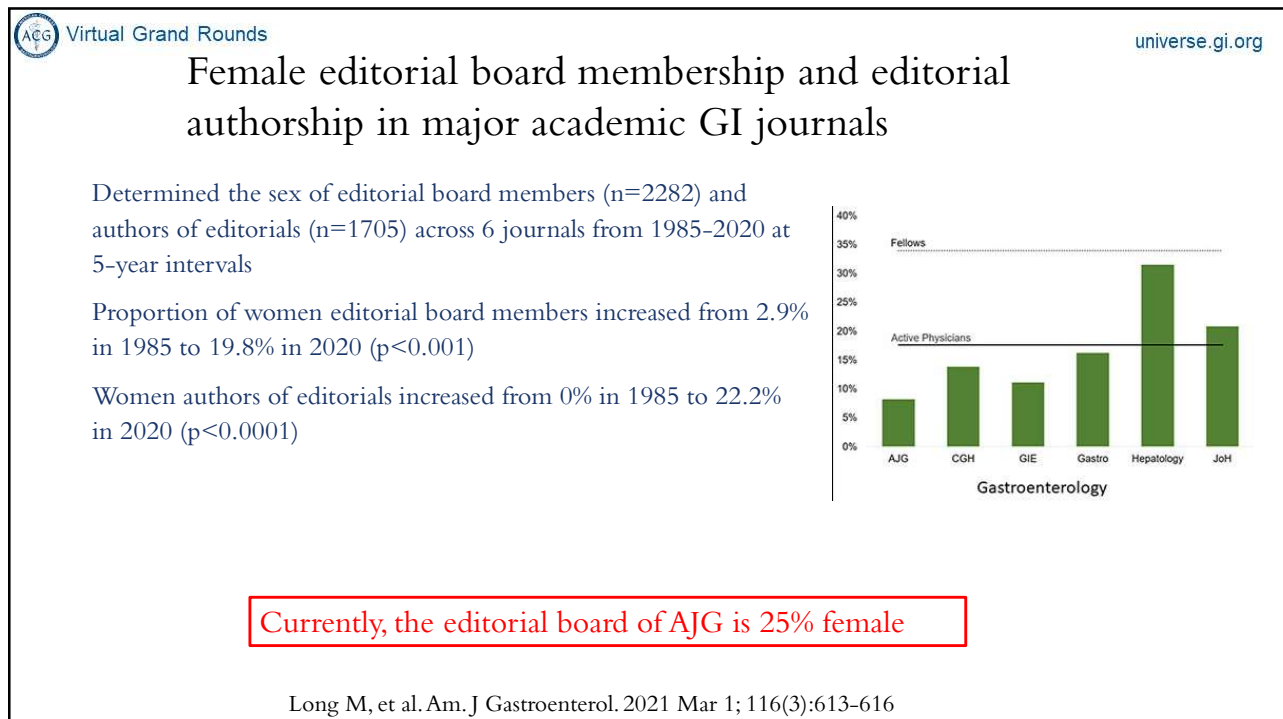
Over 20 years, proportion of female first authors increased from 9.1% to 29.3% (p for trend <0.001) over 20 years

Long M, et al. Gastrointest Endosc. 2015;81(6):1440-1447.

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Prominent Female Physician Scientists in GI



Fasiha Kanwal MD, MSHS
Professor, Section Chief, Baylor
Editor in Chief, CGH
HCC, Patient Reported
Outcomes in Cirrhosis



Norah Terrault MD, MPH
Professor, Chief GI and Liver
USC
Viral Hepatitis



Uma Mahadevan MD
Professor, IBD Center Director,
UCSF
Pregnancy and IBD



Maria Abreu MD
Professor, IBD Center
Director, U. Miami
Immunology, IBD



Linda Nguyen MD
Professor, Director GI Motility
and Neurogastroenterology,
Stanford
Motility, IBS, Gastroparesis

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and Neurogastroenterology,
Stanford
Motility, IBS, Gastroparesis

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Risk Factors for HCC in contemporary cohorts of patients with cirrhosis



Prospective cohorts from the Texas HCC consortium and Houston Veterans Administration Cirrhosis Surveillance Cohort

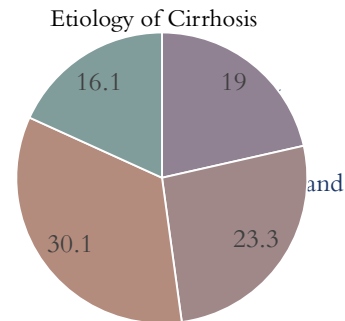
Patients w/cirrhosis enrolled from 7 centers and followed until HCC, transplant, death or June 30, 2021

2733 patients with cirrhosis included

7406 person-years of follow up

Annual incidence rate of HCC: 1.71% cured HCV, NAFLD

Risks include: cured HCC [HR 2.04], obesity [HR 1.79]



Kanwal F, et al. Hepatology. 2022 Mar 1. [epub]

■ Active HCV ■ Cured HCC ■ NAFLD ■ ETOH

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AASLD Practice Guidance: Palliative care and symptom-based management in decompensated cirrhosis

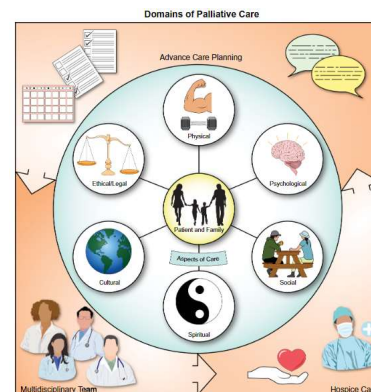


Palliative care can be provided to patients with DC at any stage

Palliative care can be delivered by any member of the care team

Palliative care does not preclude the delivery of disease-directed or even curative treatments

Hospice is different than palliative care in that it focuses exclusively on comfort, rather than disease-directed curative treatment, including only those with life expectancy measured in months




Rogal S, et al. Hepatology. 2022 Sep; 76(3):819-853.

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AGA Clinical Care Pathway for the Risk Stratification and Management of Patients with NAFLD



Primary care, endocrinologists, gastroenterologists, and obesity specialists should screen for NAFLD with advanced fibrosis

Step 1: Identify patients at risk

2 or more metabolic risk factors¹ Type 2 diabetes Steatosis on any imaging modality or elevated aminotransferases

Step 2: History and laboratory tests:
Excessive alcohol intake, CBC, liver function tests

Step 3: Non-invasive testing (NIT) for fibrosis^{2,3}
(FIB-4 is a calculated value⁴ based on age, AST, ALT & platelet count)

FIB-4 < 1.3 FIB-4 1.3 to 2.67 FIB-4 > 2.67

INDETERMINATE RISK

Step 4: Liver stiffness measurement (LSM)^{5,6,7}

LSM < 8 kPa LSM 8 to 12 kPa LSM > 12 kPa

LOW RISK
Repeat NIT in 2-3 years unless clinical circumstances change

INDETERMINATE RISK
Refer to hepatologist for liver biopsy or MR elastography or monitoring with re-eval of risk in 2-3 years

HIGH RISK
Refer to hepatologist


	LOW RISK FIB-4 < 1.3 or LSM < 8 kPa or liver biopsy F0-F1	INDETERMINATE RISK FIB-4 1.3 - 2.67 and/or LSM 8 - 12 kPa and liver biopsy not available	HIGH RISK ¹ FIB-4 > 2.67 or LSM > 12 kPa or liver biopsy F2-F4
	Management by PCP, dietician, endocrinologist, cardiologist, others		Management by hepatologist with multidisciplinary team (PCP, dietician, endocrinologist, cardiologist, others)
Lifestyle intervention ²	Yes	Yes	Yes
Weight loss recommended if overweight or obese ³	May benefit from structured weight loss programs, anti-obesity medications, bariatric surgery	Greater need for structured weight loss programs, anti-obesity medications, bariatric surgery	Strong need for structured weight loss programs, anti-obesity medications, bariatric surgery
Pharmacotherapy for NASH	Not recommended	Yes ^{4, 5, 6}	Yes ^{4, 5, 6, 7}
CVD risk reduction ⁸	Yes	Yes	Yes
Diabetes care	Standard of care	Prefer medications with efficacy in NASH (pioglitazone, GLP-1 RA)	Prefer medications with efficacy in NASH (pioglitazone, GLP-1 RA)

Kanwal F, et al. Gastroenterology. 2021 Nov; 161(5):1657-1669.

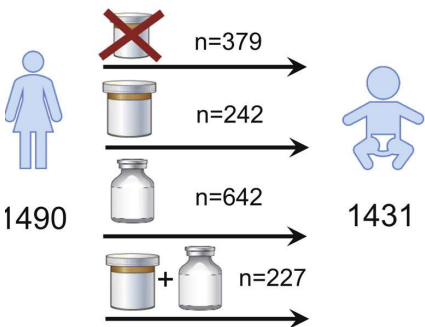
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Pregnancy In IBD and Neonatal Outcomes (PIANO) Prospective Cohort

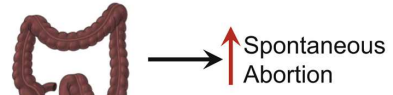
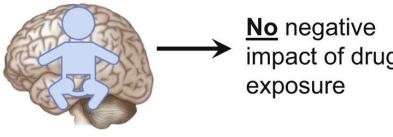


Pregnancy and Neonatal Outcomes after Fetal Exposure To Biologics and Thiopurines among Women with Inflammatory Bowel Disease



No increase in:

- Congenital malformations
- Spontaneous abortions
- Preterm birth
- Low Birth Weight
- Infections in year
 - But ↑ with preterm birth

Mahadevan U, et al. Gastroenterology. 2021 Mar; 160(4):1131-1139.

