

CLINICAL INVESTIGATION

Demographic Trends Among American Society for Radiation Oncology Clinical Practice Guideline Task Force Participants From 2010 to 2022

Sophia C. Kamran, MD,^{*†} Isabella R. Pompa, BA,^{*} Andrzej Niemierko, PhD,^{*†} Samantha L. Dawes, CMD,[‡] Sandra S. Zaky, MD,[§] and Curtiland Deville, Jr, MD^{||}

^{*}Department of Radiation Oncology, Massachusetts General Cancer Center, Boston, Massachusetts; [†]Harvard Medical School, Boston, Massachusetts; [‡]American Society for Radiation Oncology, Arlington, Virginia; [§]Department of Radiation Oncology, Stanford University, Stanford, California; and ^{||}Department of Radiation Oncology and Molecular Sciences, Johns Hopkins University, Baltimore, Maryland

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Purpose: The American Society for Radiation Oncology (ASTRO) has produced evidence-based clinical practice guidelines since 2009. It is unknown whether task force members for these guidelines are representative of the diversity of the radiation oncology field, particularly in comparison to the ASTRO membership demographics. We sought to characterize the demographic composition of all task force members to date.

Methods: The author list for ASTRO-led published guidelines from 2010 to 2022 was assessed. Main practice location/institution was extracted from the guideline publication. Self-identified gender and race/ethnicity were obtained from the ASTRO membership database. Years of experience were measured as the number of years post-board certification at time of guideline development. For United States (US)-based physicians, gender was confirmed with the National Provider Identifier database. Proportions of task force members overall and by individual guideline were described by gender, underrepresented in medicine (URM) status, geography (US vs international), US region (if US based), years of experience (separated into ≤ 5 years including residents, 6-12 years, and >12 years), and type of practice. Proportions for gender, URM, and geography were compared with ASTRO membership demographics.

Results: Between 2010 and 2022, there were 25 guideline task forces, with a total of 366 participants: 233 men, 126 women, and 7 unknown gender. There were more men than women serving on most individual task force topics, with 28% of all task forces having $>80\%$ composition of men. Of those with self-identified race/ethnicity, 9/204 (4.4%) were URM, which was lower in proportion to URM self-identified ASTRO members (336/3277, 10.3%; $P = .007$). Most participants were based in the US ($n = 323$, 88.3%), had >12 years of experience ($n = 141$, 38.5%), and were from academic institutions ($n = 302$, 82.5%). Community practitioners were less likely to be women or URM.

Conclusions: Improved data collection and more intentional efforts are needed to ensure that the diversity of guidelines task forces is representative of ASTRO membership and the specialty. © 2022 Elsevier Inc. All rights reserved.

Corresponding author: Sophia C. Kamran, MD; E-mail: skamran@mgh.harvard.edu

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Introduction

Since 2009, the American Society for Radiation Oncology (ASTRO) has produced evidence-based clinical practice guidelines to help guide the practice of radiation oncology to improve patient care.¹ The publication of the National Academy of Medicine's landmark report² issuing standards for the development of guidelines provided the foundation for ASTRO's own guideline methodology. These documents help guide radiation oncologists and patients to reduce inappropriate practice variation, improve resource utilization, and understand the evidence behind a recommendation. ASTRO has streamlined and published their guideline development process for all relevant stakeholders. This starts with guideline initiation, which consists first of topic selection and task force selection, followed by processes for evidence review, draft development, peer review, approval, and through to publication and dissemination.

Given the importance and influence of these guidelines on the radiation oncology community and associated communities, including patients, caregivers, providers, and health systems, task force participant selection and overall composition are critical. The ASTRO Guideline Subcommittee is responsible for nominating guideline task force chairs and members, and the composition ideally should reflect the diversity of the field and patient population as a whole. ASTRO's guideline preamble states that it "strives to avoid bias and is committed to creating task forces that include a diverse and inclusive multidisciplinary group of experts considering race, ethnicity, gender, experience, practice setting, and geographic location."¹ Task force members come from many different practice settings and can include radiation oncologists, radiation oncology residents, and other relevant specialties including medical oncology, surgery, medical physics, pathology, and/or radiology. Additionally, there may be a patient representative included in the task force.

Prior evaluation of clinical practice guidelines across high-impact medical journals have determined that women and racialized clinicians have been underrepresented or absent in guideline development panels.³ It is known that the United States (US) and its cancer population are diversifying rapidly,⁴ yet historical de facto and de jure exclusions have limited workforce diversity in radiation oncology⁵ and related radiation sciences.⁶ Inclusion of more viewpoints can enhance innovation, interpretation, creativity, team-building, problem-solving, and productivity—all crucial components for creating a guideline—while ensuring a just and equitable selection process.⁶⁻⁹ In addition, the COVID-19 pandemic highlighted health disparities and inequities in medicine with disproportionate effects on racial and ethnic minority communities leading to calls for racial justice, particularly in health care.^{10,11} The National Comprehensive Cancer Network, American Cancer Society, and National Minority Quality Forum recently published recommendations for elevating equitable cancer care, which include reviewing guidelines for disparity issues that could eliminate

or reduce disparity, incorporating language recognizing existence of bias in care, and incorporating a framework to account for health disparities into panel processes.¹² Other medical fields have incorporated the specific recommendation that guideline panels should be diverse.^{13,14}

Therefore, we sought to evaluate the demographic composition of past ASTRO guideline task forces to understand the historical trends in representation, particularly in comparison to the demographics of the radiation oncology field from ASTRO membership data. This will also aid in identifying gaps and potentially assisting with future processes to ensure that diverse demographic identities and perspectives are included and represented on guideline task forces.