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Exposure to Corticosteroids in Pregnancy is Associated with Adverse Perinatal Outcomes (PIANO)

1490 mothers with IBD enrolled, 1431 live births

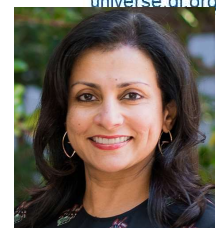
Steroid use was associated with preterm birth (OR 1.79), LBW (OR 1.76), and NICU admission (OR 1.54)

Late corticosteroid use (2nd and/or 3rd trimester) was associated with serious infections at 9 and 12 months

Emphasizes the importance of controlling disease activity before and during pregnancy with steroid-sparing therapy

Odufalu D, et al. Gut. 2022 Sep; 71(9):1766-1772.

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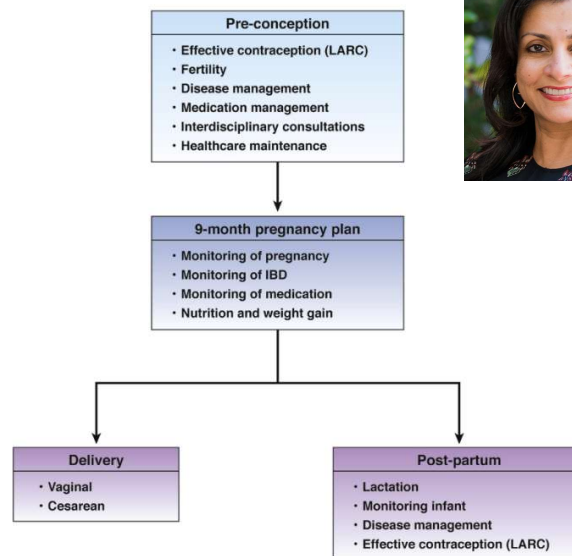


IBD Parenthood Clinical Care Pathway

Includes care pathways from preconception to post-partum

Evidence based assessment of medication utilization and optimization of disease state during pregnancy

One of the first care pathways that also included patient advocates in the planning and distribution



versible contraception.

Mahadevan U, et al. Am J Obstet Gynecol. 2019 Apr;220(4):308-323.

26

GI/Hepatology Female Physician Scientists

Areas of interest across the GI/Hepatology spectrum

Many are experts in women's health issues in GI/Hepatology

ALL are also experts in other content "niches"

ALL have moved the needle for women in GI/Hepatology through their publications, mentorship of trainees and junior faculty, patient care, leadership (journals, societies)

ALL have continued to give back to the GI community and are role models for the next generation of female physician scientists

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What can WE do to enhance the position of women in clinical research in GI?

Sponsor women in GI for roles in committees, leadership, and collaborative publications

Encourage female trainees to complete research training pathways (T-32) for formal training in epidemiology, biostatistics, grant writing

Mentor women in GI; provide career advice, opportunities, invitations for review papers

Invite women as reviewers for our top journals (including as a co-reviewer if you receive an invite)

Invite women to write invited reviews, participate in published conference proceedings

Sponsor female junior faculty/fellows for leadership training programs

Be an ally: advocate for change on behalf of patients and peers



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Words of Advice for Trainees and Junior Faculty in GI on Developing a Research Career

Networking is really critical, and women generally don't do as good a job of this as men. There should be opportunities on a regular basis throughout the year that you interact with people within your university and your field on a casual as well as more formal level. You can be the smartest person in the room, but if no one knows who you are, you will struggle to get recognized for your work.

Choose your mentor wisely! If you pick someone very junior, you may be seen as a competitor or a hindrance in their own advancement. If you pick someone too senior with too many people, you will only get the rubber stamp mentorship. Pick someone you admire and connect with. Someone with a track record of mentoring people who have developed independent careers.



Uma Mahadevan MD

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Words of Advice for Trainees and Junior Faculty in GI on Developing a Research Career

Write every day. Set aside 30 min with no texts, IG, twitter and write without looking anything up. Sending a manuscript doesn't have a deadline so you must create your own discipline.



Maria Abreu MD

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What does the future hold for women in GI?

Percentage of women will continue to in specialties including GI will increase

Diversity will enhance all aspects of clinical care and research

Women will continue to gain leadership skills and leadership positions

In 2017, all 4 GI societies were led by women, this will occur with more frequency as deserving women are recognized

- Anna Lok (AASLD), Carol Burke (ACG), Sheila Crowe (AGA), and Karen Woods (ASGE)

The future is bright!



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It's Time to Break Another Glass Ceiling: Women and Interventional Endoscopy

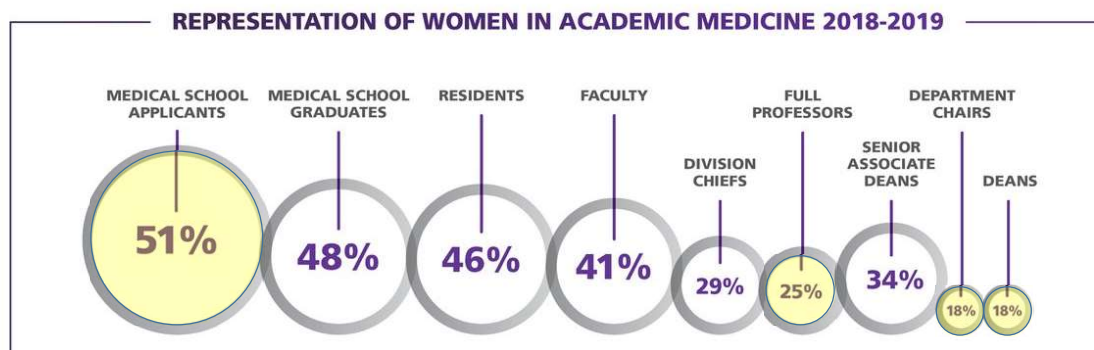


Allison R. Schulman, MD MPH
Associate Professor of Medicine & Surgery
Director of Bariatric Endoscopy
Interventional Endoscopy
Michigan Medicine

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- Background

- Despite an increasing number of women matriculating into medical school, many challenges persist

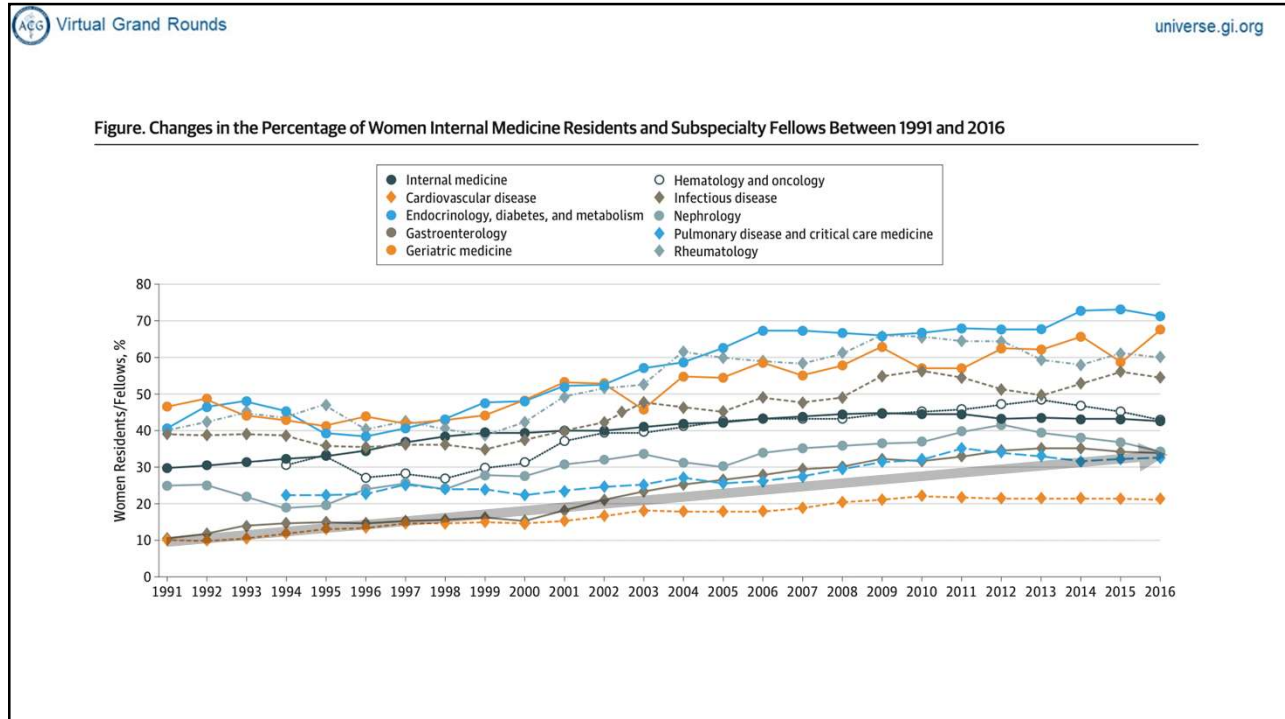


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Table. Total and Percentage of Women Internal Medicine Subspecialty Residents and Fellows in 1991 and 2016^a