Methods and Materials

The published author list for all guidelines where ASTRO was the lead society and had oversight of task force composition from 2010 through 2022 was collated and assessed. Patient representative data were not included in the analysis. Each author's main practice location/institution as listed in the guideline publication was included in the results. Additionally, race/ethnicity (White, Asian, Black, American Indian or Alaska native, Native Hawaiian or other Pacific Islander, or Hispanic) obtained through self-identification using ASTRO's current membership database was analyzed as a combined single variable because it was historically captured this way in the ASTRO membership database. Underrepresented in medicine (URM) status refers to Black, Hispanic, American Indian or Alaska native, and Native Hawaiian or other Pacific Islander individuals, per the Association of American Medical Colleges definition of racial and ethnic groups that are historically underrepresented in the medical profession relative to their numbers in the general population.^{15,16} Years of experience was measured as the number of years post-board certification, where known, at the time of guideline development. For US-based physicians, a search of the National Provider Identifier (NPI) database, where gender is a required field with no missing data, was captured to confirm gender. Of note, both ASTRO membership database and the NPI database ask for "gender" with options of "male/female," which is generally noted as a biological definition (not a gender identity). The NPI database only provides the options of "male" and "female"—there is no opportunity to select/input anything else. Throughout the remainder of the article, we use "man/woman" instead of "male/female" for gender descriptions.

Statistics

Descriptive statistics were performed to illustrate the distribution of task force members by various demographics. The entire task force composition was analyzed; this includes representatives from other societies outside of ASTRO. The proportion of women versus men overall as well as by

individual guideline was presented. The proportions of task force members were described overall and by individual guideline regarding race, ethnicity, geography (US vs international), US region (if US based; see Appendix E1), years of experience (separated into ≤ 5 years including residents, 6-12 years, and >12 years), and type of practice. Guideline task force chairs were also evaluated separately by gender.

For each individual task force, the expected number of participants by gender, race/ethnicity, and geography was calculated by multiplying the total number of participants in the task force by the proportion present in current ASTRO radiation oncologist membership for each demographic (as of July 2022).¹⁷ For the purposes of the analysis, “unknown” and “prefer to not say” data were removed for comparisons. The statistical significance of the difference between the actual and the expected number of participants was assessed using a binomial probability test. For comparisons between task force member proportions and ASTRO membership proportions for specific demographics, χ^2 analysis was performed. Other proportional comparisons were performed using χ^2 analysis. Proportions of task force members by gender were calculated to assess long-term trends between 2010 and 2022 using simple linear regression models to estimate trends and associated *P* values. Data were analyzed using Stata version 17 (StataCorp) and R version 4.2.1 (R Group for Statistical Computing). *P* $\leq .05$ was considered significant in 2-sided tests.

Results

Between 2010 and 2022, there were 25 guideline task forces, representing 20 different disease sites (Table E1). Five guidelines were updated that created a new task force for the updates: whole breast irradiation, palliative thoracic, brain metastases, bone metastases, and endometrial. In total, there were 366 individuals serving on task forces; 233 who identified as men, 126 who identified as women, and 7 with unknown gender (Table 1). The total number of unique individuals was 304, as there were 25 individuals who served on multiple task forces (18 men, 7 women, 0 URM). The number of individuals serving on several different disease-site task forces (not just the update of the prior task force) was 22 (17 men, 5 women, 0 URM).

Gender

By gender, in general, there were more men than women serving on individual task forces (Fig. 1A). The task forces with 80% or higher representation of men included oropharyngeal (16/16, 100%), glioblastoma (13/14, 92.9%), non-small cell lung cancer (NSCLC; 12/14, 85.7%), bone metastases 2011 guideline (14/17, 82.4%), lung stereotactic body radiation therapy (14/17, 82.4%), palliative thoracic 2011 guideline (9/11, 81.8%), and prostate (12/15, 80.0%).

Therefore, 28% of all task forces had $>80\%$ composition of men. Among all task forces, the proportion of women was 34.4% ($n = 126$) compared with 63.7% men ($n = 233$). In comparison to ASTRO membership demographics in July of 2022,¹⁷ this is similar, as among radiation oncologists, 26% identify as women, while 60% identify as men, and 14% are unknown (*P* = .05). When removing the breast/gynecologic disease-site task forces, the proportion of women decreases to 28.5% compared with 71.4% men, which is not statistically significant compared with ASTRO demographic data (*P* = .56). Between 2010 and 2022, representation of women on task forces significantly increased (*P* = .002 for trend; Fig. 1B).