Internal Medicine Subspecialty	1991 Total		2016 Total	
	Residents or Fellows	Women, No. (%)	Residents or Fellows	Women, No. (%)
Cardiovascular disease	1925	195 (10.1)	2616	557 (21.3)
Endocrinology	342	139 (40.6)	637	454 (71.3)
Gastroenterology	803	86 (10.7)	1505	512 (34.0)
Geriatric medicine	181	84 (46.4)	221	150 (67.9)
Hematology and oncology	1080 ^b	281 (26.0) ^b	1657	711 (42.9)
Infectious disease	595	234 (39.3)	727	395 (54.6)
Nephrology	482	130 (23.9)	848	292 (34.4)
Pulmonary disease and critical care	1133 ^b	183 (16.2) ^b	1621	528 (32.6)
Rheumatology	337	135 (40.1)	457	275 (60.2)

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- Status of diversity in leadership

Gender disparities in gastroenterology fellowship director positions in the United States

Zibing Woodward, MD,^{1,2} Zaida Rodriguez, MD,^{1,3} Janice H. Jou, MD,^{1,3} Kian Keyashian, MD,^{1,3}
 Yiyi Chen, PhD,¹ Charles R. Thomas, Jr, MD,¹ Grace H. Elta, MD,⁴ Sharlene L. D’Souza, MD^{1,3}
 Portland, Oregon, USA

Role	No. of women (%)	No. of men (%)	Total
Program director	29 (17.8%)	134 (82.2%)	163
Associate program director	30 (28%)	77 (72%)	107
Division chief	11 (7.3%)	139 (92.7%)	150

Rank	Men	Women
Instructor	3	0
Assistant Professor	14	31
Associate Professor	9	39
Full Professor	4	45

Nat Rev Gastro Hep 2020

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- Status of diversity in leadership

Gender disparities in leadership positions in the GI field

Zibing Woodward, MD
Yiyi Chen, PhD,¹ Chair
Portland, Oregon, USA

Female Division Chief

Male Division Chief

Figure 4. Fellowship program director gender broken down by the gender of their division chiefs.

Program director

Man Keyashian, MD,^{1,3}
L. D'Souza, MD^{1,3}

Role	No.
Program director	29
Associate program director	30 (28%) 77 (72%) 107
Division chief	11 (7.3%) 139 (92.7%) 150

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- Status of diversity in leadership

When the minority tax is doubled: being Black and female in academic medicine

Sophie Balzora

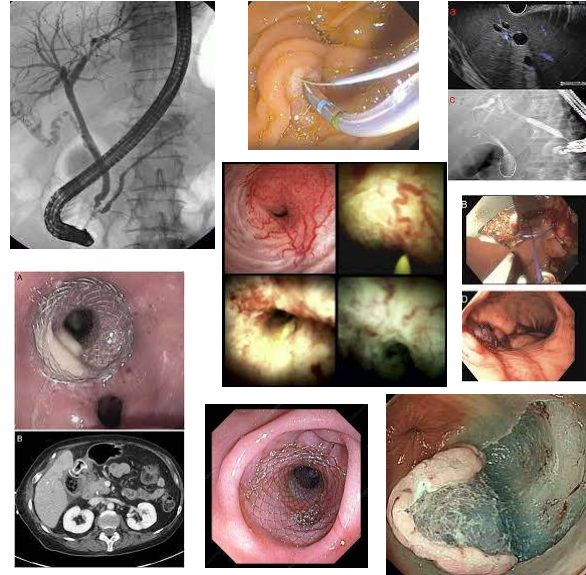
<0.7% of U.S. medical school faculty full professors are Black women

Nat Rev Gastro Hep 2020

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- Interventional endoscopy training

- Advanced endoscopy (AE) has become a popular career choice with a growing number of applicants
- Dedicated AE fellowships (AEF) originated in the 1980s, focused on ERCP
- Field has grown tremendously
- Technically demanding, require a special skill set
- Dedicated year in AE has become apparent



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- Interventional endoscopy training

TABLE 4. Relevant match statistics for general gastroenterology, advanced endoscopy, and other subspecialty fellowships for the 2020 appointment year

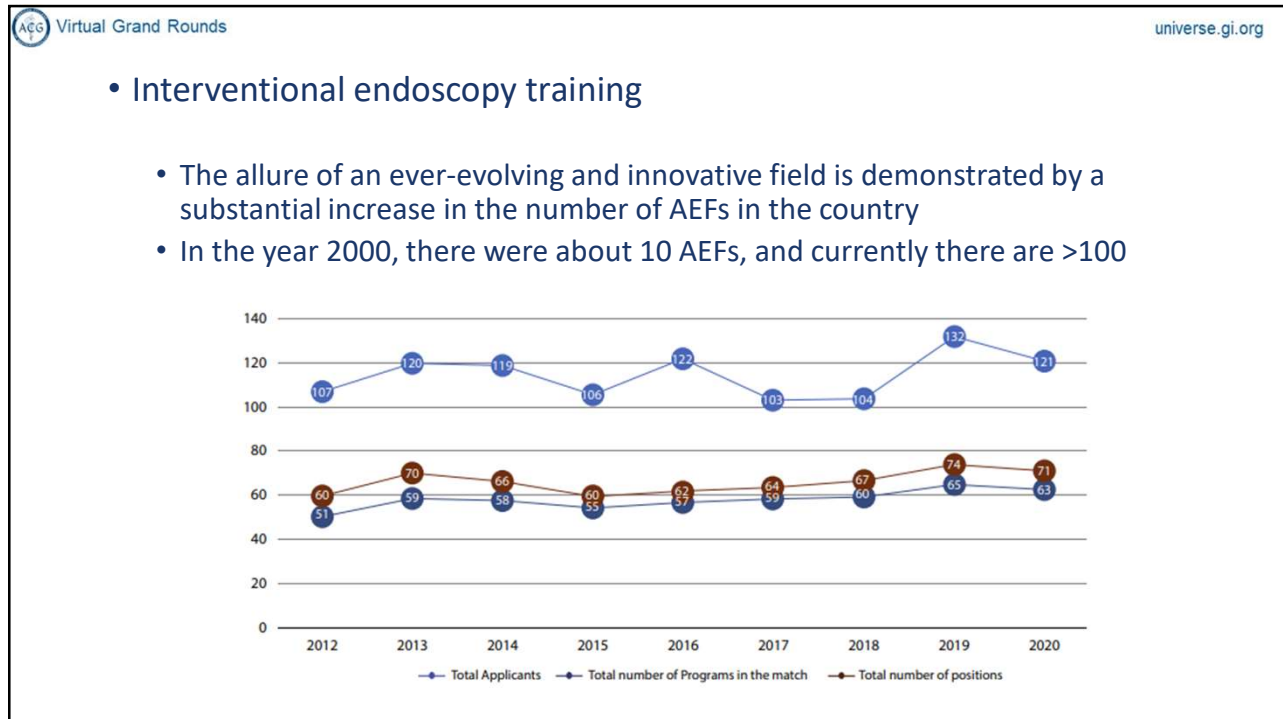
Fellowship*	No. of applicants	No. of positions	No. of applicants per position	Applicant match rate (%)
General gastroenterology	908	577	1.6	62.7
Advanced endoscopy fellowship	104	71	1.5	60.6
Interventional cardiology†	310	NA	NA	NA
Advanced heart failure and transplant cardiology	84	115	.7	95.2
Clinical cardiac electrophysiology	126	135	.9	91.2
Interventional pulmonology	42	38	1.1	85.7

NA, Not available.