Race/ethnicity

There were 204 individuals with documented race/ethnicity data (55.7%) and 162 individuals with unknown data (44.3%). Of those with documented race/ethnicity, 9 (4.4%) were URM while 195 (95.6%) were non-URM. Of the 9 URMs, 8 were women and 1 was a man. Most task forces did not have any URM representation (Fig. 2A). In general, URM representation was more common on recently formed task forces (2020 to present) compared with older task forces. Among ASTRO membership data, of those with documented race/ethnicity data, 10.3% (336/3277) of members identify as URM and 89.7% identify as non-URM. When comparing total URMs among task force members (9/204) to total URMs among ASTRO members (336/3277), task force members have significantly fewer URMs (*P* = .007; Fig. 2B). Among those with documented race/ethnicity and gender data among task force members, there was a significantly higher proportion of women representation among URMs (9/10) compared with women representation among non-URMs (69/193, *P* = .002).

Geography/region

By geographic location, most individuals serving on a task force were based in the US ($n = 323$, 88.3%; Fig. E1). However, the oligometastases task force consists of 50% US-based individuals and 50% non-US-based individuals, as this is a joint task force guideline between ASTRO and the European Society for Radiotherapy and Oncology. Among those who are from the US, more individuals are from institutions in the South ($n = 105$, 32.5%) followed by the Midwest ($n = 85$, 26.3%), the Northeast ($n = 74$, 22.9%), and the West ($n = 59$, 18.3%). Most ASTRO members are US based (75.8%).

Years of experience

When evaluating task force composition by years of experience at the time of guideline formation, we found

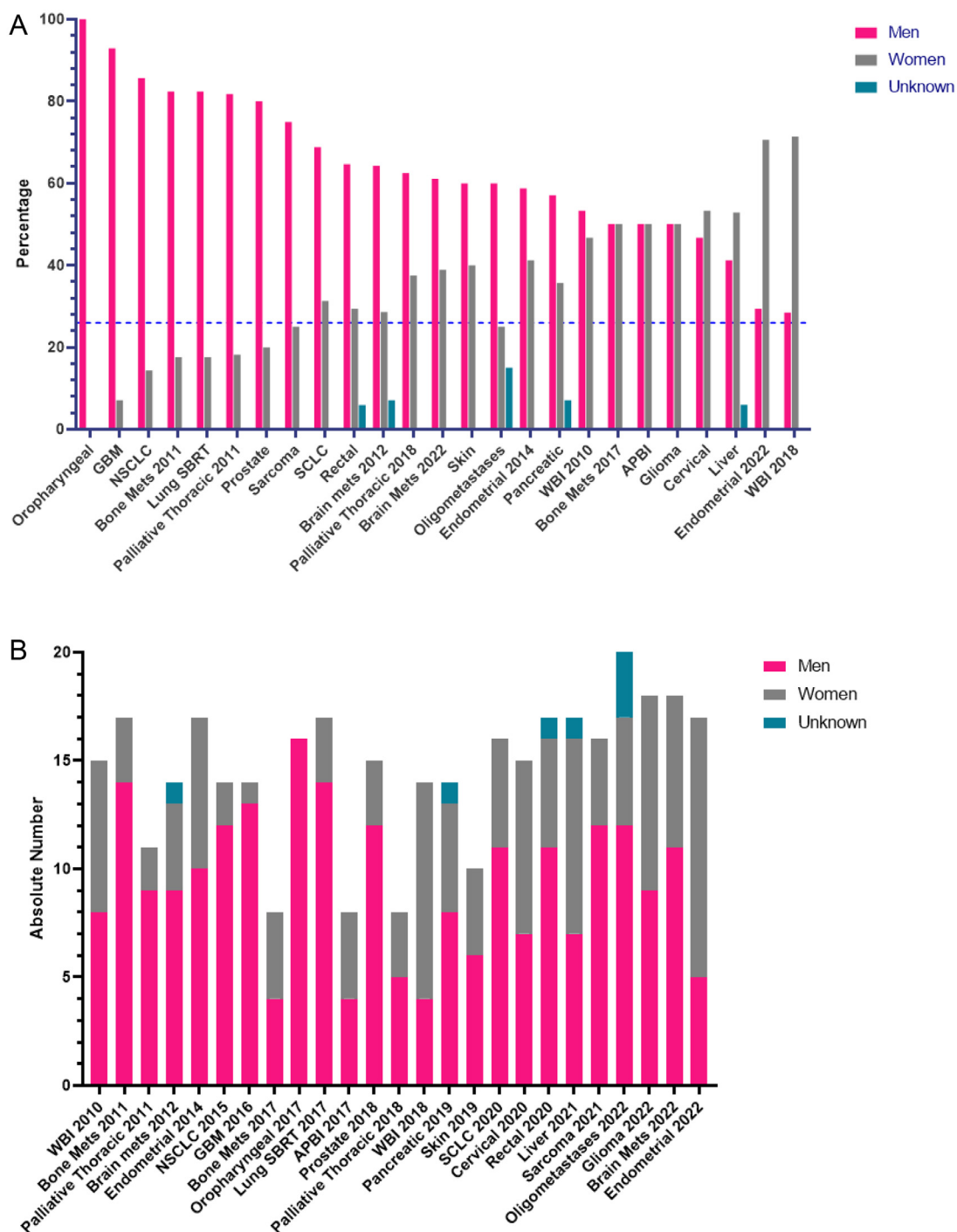


Fig. 1. Gender representation across clinical guideline task forces. (A) Gender representation across clinical guideline task forces in descending order of representation of men. The dotted blue line represents the percentage of women in the American Society for Radiation Oncology (ASTRO) membership data in 2022. (B) Gender representation across clinical guideline task forces by year of publication. Between 2010 and 2022, representation of women on task forces has been significantly increasing ($P = .002$ for trend).

that the majority of task force members had more than 12 years of experience ($n = 141$, 38.5%) followed by members with 6 to 12 years of experience ($n = 90$, 24.6%) and 48 task force members with 5 years or less (including residents, 13.1%), with 87 individuals

unknown (15 of which were international) (Fig. 3A). Task force members who were men had more experience compared with task force members who were women (>12 years of experience, 67%, $n = 95/141$ men vs 32%, $n = 45/141$ women; Fig. 3B). Among task force members

Table 1 Clinical practice guideline task force participant demographics, 2010 to 2022

		Guideline, n (%)																						Total				
		WBI*	Bone mets*	Pall thoracic*	Brain mets*	Endometrial*	NSCLC	GBM	Bone mets*	Orophnx	Lung SBRT	APBI	Prostate	Pall thoracic*	WBI*	Panc	Skin	SCLC	Cervical	Rectal	Liver	Sarcoma	Oligo		Glioma	Brain mets*	Endometrial*	
Year		2010	2011	2011	2012	2014	2015	2016	2017	2017	2017	2017	2018	2018	2019	2019	2019	2020	2020	2020	2021	2021	2022	2022	2022	2022	2022	
Total [†]		15	17	11	14	17	14	14	8	16	17	8	15	8	14	14	10	16	15	17	17	16	20	18	18	17	366	
Gender	Men	8 (53.3)	14 (82.4)	9 (81.8)	9 (64.3)	10 (58.8)	12 (85.7)	13 (92.9)	4 (50)	16 (100)	14 (82.4)	4 (50)	12 (80)	5 (62.5)	4 (28.6)	8 (57.1)	6 (60)	11 (68.8)	7 (46.7)	11 (64.7)	7 (41.2)	12 (75)	12 (60)	9 (50)	11 (61.1)	5 (29.4)	233 (63.7)	
	Women	7 (46.7)	3 (17.6)	2 (18.2)	4 (28.6)	7 (41.2)	2 (14.3)	1 (7.1)	4 (50)	0 (0)	3 (17.6)	4 (50)	3 (20)	3 (37.5)	10 (71.4)	5 (35.7)	4 (40)	5 (31.3)	8 (53.3)	5 (29.4)	9 (52.9)	4 (25)	5 (25)	9 (50)	7 (38.9)	12 (70.6)	126 (34.4)	
	Unknown	0 (0)	0 (0)	0 (0)	1 (7.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.1)	0 (0)	0 (0)	0 (0)	1 (5.9)	1 (5.9)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	7 (1.9)	
Race	White	9 (60)	5 (29.4)	6 (54.5)	4 (28.6)	11 (64.7)	5 (35.7)	3 (21.4)	4 (50)	5 (31.3)	8 (47.1)	6 (75)	7 (46.7)	3 (37.5)	9 (64.3)	8 (57.1)	7 (70)	7 (43.8)	5 (33.3)	4 (23.5)	4 (23.5)	4 (25)	9 (45)	4 (22.2)	2 (11.1)	10 (58.5)	149 (40.7)	
	Asian	0 (0)	3 (17.6)	1 (9.1)	3 (21.4)	2 (11.8)	1 (7.1)	4 (28.6)	2 (25)	2 (12.5)	1 (5.9)	0 (0)	1 (6.7)	1 (12.5)	0 (0)	0 (0)	2 (20)	3 (18.8)	0 (0)	3 (17.6)	3 (17.6)	0 (0)	1 (5)	4 (22.2)	8 (44.4)	1 (5.9)	46 (12.6)	
	Black	1 (6.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6.7)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	3 (0.8)	