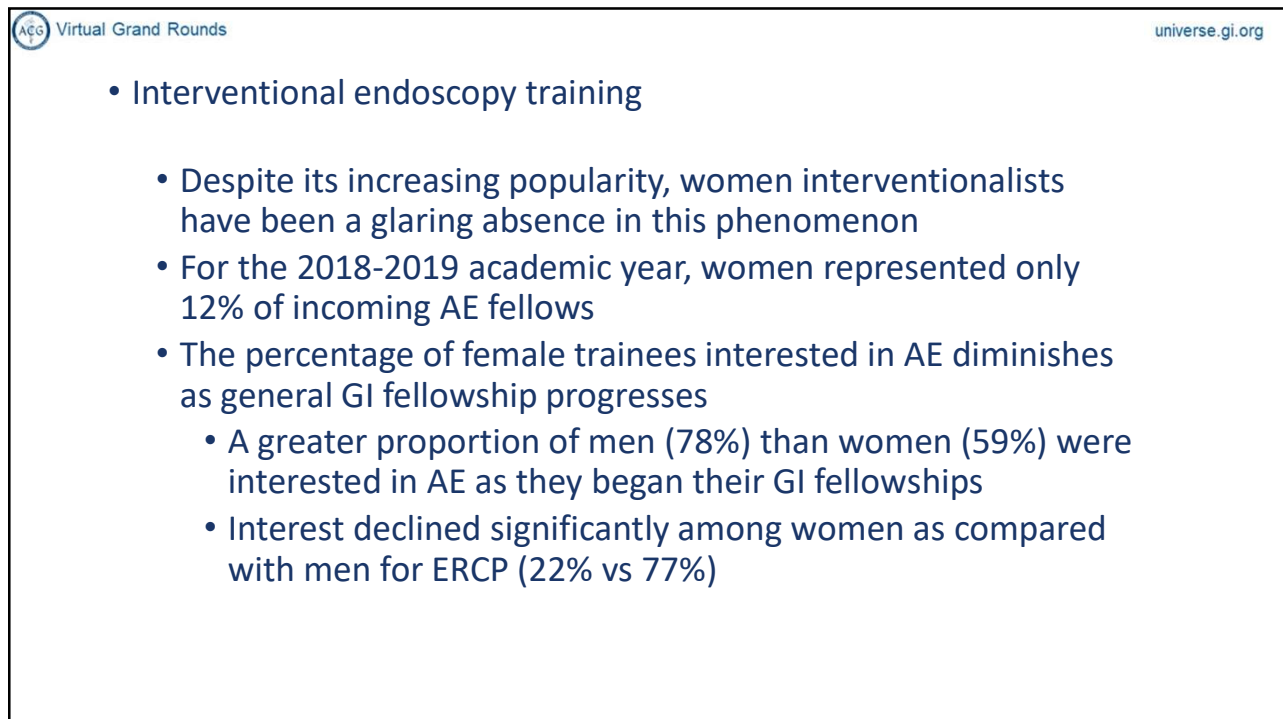
*Data for fellowships other than advanced endoscopy fellowships were obtained from the National Resident Matching Program and Electronic Residency Application Service website (Available at: www.nrmp.org).

†Interventional cardiology participates in the Electronic Residency Application Service but not in the National Resident Matching Program.

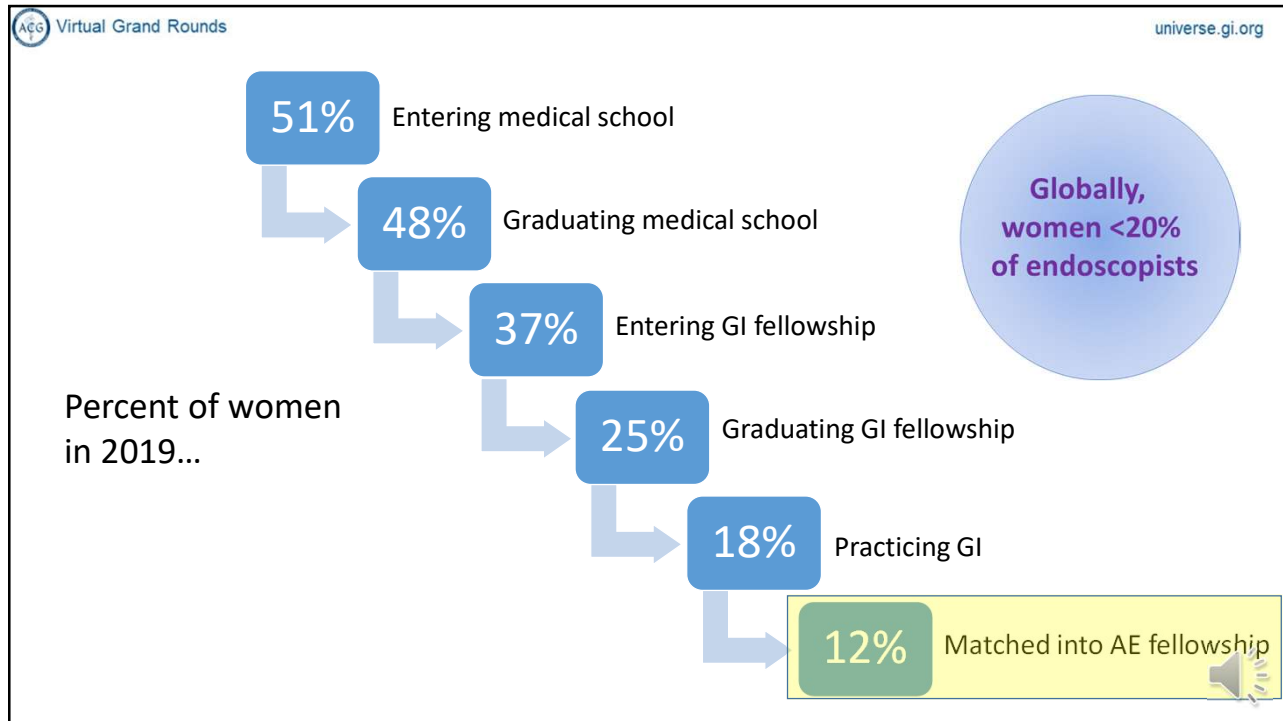
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- What are the barriers?
 - Underrepresentation of women
 - Leadership
 - Lack of visible mentors
 - Lack of safe and comfortable environment
 - Ergonomics
 - Concerns for radiation exposure
 - Gender-based bias in workplace
 - Discrimination
 - Implicit bias
 - Imposter syndrome
 - Work-life balance
 - Schedules
 - Family planning/pregnancy

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Gender disparities in advanced endoscopy fellowship

[Jessica X. Yu](#),¹ [Tyler M. Berzin](#),² [Brintha Enestvedt](#),¹ [Michelle A. Anderson](#),³ [Violeta B. Popov](#),^{4,5}
[Christopher C. Thompson](#),⁶ and [Allison R. Schulman](#)^{3,7}

- Survey of AEF program directors participating in the ASGE match
- Aims:
 - Describe program characteristics
 - Identify contributors to gender disparity including barriers and facilitators influencing women pursuing AEF training

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Gender disparities in advanced endoscopy fellowship

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[Christopher C. Thompson](#),⁶ and [Allison R. Schulman](#)^{3,7}

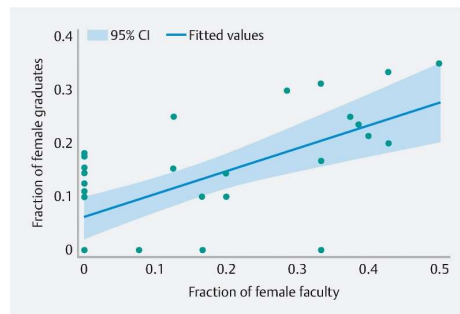
- 59.3% response rate (38/64)
- Women represented
 - 15.8% (6/38) of AEF PDs
 - 13.2% (5/38) of endoscopy chiefs
 - 14.8 ± 17.0% of AEF faculty
 - 12.0 ± 11.1% of AEF trainees over the past 10 years
- 47.4 % (18/38) programs reported no female AE faculty (!)
- 31.6 % (12/38) of programs have never had a female fellow (!)

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Gender disparities in advanced endoscopy fellowship

Jessica X. Yu,¹ Tyler M. Berzin,² Brintha Enestvedt,¹ Michelle A. Anderson,³ Violeta B. Popov,^{4,5}
Christopher C. Thompson,⁶ and Allison R. Schulman^{3,7}

- Percentage of female fellows was strongly associated with percentage of female AEF faculty ($\beta = 0.43$, $P < 0.001$)



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Gender disparities in advanced endoscopy fellowship

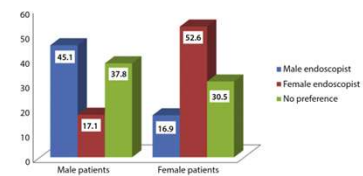
Jessica X. Yu,¹ Tyler M. Berzin,² Brintha Enestvedt,¹ Michelle A. Anderson,³ Violeta B. Popov,^{4,5}
Christopher C. Thompson,⁶ and Allison R. Schulman^{3,7}

- Percentage of female fellows was strongly associated with percentage of female AEF faculty ($\beta = 0.43$, $P < 0.001$)
- Most important cited barriers to recruitment:
 - Inflexible hours and call (mean rank 3.3 ± 1.1)
 - Exposure to fluoroscopy (2.9 ± 1.1)
 - Lack of women endoscopists at national conferences/courses (2.9 ± 1.1)
 - Lack of female mentorship (2.9 ± 1.0)

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- Why does this matter?
 - 22-70% women with gender preference for endoscopists
 - Patient gender single most predictive factor for same-sex preference
 - 34.1-90% delay care until same-gender provider

- Study of 1078 Muslim patients
 - 66% indicated gender preference
 - 72% would delay care by 7 days for same gender



Anglade P et al. GIE 2021
Kamani L et al. GIE 2021

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- Why does this matter?
 - In survey, 24.7% women vs 37.5% men (no diff) wanted career in advanced endoscopy
 - Major motivating factors (men and women):
 - Strong personal interest
 - Preference for procedures
 - Encouragement from a mentor
 - Wider skill sets for jobs
 - No gender difference in career satisfaction for those who went into AE

Increase job satisfaction → improve patient care

David Y et al. Am J Gastro 2021
Courtesy of Amrita Sethi

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- Why does this matter?