	AIAN	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6.3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.3)
	Hispanic	1 (6.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.9)	0 (0)	1 (5)	1 (5.6)	0 (0)	0 (0)	5 (1.4)
	NA	4 (26.7)	9 (52.9)	4 (36.4)	7 (50)	4 (23.5)	8 (57.1)	7 (50)	2 (25)	9 (56.3)	8 (47.1)	1 (12.5)	7 (46.7)	4 (50)	5 (35.7)	6 (42.9)	1 (10)	6 (37.5)	9 (60)	10 (58.8)	9 (52.9)	11 (68.8)	8 (40)	9 (50)	8 (44.4)	6 (35.3)	162 (44.3)	
URM [‡]	Yes	2 (18.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (14.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (16.7)	0 (0)	1 (12.5)	1 (20)	2 (16.7)	1 (11.1)	0 (0)	0 (0)	9 (4.4)	
	No	9 (81.8)	8 (100)	7 (100)	7 (100)	13 (100)	6 (100)	7 (100)	6 (100)	7 (100)	9 (100)	6 (85.7)	8 (100)	4 (100)	9 (100)	8 (100)	9 (100)	10 (100)	5 (83.3)	7 (100)	7 (87.5)	4 (80)	10 (83.3)	8 (88.9)	10 (100)	11 (100)	195 (95.6)	
Geographic location	US	15 (100)	14 (82.4)	8 (72.7)	10 (71.4)	17 (100)	12 (85.7)	14 (100)	7 (87.5)	15 (93.8)	15 (88.2)	7 (87.5)	13 (86.7)	7 (87.5)	13 (92.9)	13 (92.9)	10 (100)	14 (87.5)	14 (93.3)	16 (94.1)	16 (94.1)	15 (93.8)	10 (50)	16 (88.9)	17 (94.4)	15 (88.2)	323 (88.3)	
	Int'l	0 (0)	3 (17.6)	3 (27.3)	4 (28.6)	0 (0)	2 (14.3)	0 (0)	1 (12.5)	1 (6.3)	2 (11.8)	1 (12.5)	2 (13.3)	1 (12.5)	1 (7.1)	1 (7.1)	0 (0)	2 (12.5)	1 (6.7)	1 (5.9)	1 (5.9)	1 (6.3)	10 (50)	2 (11.1)	1 (5.6)	2 (11.8)	43 (11.7)	
Region, if US	Northeast	5 (33.3)	2 (14.3)	2 (25)	0 (0)	3 (17.6)	4 (33.3)	3 (21.4)	2 (28.6)	2 (13.3)	2 (13.3)	3 (42.9)	2 (15.4)	1 (14.3)	4 (30.8)	3 (23.1)	4 (40)	7 (50)	1 (7.1)	3 (18.8)	4 (25)	6 (40)	3 (30)	3 (18.8)	2 (11.8)	3 (20)	74 (22.9)	
	Midwest	5 (33.3)	7 (50)	3 (37.5)	6 (60)	5 (29.4)	6 (50)	4 (28.6)	2 (28.6)	3 (20)	3 (20)	1 (14.3)	2 (15.4)	3 (42.9)	2 (15.4)	2 (20)	3 (21.4)	3 (21.4)	2 (12.5)	2 (12.5)	4 (26.7)	2 (20)	4 (25)	5 (29.4)	4 (26.7)	85 (26.3)		
	West	1 (6.7)	1 (7.1)	3 (37.5)	2 (20)	6 (35.3)	0 (0)	3 (21.4)	1 (14.3)	1 (6.7)	3 (20)	0 (0)	3 (23.1)	1 (14.3)	2 (15.4)	1 (7.7)	4 (40)	3 (21.4)	3 (21.4)	5 (31.3)	4 (25)	1 (6.7)	1 (10)	3 (18.8)	4 (23.5)	3 (20)	59 (18.3)	
	South	4 (26.7)	4 (28.6)	0 (0)	2 (20)	3 (17.6)	2 (16.7)	4 (28.6)	2 (28.6)	9 (60)	7 (46.7)	3 (42.9)	6 (46.2)	2 (28.6)	5 (38.5)	7 (53.8)	0 (0)	1 (7.1)	7 (50)	6 (37.5)	6 (37.5)	4 (26.7)	4 (40)	6 (37.5)	6 (35.3)	5 (33.3)	105 (32.5)	
Years of experience	≤5 [§]	4 (26.7)	3 (17.6)	1 (9.1)	4 (28.6)	2 (11.8)	1 (7.1)	2 (14.3)	2 (25)	2 (12.5)	6 (35.3)	1 (12.5)	1 (6.7)	2 (25)	2 (14.3)	1 (7.1)	2 (20)	1 (6.3)	1 (6.7)	2 (11.8)	1 (5.9)	1 (6.3)	1 (5)	4 (22.2)	1 (5.6)	0 (0)	48 (13.1)	
	6-12	0 (0)	2 (11.8)	1 (9.1)	2 (14.3)	3 (17.6)	0 (0)	4 (28.6)	3 (37.5)	2 (12.5)	4 (23.5)	1 (12.5)	6 (40)	4 (50)	4 (28.6)	4 (40)	6 (37.5)	6 (40)	5 (29.4)	9 (52.9)	3 (18.8)	3 (15)	2 (11.1)	8 (44.4)	4 (23.5)	90 (24.6)		
	>12	9 (60.0)	8 (47.1)	7 (63.6)	5 (35.7)	8 (47.1)	11 (78.6)	5 (35.7)	3 (37.5)	5 (31.3)	5 (29.4)	5 (62.5)	5 (33.3)	1 (12.5)	5 (35.7)	6 (42.9)	2 (20)	6 (37.5)	6 (40)	4 (23.5)	3 (17.6)	7 (43.8)	5 (25)	6 (33.3)	5 (27.8)	9 (52.9)	141 (38.5)	
Type of practice	Unknown	2 (13.3)	4 (23.5)	2 (18.2)	3 (21.4)	4 (23.5)	2 (14.3)	3 (21.4)	0 (0)	7 (43.8)	2 (11.8)	1 (12.5)	2 (20)	1 (12.5)	3 (21.4)	3 (21.4)	2 (20)	3 (18.8)	2 (13.3)	6 (35.3)	4 (23.5)	5 (31.3)	11 (55)	6 (33.3)	4 (22.2)	4 (23.5)	87 (23.8)	
	Academic	12 (80)	12 (70.6)	9 (81.8)	11 (78.6)	15 (88.2)	13 (92.9)	11 (78.6)	6 (75)	11 (68.6)	14 (82.4)	7 (87.5)	12 (80)	6 (75)	13 (92.9)	12 (85.7)	8 (80)	13 (81.3)	12 (80)	15 (88.2)	15 (88.2)	14 (87.5)	16 (80)	16 (88.9)	13 (72.2)	16 (94.1)	302 (82.5)	
	Community	2 (13.3)	4 (23.5)	2 (18.2)	2 (14.3)	2 (11.8)	1 (7.1)	3 (21.4)	2 (25)	5 (31.3)	2 (11.8)	1 (12.5)	2 (13.3)	2 (25)	1 (7.1)	0 (0)	2 (20)	2 (12.5)	2 (13.3)	1 (5.9)	2 (11.8)	1 (6.3)	2 (10)	2 (11.1)	4 (22.2)	1 (5.9)	50 (13.7)	
	Govt	0 (0)	1 (5.9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.9)	0 (0)	1 (6.7)	0 (0)	0 (0)	1 (7.1)	0 (0)	1 (6.3)	1 (6.7)	0 (0)	0 (0)	1 (6.3)	0 (0)	0 (0)	1 (5.6)	0 (0)	8 (2.2)	
Unknown	1 (6.7)	0 (0)	0 (0)	1 (7.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.1)	0 (0)	0 (0)	0 (0)	1 (5.9)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	6 (1.6)		
Task force chairs (2 per task force)																										50		
Gender	Men	2 (100)	2 (100)	2 (100)	1 (50)	0 (0)	2 (100)	2 (100)	1 (50)	2 (100)	1 (50)	1 (50)	2 (100)	2 (100)	1 (50)	1 (50)	1 (50)	2 (100)	1 (50)	1 (50)	1 (50)	1 (50)	2 (100)	0 (0)	2 (100)	1 (50)	34 (68)	
	Women	0 (0)	0 (0)	0 (0)	1 (50)	2 (100)	0 (0)	0 (0)	1 (50)	0 (0)	1 (50)	1 (50)	0 (0)	0 (0)	1 (50)	1 (50)	1 (50)	0 (0)	1 (50)	1 (50)	1 (50)	1 (50)	1 (50)	0 (0)	2 (100)	0 (0)	1 (50)	16 (32)
URM	Yes	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (4)	