THE RED SECTION

The Need for Allyship in Achieving Gender Equity in Gastroenterology

Mohammad Bilal, MD¹, Sophie Balzora, MD, FACC², Mark B. Pochapin, MD, FACP, FASGE, FACC² and Arny S. Oxentenko, MD, FACP, FACC, AGAF³

Am J Gastroenterol 2021;116:2321–2323. <https://doi.org/10.14309/ajg.000000000001508>; published online October 19, 2021

- Academic faculty workforce should reflect female medical school matriculants
- Increasing women in advanced endoscopy brings diversity of thought
- Serves valuable need for our patients (women prefer women)

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- How do we achieve this?
- **System based factors:**
 - Evaluation of hiring practices
 - Zero-tolerance policies for harassment
 - Ensuring equitable representation
 - Transparency surrounding parental leave policies
 - Breast pumping time, childcare access, schedule flexibility
 - Avoid pipeline “leaks”
 - Ensure advancement opportunity, parental support, an environment without harassment, sponsorship
 - Avoid pipeline “plugs”
 - Term limits
 - Fair selection processes for leadership
 - Salary compensation and equity

Bilal et al, Am J Gastro 2021

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- How do we achieve this?

- **System based factors:**

- Diversify leadership
- Change the environment
- Create networks and increase visibility of mentors/role models
- Seek guidance
- Provide opportunities
- Elevate and amplify perspectives and voices of diversity
- Practice allyship

Bilal et al. Am J Gastro 2021

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- How do we achieve this?

- **Individual factors:**

- Self advocacy
- Support team of coaches, sponsors, and mentors
- Combat the “third shift” (household tasks)
- Allyship

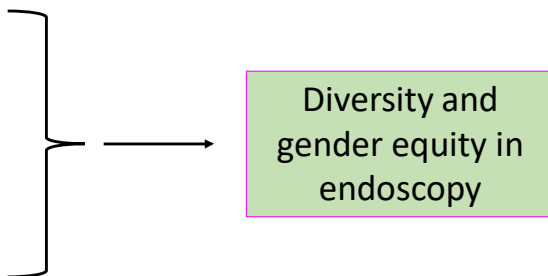


Bilal et al. Am J Gastro 2021

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- How do we achieve this?
- **Paradigm shift**
 - Recruitment of new endoscopists
 - Retention of existing providers
 - Sustainability
 - Innovation



Adams MA, GIE 2021
Courtesy of Amrita Sethi

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Addressing gender in gastroenterology: opportunities for change

Loren G. Rabinowitz, MD,¹ Sharmila Anandasabapathy, MD,² Amrita Sethi, MD,³ Uzma D. Siddiqui, MD,⁴
Michael B. Wallace, MD,⁵ Michelle K. Kim, MD, PhD¹




TABLE 2. Industry and the endoscopist
1. Endoscopy leadership, both in practice and hospital settings, must set clear behavioral expectations for equal and appropriate treatment of male and female endoscopists with industry partners.
2. Unconscious bias training has been demonstrated to be an effective tool in combatting unequal treatment of women in medicine and may be beneficial in the endoscopy setting. ²⁷
3. Female and male endoscopists should have equal representation and purchasing power in negotiations with industry partners. This equality should be made clear to industry representatives throughout the negotiating process.
4. Female endoscopists should be actively recruited to participate and lead research opportunities.

GIE 2020
Courtesy of Amrita Sethi

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- How do we achieve this?
- **Change at a local level (endoscopy unit / division)**
 - Increase presence at the table: chief of endo, meetings with unit players (nursing, anesthesia, hospital supply)
 - Amplify thoughts and ideas of others, prevent being overlooked
 - Nominate others for opportunities, help overcome imposter syndrome
 - Recognize good work and elevate to the level that will make a difference (ex. email a supervisor/chief)
 - Embrace failure/complications → learning opportunities
 - Address policies that cause barriers (pregnancy, work hours, meeting times, etc.)

Adams MA, GIE 2021
Courtesy of Amrita Sethi


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- How do we achieve this?
- **Changing the environment**
 - Set the mission and core values
 - Change the dialogue - definitions of success, qualifications
 - Enhance the skillset - leadership training, professional coaching
 - Bias training - without awareness there can be no change
 - Provide atmosphere of safety (psychologically and physically)
 - Expect excellence but reward the effort

EDITORIAL

Don't fix the women, fix the system: recognizing and addressing implicit gender bias in gastroenterology training and practice



Adams MA, GIE 2021
Courtesy of Amrita Sethi

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- How do we achieve this?
- **New platforms**



WIE is the global organization that champions the advancement of women through education, professional growth and leadership development.






Courtesy of Amrita Sethi

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- How do we achieve this?
- **Societal involvement**

- ASGE Women in Endoscopy SIG
- ACG Women in GI Circle
- UEG Diversity Committee
- Society for Women in Gastroenterology (SWiG)

- Women in Endoscopy (WIE)
- Women in GI Network Asia Pacific Society (WIGNAPS)
- Association of Black Gastroenterologists and Hepatologists of America (ABGH)

Courtesy of Amrita Sethi

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maxmore spine 2022 15 January

The 12th Didactic Course

YouTube LIVE ONLINE EDUCATION WITH MAXMORE

Lectures & Live Surgery

- PELD/ PECD/ PSLD/ UBE(BESS)
- Full Endoscopic ACDF
- Full Endoscopic Decompression
- X-TLIF

Meet the experts

INTERNATIONAL

Bisschops, Raf, Prof. Dr. Dpt. of Gastroenterology and Hepatology, University Hospitals Leuven Leuven, Belgium

Costamagna, Guido, Prof. Dr. Istituto di Clinica Chirurgica, Università Cattolica del S. Cuore Rom, Italy

Dinis-Ribeiro, Mário, Prof. Dr. Instituto Português de Oncologia "Francisco Gentil", University of Porto Porto, Portugal

Devière, Jacques, Prof. Dr. Dpt. of Gastroenterology and Hepato-Pancreatology, Université Libre des Bruxelles Bruxelles, Belgium

Fockens, Paul, Prof. Dr. Dpt. of Gastroenterology and Hepatology, Radboud University Medical Center, Nijmegen, The Netherlands

Hewes, Robert, Prof. Dr. Dpt. of Gastroenterology/ Internal Medicine, Florida Hospital Orlando Orlando, USA

Huet, Thomas, Prof. Dr. Dpt. of Gastroenterology and Hepatology, University of Lille Lille, France

Itoi, Takao, Prof. Dr. Dpt. of Gastroenterology and Hepatology, Tokyo Medical University Tokyo, Japan

Mori, Yuichi, Prof. Dr. Digestive Disease Center, Showa University Northern Yokohama Hospital Yokohama, Japan

Reddy, Nageshwar, Prof. Dr. Dpt. of Gastroenterology & Therapeutic Endoscopy, Asian Institute of Gastroenterology Hyderabad, India

Repici, Alessandro, Prof. Dr. Humanitas Research Hospital & Humanitas, University Rozzano Milan, Italy

Varadarajulu, Shyam, Prof. Dr. Dpt. of Gastroenterology/ Internal Medicine, University of Illinois at Chicago Chicago, USA

Zhou, Pinghong, Prof. Dr. Endoscopy Center Zhong Shan Hospital, Fudan University Shanghai, China

If you can't see it, you can't be it

Adapted from slide courtesy of Amrita Sethi

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- How do we achieve this?
- Increasing visibility

If you can see it, you can do it

Adapted from slide courtesy of Amrita Sethi

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- Conclusion
- Despite an increasing number of women matriculating into medical school, many challenges persist
- Gender disparities evident throughout medicine, with few women filling leadership roles and being promoted
- These disparities are exacerbated in procedural fields including interventional endoscopy
- Need to recruit and retain in order to sustain
- Need an inclusive, innovative environment
- Increase mentorship to inspire others, overcome obstructive perceptions
- Diversify leadership to enhance innovation, elevation, & promotion

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ERGONOMICS IN ENDOSCOPY – WHAT DO WOMEN DO DIFFERENTLY?

Asmeen Bhatt MD PhD
Assistant Professor
Department of Gastroenterology, Hepatology and Nutrition
The University of Texas Health Science Center at Houston




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ERGONOMICS

- **Ergonomics**- Greek words Ergon (work) and Nomos (laws). Term was coined by a Polish scholar in 1857.
- Definition: an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely (Merriam-Webster Dictionary)

er•go•nom•ic
/ ˌɜrɡəˈnämik / adj

relating to or designed for efficiency and comfort in the working environment


FIVE ASPECTS:

1. Safety
2. Comfort
3. Ease of Use
4. Productivity/Performance
5. Aesthetics

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WHY IS IT IMPORTANT IN ENDOSCOPY?

 **Endoscopy related injury**

- Prevalence of musculoskeletal injury ranging from 29%-89% in physicians from performing endoscopy, as summarized in several review articles.
- A 2016 survey revealed that 47% of gastroenterology fellows reported a new musculoskeletal injury related to endoscopy, mostly in the first year of training. Only 25% had ergonomic training and 83% desired such training.

Shergill A et al. *Gastrointest Endosc.* 2009;70:145-153.
Yung D et al. *Expert Rev Gastroenterol Hepatol.* 2017;11(10):939-947.
Harvin G. *J Clinical Gastroenterol* 2014; 48 (7): 590-594.
Edward V et al. *Endosc Int Open.* 2019; 7(6): E808-E812.
Cohen D et al. *Dig Dis Sci.* 2008 ; 53(7):1902-1909.
Janssen I et al. *J Appl Physiol* (1985) 2000;89(1):81-88

 **Male : Female Gastroenterologists** 

- Association of American Medical Colleges (AAMC) data shows that only 17.6% of all practicing gastroenterologists are women.
- American Board of Internal Medicine (ABIM) statistics from academic year 2018-19 shows that 39% of first year gastroenterology trainees are now women!
- Women have smaller hand sizes that do not fit the endoscopes, have smaller muscle mass and high levels of progesterone during pregnancy cause laxity of joints and ligaments, which can all potentially lead to musculoskeletal injury.

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ENDOSCOPY RELATED INJURY (ERI)

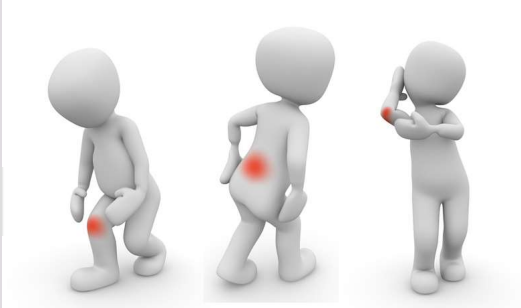
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ENDOSCOPY RELATED INJURY


Prevalence

29%-89%



Mechanisms

- Overuse Injuries (high pinch force)
- Repetitive Motions
- Awkward and Fixed Positions
- Standing for long periods of time
- Use of lead aprons
- Lack of breaks and less recovery time




Sites

- Thumb, Hand, Wrist, Elbow, Shoulder and Carpel Tunnel Syndrome
 - Neck and Upper Back
 - Lower Back

Shergill A et al. Gastrointest Endosc. 2009;70:145-153.
 Harvin G. J Clinical Gastroenterol 2014; 48 (7): 590-594.
 Yung D et al. Expert Rev Gastroenterol Hepatol. 2017;11(10):939-947.
 Ridditiid W et al. Gastrointest Endosc. 2015;81 (2):294-302.

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ENDOSCOPY RELATED INJURY IN FEMALES

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ENDOSCOPY RELATED INJURY IN FEMALES

- A 2004 survey of 726 laparoscopic surgeons studied the relationship between hand size and difficulty using surgical instruments: found that the percentage of time subjects reported having difficulty using all laparoscopic instruments was greater for the Small glove size group compared to both the Medium and Large groups ($p < 0.001$)
- A 2008 survey of U.S. gastroenterology fellows showed that respondents felt like hand size affected the ability to learn endoscopy and a significant number of trainees, especially females, perceive that their hands are too small for standard endoscopes
- Korean Study, n=55, Female participants (33%), Severe pain was seen in 47% (26/55), more women than men reported severe pain (61% vs 40%, respectively, $p=0.15$)
- A study of 171 endoscopists from Portugal with 55% females, found that female gender was related to higher number of musculoskeletal injury ($P= 0.03$) and severe pain ($P=0.02$)

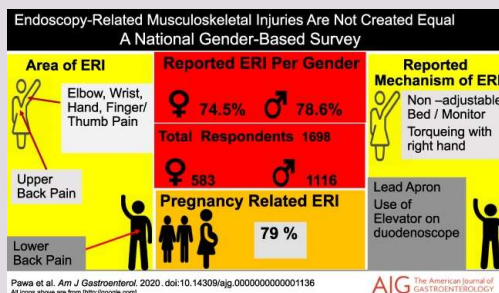


Berguer R et al. Surg Endosc. 2004 Mar; 18(3):508-12
 Cohen D et al. Dig Dis Sci. 2008 ; 53(7):1902-1909
 Byun Y et al., World J Gastroenterol, 2008; 14:4359-64.
 Morais R et al., Endosc Int Open. 2020; 8(4): E470-E480.

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ENDOSCOPY RELATED INJURY IN FEMALES

- Survey study of 1698 participants: Rates of Injury-75%. Male Participants – 65.7%; Thumb, neck, hand/finger, lower back, shoulder, and wrist
- **No significant difference** in the prevalence of ERI between male and female gastroenterologists
- Females reported upper extremity ERI while males reported lower-back pain-related ERI
- Significant gender differences were noted in the reported mechanisms attributed to ERI
- Most respondents did not discuss ergonomic strategies in their current practice (63%)
- ERI was less likely to be reported in GI physicians who took breaks during endoscopy ($P = 0.002$)
- Approximately 79% of the female participants reported new-onset ERI related to pregnancy



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PREVENTION AND MITIGATION

Ergonomic endoscopy

Most effective

Least effective

Hierarchy of Controls

Elimination	Prevention through design: ENDOSCOPE/DEVICE COMPANIES
Substitution	
Engineering Controls	Endoscopy suite: adjustable monitors, beds Endoscope: support stands, caps, right/left dial assist
Administrative Controls	Ergonomic training/safety culture Ergonomics "time out" Endoscopy schedule Endoscope maintenance
PPE	Endoscopist's technique Microbreaks/stretching Maintain physical fitness

© ASGE / GIE

Shergill A and McQuaid K. Gastrointest Endosc. 2019 Dec;90 (6):966-970.

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ENGINEERING CONTROLS

Endoscopy Unit

- Adjustable Beds
- Adjustable Monitors

Distal Attachment Cap

Auxiliary angle (left/right dial) assist knob/adaptor

Colonoscope control support device

Endoscope Related Controls

Aer-O-Scope Colonoscope system

Invendo Colonoscope system

Pathfinder endoscope overtube

Tan G and Rao S. Tech Gastrointest Endosc 2019; 21:133-139
 Shergill A et al. Gastrointest Endosc. 2021;93 (3):704-970
 Wei M et al. Gastrointest Endosc 2021 Mar;93(3):740-749

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Cushioned Or Insole Shoes



Compression Stockings



Anti-Fatigue Floor Mats



Two-Piece Lead Aprons

OTHERS....

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ADMINISTRATIVE CONTROLS

Ergonomics training/ Safety culture:

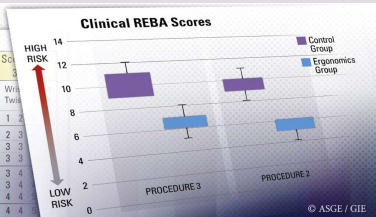
- A 2021 Core Curriculum article for “Ergonomics in Endoscopy” addresses the training environment, goals of training (cognitive, technical and non-technical skills) and training processes and assessment of training
- A 2020 study showed that simulation-based Endoscopy Training Curriculum (ETC) is associated with reduced risk of Musculoskeletal Injury during endoscopy.





Simulation-based ergonomic training

Upper Arm	Lower Arm	Wrist		
		Twist	Twist	Twist
1	1	1	2	2
2	2	2	2	2
3	2	3	3	3
1	2	3	3	3
2	3	3	3	3
3	3	4	4	4
1	3	3	4	4



Walsh C et al. Gastrointest Endosc. 2021 June; 93 (6): 1222-1227
Khan R et al. Gastrointest Endosc. 2020 Nov;92(5):1070-1080

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ADMINISTRATIVE CONTROLS

- **Ergonomics “Time Out”:**

A 2019 Quality Improvement Project aimed at GI faculty, fellows, nurses and technicians used an “Ergonomic Checklist” among other measures to educate and improve Endoscopy Ergonomics.






- **Endoscopy Schedule:**

Incorporating non procedure days for recuperation

- **Endoscope Maintenance**



THE UCI ERGONOMICS FOR ENDOSCOPY “FMT” CHECKLIST
Division of Gastroenterology

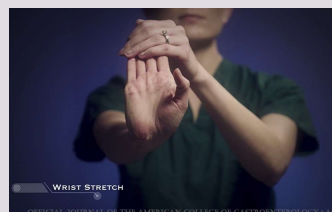
The Facts	Floor and Fluoroscopy	Monitor	Table
<p>Up to 89% of GI physicians have reported musculoskeletal injury.</p> <p>The most common sites of injury reported are the hands and wrists, followed by neck, back, and feet.</p> <p>Poor posture is a leading cause of injury. Bending forward because the procedure table is too low can increase lumbar spine compression by 50%.</p> <p>The best posture for endoscopy is an upright anatomical position with elbows flexed at 90 degrees. This maximizes mechanical advantage and the ability to generate force.</p> <p>Performing stretching exercises such as squeezing a ball-up gown and rolling the shoulders back while washing hands are recommended along with rest breaks.</p>	<p>Anti-fatigue mats, gel floor pads, cushioned insoles, compression stockings and shifting positions can reduce fatigue and pain.</p>  <p>Use a 2-piece lead apron. Doing so can reduce the weight on the lower back by 80%.</p> 	<p>Position monitor directly in front of you such that the viewing angle is between 15-25 degrees below horizontal. If the monitor is too close, it can cause headache and eye fatigue.</p>  <p>Use of bifocals can increase the risk of neck injury due to excessive neck extension.</p> 	<p>Adjust the table to a height where a colonoscopy shaft is held between elbow height and 10cm below elbow height.</p>  <p>Stand in a neutral position to maximize the amount of force you can generate with the minimal amount of effort.</p> 