Abbreviations: AIAN = American Indian/Alaska Native; APBI = accelerated partial breast irradiation; GBM = glioblastoma; Int'l = international; mets = metastases; NA = not applicable/unknown; NSCLC = non-small cell lung cancer; Oligo = oligometastases; Orophnx = oropharyngeal; Pall thoracic = palliative thoracic; Panc = pancreas; SBRT = stereotactic body radiation therapy; SCLC = small cell lung cancer; URM = underrepresented in medicine; US = United States; WBI = whole breast irradiation.

* Task forces with an update.
[†] Patient representative not included.
[‡] Only includes individuals with known self-reported race/ethnicity; excludes individuals with unknown or unreported race/ethnicity.
[§] Including residents.

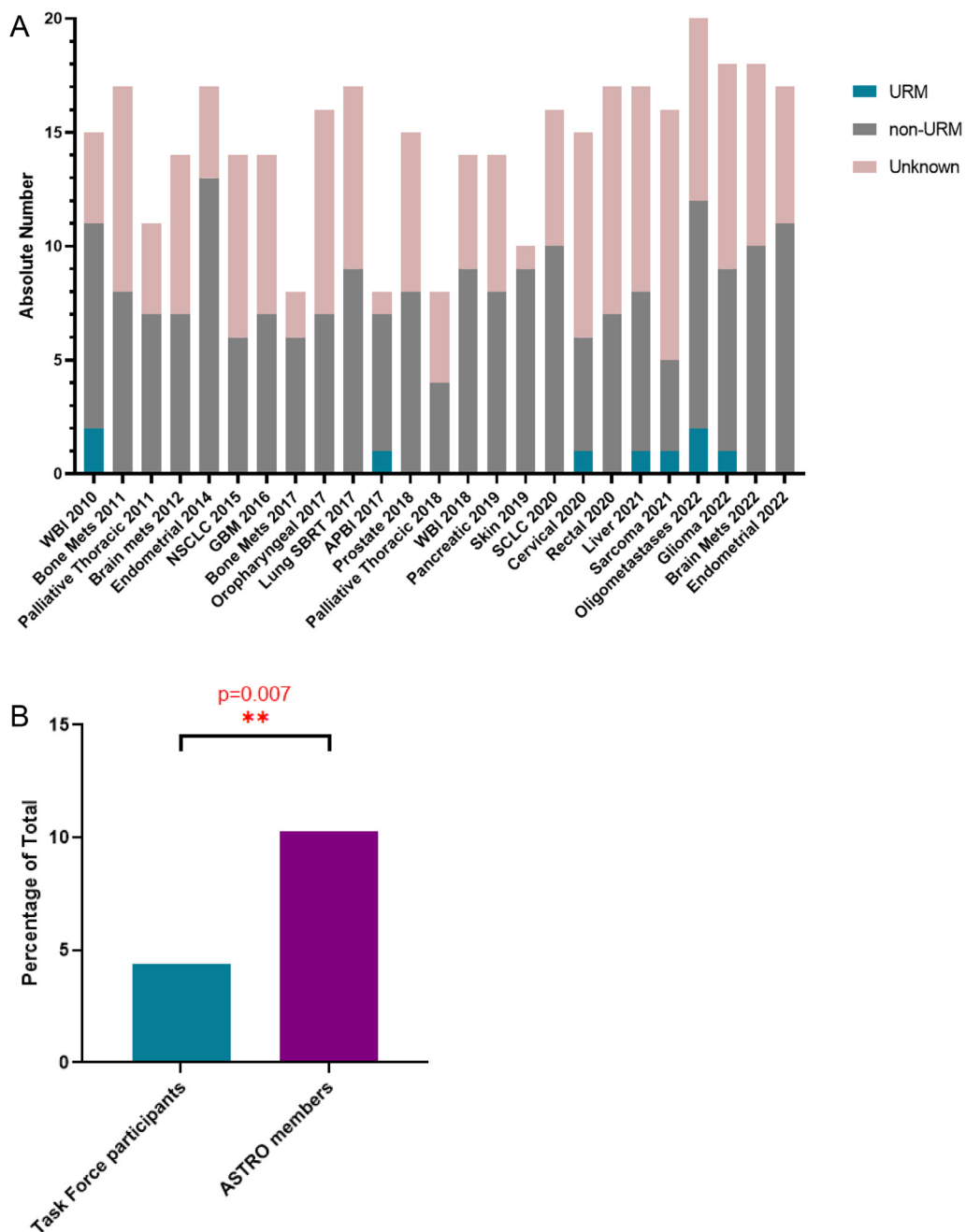


Fig. 2. Underrepresented in medicine (URM) representation across clinical guideline task forces. (A) URM representation across clinical guideline task forces by year of publication. Most task forces did not have any URM representation, with more URM representation on recently formed task forces (2020 to present) compared with older task forces. (B) Proportion of URM among task force participants in comparison to American Society for Radiation Oncology (ASTRO) members. There are significantly fewer URMs among task force members (9/204) compared with ASTRO members (336/3277; $P = .007$).

with ≤ 5 years of experience, 3 identified as URM (6.3%, $n = 3/48$; Fig. 3C). Women and URM showed greatest representation in the category of ≤ 5 years of experience (Fig. 3B, 3C). By individual task force, NSCLC had the largest representation of members, with >12 years of experience, while palliative thoracic (2018) had the smallest (Fig. 3D).

Place of practice

Most guideline task force participants were from academic institutions ($n = 302$, 82.5%), with 50 from community institutions (13.7%), 8 from government institutions (2.2%), and 6 unknown (Fig. 4A). By gender, women were less likely to come from community practices ($n = 8/50$) compared