Ali MF et al. Tech Gastrointest Endosc. 2019, 21(3): 159-161

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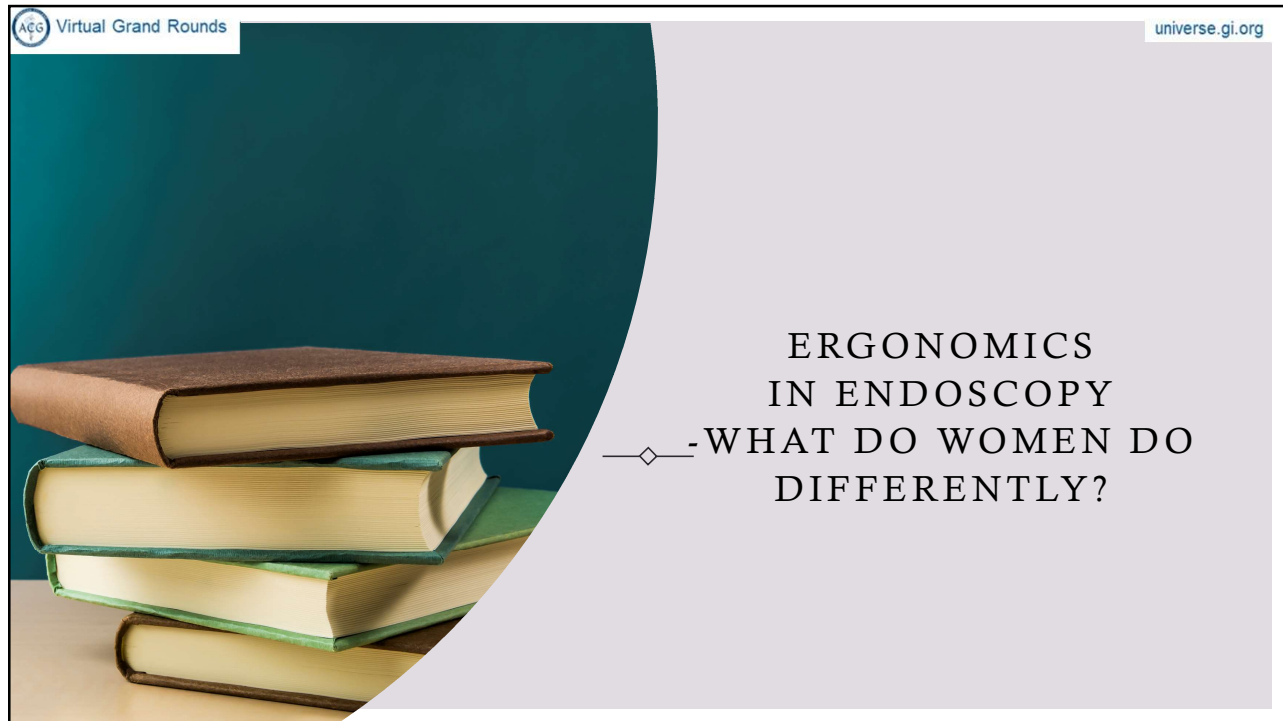
PERSONAL PROTECTIVE EQUIPMENT

- **Endoscopist’s Technique:** “Pinkie Maneuver”, Place Shaft on the Bed
- **Microbreaks/Stretches:** A 2016 study of 56 surgeons showed that incorporating microbreaks with exercises during surgery resulted in self-reported improvement or no change in their mental focus (88%) and physical performance (100%) and significantly reduced discomfort in the shoulders. 87% of the surgeons wanted to incorporate the microbreaks with exercises into their OR routine
- **Maintain Physical Fitness:** One 2019 article from the Am J Gastroenterol called on endoscopists to train as “**endo-athletes**” and adopt the Ergonomic Pentathlon- Equipment (adjusting to appropriate heights), Preparation (optimizing layout), Teamwork (teaching team best ergonomic practices), Recovery (regular exercising and stretching between cases) and Reflection (contemplating how to improve ergonomics), as principles to help reduce risk of injury



Ali MF et al. Tech Gastrointest Endosc. 2019, 21(3): 159-161
Hallbeck M et al. Appl Ergon. 2017 Apr;60:334-341
Zibert K et al. Am J Gastroenterol. 2019 Apr;114(4):541-543.

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METHODS

- A survey instrument was designed in REDCap.
- The survey was distributed as a REDCap link via email to participants (practicing gastroenterologists) in 2020 and responses to the survey were stored within REDCap.
- The study protocol was approved by the IRB at the University of Texas Health Science Center at Houston.
- Statistical data analysis was done using the Stata software version 14.2. Majority of the overall data contained categorical variables which were summarized as frequency for analysis and the statistical significance between females and males were determined.

Demographic Data

Personal Preferences

- Equipment
- Endoscopy room orientation
- Use of specific parts of the endoscope
- Styles of performing various techniques

Injury from performing endoscopy

- Sites of injury
- If time was taken off from work?
- Use of corrective lenses
- Preferences to improve ergonomics

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SURVEY PARTICIPANT CHARACTERISTICS

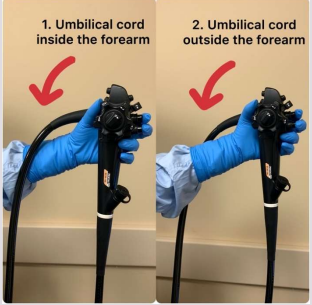
	Yes (n=107)	Female (n=41)	Male (n=66)	p-value
Age				
<40 years	45 (42.1%)	21 (46.7%)	24 (36.4%)	
40-60 years	45 (42.1%)	18 (40%)	27 (40.9%)	0.04*
> 60 years	17 (15.8%)	2 (11.7%)	15 (22.7%)	
Years in practice				
<5 years	31 (29%)	13 (31.7%)	18 (27.3%)	0.12
5-10 years	32 (30%)	16 (39%)	16 (24.2%)	
>10 years	44 (41.1%)	12 (29.3%)	32 (48.5%)	
Practice setting				
Academic/University	81 (75.7%)	34 (82.9%)	47 (71.2%)	0.37
Private	17 (15.9%)	5 (12.2%)	12 (18.2%)	
Hospital employed	9 (8.4%)	2 (4.9%)	7 (10.6%)	
Gender distribution of practice				
Solo practice	1 (0.93%)	0	1 (1.5%)	0.85
<25% female	46 (43%)	18 (43.9%)	28 (42.4%)	
25-50% female	51 (47.6%)	19 (46.3%)	32 (48.5%)	
>50% female	9 (8.4%)	4 (9.8%)	5 (7.6%)	
Weekly case volumes				
<20 cases	38 (35.5%)	18 (43.9%)	20 (30.3%)	0.04*
20-40 cases	49 (45.8%)	20 (48.8%)	29 (43.9%)	
>40 cases	20 (18.7%)	3 (7.3%)	17 (25.8%)	
Perform advanced endoscopy	38 (35.5%)	8 (19.5%)	30 (45.5%)	0.00*
Work with GI Fellows	77 (71.9%)	31 (76.6%)	46 (69.7%)	0.50
Height				
<5'2"	9 (8.4%)	9 (21.9%)	0	0.00*
5'2" - 5'8"	43 (40.2%)	28 (68.3%)	15 (22.7%)	
>5'8"	55 (51.4%)	4 (9.8%)	51 (77.3%)	
Glove/Hand Size				
X-Small	1 (0.9%)	1 (2.4%)	0	0.00*
Small	21 (19.6%)	20 (48.8%)	1 (1.5%)	
Medium	45 (42.1%)	20 (48.8%)	25 (37.9%)	
Large	30 (28%)	0	30 (45.4%)	
X-Large	10 (9.4%)	0	10 (15.2%)	
Simulation device training during fellowship	36 (33.6%)	13 (31.7%)	23 (34.8%)	0.73

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ENDOSCOPY STYLES

Endoscope control hold technique



	Yes (n=107)	Female (n=41)	Male (n=66)	p-value
Physician position				
Predominantly standing	103 (96.3%)	41 (100%)	62 (93.9%)	0.27
Predominantly sitting	4 (3.7%)	0	4 (6.1%)	
Patient Bed Level				
At physician hip level	70 (65.4%)	28 (68.3%)	42 (63.6%)	0.79
Above physician hip level	30 (28%)	10 (24.4%)	20 (30.3%)	
Below physician hip level	7 (6.6%)	3 (7.3%)	4 (6.1%)	
Monitor Height				
At physician eye level	63 (58.9%)	22 (53.7%)	41 (62.1%)	0.42
Above physician eye level	34 (31.8%)	16 (39%)	18 (27.3%)	
Below physician eye level	10 (9.3%)	3 (7.3%)	7 (10.6%)	
Endoscope tower location				
Behind physician	94 (87.8%)	36 (87.8%)	58 (87.9%)	0.73
In front of physician	6 (5.6%)	3 (7.3%)	3 (4.5%)	
To the left of physician	7 (6.6%)	2 (4.9%)	5 (7.6%)	
Endoscope wheel locks used frequently?				
Yes	26 (24.3%)	9 (21.9%)	17 (25.8%)	0.65
No	81 (75.7%)	32 (78.1%)	49 (74.2%)	
Hand predominantly used to turn small wheel on endoscope				
Left	68 (63.5%)	21 (51.2%)	47 (71.2%)	0.03*
Right	39 (36.5%)	20 (48.8%)	19 (28.8%)	
Endoscope control hold technique				
Umbilical cord inside the forearm	37 (34.6%)	4 (9.8%)	33 (50%)	0.00*
Umbilical cord outside the forearm	70 (65.4%)	37 (90.2%)	33 (50%)	
Feedback asked from colleagues regarding endoscopy posture				
Yes	3 (2.8%)	1 (2.4%)	2 (3%)	0.85
No	104 (97.2%)	40 (97.6%)	64 (97%)	
Colonoscope used in petite or low BMI patients				
Pediatric colonoscope	79 (73.8%)	36 (87.8%)	43 (65.1%)	0.01*
Regular colonoscope	28 (26.2%)	5 (12.2%)	23 (34.9%)	

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TECHNIQUE PREFERENCES

Preferred method for turning the endoscope shaft during procedure				
	Yes (n=107)	Female (n=41)	Male (n=66)	p-value
Using the small (left/right deflection) wheel	49 (45.8%)	23 (56.1%)	26 (39.4%)	0.09
Torquing or twisting the shaft	101 (94.4%)	40 (97.6%)	61 (92.4%)	0.26
Turning your left forearm (that is holding the endoscope control)	51 (47.7%)	17 (41.5%)	34 (51.5%)	0.31
Turning your body	44 (41.1%)	16 (39%)	28 (42.4%)	0.72
Preferred method for stabilizing the endoscope shaft during procedure				
	Yes (n=107)	Female (n=41)	Male (n=66)	p-value
Stabilize with your body	70 (65.4%)	28 (68.3%)	42 (63.6%)	0.62
Place shaft on the bed	72 (67.3%)	27 (65.8%)	45 (68.2%)	0.80
Hold the shaft with your fingers of left hand	53 (49.5%)	23 (56.1%)	30 (45.5%)	0.28
Ask for assistance from tech/nurse	30 (28%)	11 (26.8%)	19 (28.8%)	0.82

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INJURY FROM PERFORMING ENDOSCOPY

Injury from performing endoscopy				
	Yes (n=107)	Female (n=41)	Male (n=66)	p-value
Experienced any pain or tingling numbness associated with performing endoscopy	53 (49.5%)	26 (63.4%)	27(40.9%)	0.02*
Pain in wrist	18 (16.8%)	11 (26.8%)	7 (10.6%)	0.02*
Pain in hand, thumb or fingers	43 (40.2%)	20 (48.8%)	23 (34.8%)	0.15
Pain in elbow	8 (7.5%)	3 (7.3%)	5 (7.6%)	0.96
Pain in neck	15 (14%)	8 (19.5%)	7 (10.6%)	0.19
Pain in shoulder	18 (16.8%)	7 (17.1%)	11 (16.7%)	0.95
Pain in upper back	11 (10.3%)	5 (12.2%)	6 (9.1%)	0.60
Pain in lower back	15 (14%)	9 (22%)	6 (9.1%)	0.06
Pain in hip	3 (2.8%)	1 (2.4%)	2 (3%)	0.85
Pain in knee	5 (4.7%)	0	5 (7.6%)	0.07
Pain in ankle	1 (0.9%)	0	1 (1.5%)	0.42
Pain in foot	3 (3.7%)	3 (7.3%)	1 (1.5%)	0.12
Taken time off from work to treat pain, tingling or numbness	9 (8.4%)	1 (2.4%)	8 (12.1%)	0.07
Needed corrective lenses or a change in prescription of lenses due to performing endoscopy	10 (9.3%)	3 (7.3%)	7 (10.6%)	0.57

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UNIVARIATE AND MULTIVARIATE ANALYSIS

		Have you experienced any pain or numbness associated with the procedure?		p-value
		Yes	No	
(n=107)				
Gender	Female	26 (63.4%)	15 (36.6%)	0.02*
	Male	27 (40.9%)	39 (59.1%)	
Do you work with GI fellows in training?	Yes	33 (42.9%)	44 (57.1%)	0.03*
	No	20 (66.7%)	10 (33.3%)	
Weekly endoscopy case volume	< 20 cases	16 (42.1%)	22 (57.9%)	0.34
	20 – 40 cases	28 (57.1%)	21 (42.9%)	
	> 40 cases	9 (45%)	11 (55%)	
Performing fluoroscopic or Advanced endoscopic procedures	Yes	22 (57.9%)	16 (42.1%)	0.19
	No	31 (44.9%)	38 (55.1%)	
How do you prefer to hold the endoscope?	Outside the forearm	36 (51.4%)	34 (48.6%)	0.59
	Inside the forearm	17 (45.9%)	20 (54.1%)	
At what height is the monitor set for your procedures?	Above eye level	18 (52.9%)	16 (47.1%)	0.77
	At eye level	31 (49.2%)	32 (50.8%)	
	Below eye level	4 (40%)	6 (60%)	

Factor	Coefficient	Standard error	p-value
Weekly endoscopy case volume	0.137	0.313	0.66
Gender	1.355	0.503	0.00*
Performing fluoroscopic or advanced endoscopic procedures	0.859	0.489	0.07
Endoscope hold control	0.029	0.492	0.95
Monitor height location	-0.031	0.360	0.93
Working with fellows in training	-1.102	0.488	0.02*

Endoscope control hold technique

1. Umbilical cord inside the forearm 2. Umbilical cord outside the forearm

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PREFERENCES TO IMPROVE ENDOSCOPY ERGONOMICS

Preferences to improve ergonomics				
	Yes (n=107)	Female (n=41)	Male (n=66)	p-value
Pre-procedure posture safety check list	70 (65.4%)	32 (78%)	38 (57.6%)	0.03*
Wear a posture sensor on your back which signals you to stand up straight	35 (32.7%)	20 (48.8%)	15 (22.7%)	0.00*
Use braces at the site of pain to provide stability	35 (32.7%)	19 (46.3%)	16 (24.2%)	0.01*
Task colleagues (techs, nurses) to remind physician of correct posture	41 (38.3%)	18 (43.9%)	23 (34.8%)	0.34
External items to help with position (chair, anti-fatigue mat, Christmas tree to hold shaft etc.)	43 (40.2%)	19 (46.3%)	24 (36.4%)	0.30
Change working posture and use pauses during long procedures	49 (45.8%)	20 (48.8%)	29 (43.9%)	0.62
Re-design endoscopy room (remove unnecessary equipment, install adjustable monitors etc.)	51 (47.7%)	20 (48.8%)	31 (47%)	0.85
Willing to try new re-designed lighter endoscopes	58 (54.2%)	24 (58.5%)	34 (51.5%)	0.47
Educate oneself about endoscopy ergonomics (attend conferences, read journal articles etc.)	83 (77.6%)	31 (75.6%)	52 (78.8%)	0.70

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PREGNANCY AND ENDOSCOPY ERGONOMICS

- Of the 41 total female participants, 30 performed endoscopy during pregnancy (73.2%)
- Of those 30 participants, 7 (23.3%) performed advanced endoscopy with fluoroscopy during pregnancy. These 30 participants stated that they did not use any special modifications to perform endoscopy or use any special precautions to perform advanced endoscopy with fluoroscopy during pregnancy
- The two most common comments received from females who performed endoscopy during pregnancy
 - 1) Procedure was preferably done sitting and
 - 2) Fewer/lesser cases were performed each day —◇—

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CONCLUSIONS

Survey Participant Characteristics- Females were shorter in height, had smaller hand sizes, performed fewer weekly case volumes and more males than females performed advanced endoscopic procedures.


Endoscopy Styles- Females preferred holding the endoscope with the umbilical cord outside the forearm, using the right hand to turn the small wheel and using a pediatric colonoscope to perform colonoscopy in a petite or low BMI patient.

Technique Preferences- The preferred methods for turning the endoscope shaft and for stabilizing the endoscope shaft during the procedure were not statistically different between the genders.


Our study is the first to highlight these subtle gender —◇— differences in endoscopy styles

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CONCLUSIONS



Injury from performing endoscopy- Overwhelming percentage of gastroenterologists suffer work related injury, especially females. Most common site on injury is hand, thumb and fingers. Females suffer from more wrist pain than males.

Univariate and Multivariate Analysis of injury with variables- Gender is an independent risk factor for injury. Working with a GI fellow decreases injury, while higher weekly case volumes and performing advanced endoscopy procedures do not.

Preferences to improve endoscopy ergonomics- Our study proved a willingness to adopt options to improve endoscopy ergonomics; will guide our future studies .

These findings provide insight into the needs for techniques to improve endoscopy ergonomics which will likely prevent future injuries, enhance work efficiency and satisfaction.

We propose that there is a strong need for ergonomic focused specific training for female and male trainees in gastroenterology

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THANK YOU




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Questions



Asmeen Bhatt, MD, PhD, FACG



Millie D. Long, MD, MPH, FACG *(will not be able to join for Q&A)*



Allison R. Schulman, MD, MPH

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