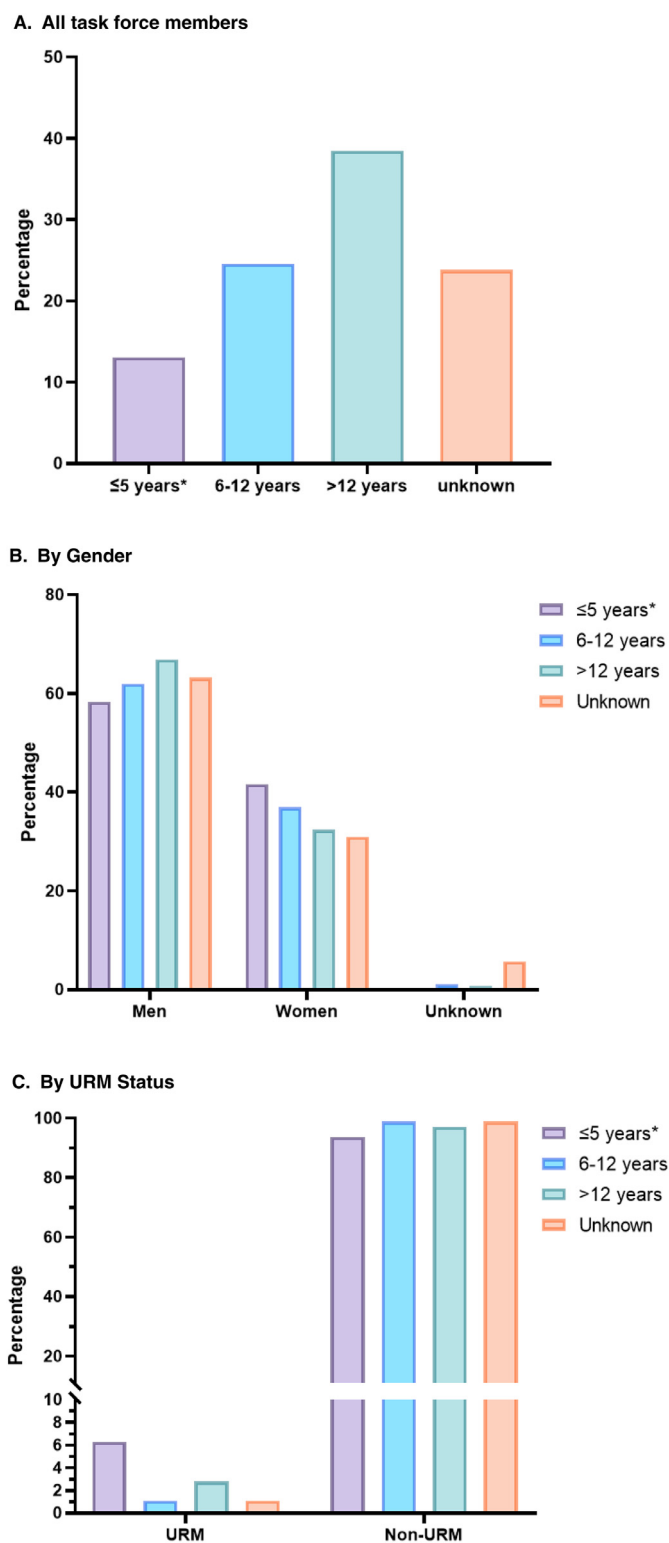


Fig. 3. Clinical guideline task force members by years of experience. (A) Most task force participants had more than 12 years of experience ($n = 141$, 38.5%). (B) By gender, among those with >12 years of experience, most were men (67%, $n = 95/141$ vs 32%, $n = 45/141$). (C) Underrepresented in medicine (URM) task force members showed greatest representation in the category of ≤ 5 years of experience. (D) Clinical guideline task forces presented in descending order by representation of members with >12 years of experience. Non-small cell lung cancer (NSCLC) had the largest representation of members with >12 years of experience. Palliative thoracic (2018) had the smallest.

D. By individual task force

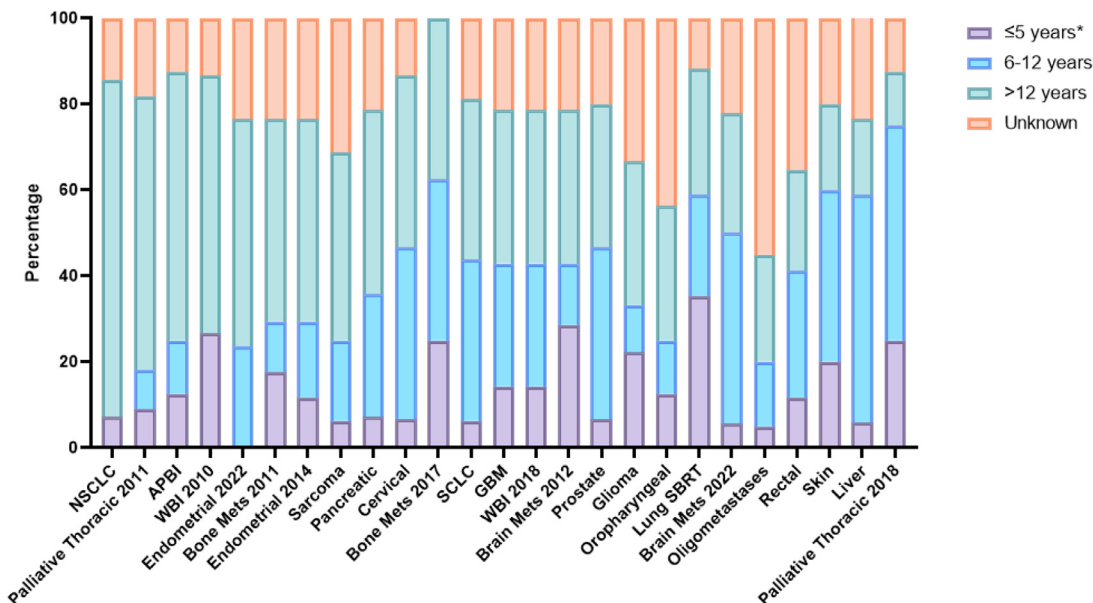


Fig. 3. Continued.

with academic institutions ($n = 115/302$; $P < .002$; Fig. 4B). Among the URM task force participants ($n = 9$), 8 were from academic institutions, with 1 from the community (Fig. 4C). The top 3 institutions with the most task force members are UT—MD Anderson Cancer Center ($n = 31$), Duke University Cancer Center ($n = 20$), and Memorial Sloan Kettering Cancer Center ($n = 13$) (Table E2, Fig. E2).

Task force chairs

There are 2 members who serve as “chairs” within each task force. With 20 different disease site-based task forces and 5 updates, there are effectively 25 different task forces, and thus 50 chairs. Among the 50 chairs, 34 were men (68.0%) and 16 were women (32.0%). The 16 women were chairs representing 14 task forces, with the endometrial (2014) task force and glioma task force having both chairs as women. Three of the 14 task forces with women chairs had a statistically significant higher number of women on the task force compared with the ASTRO membership proportion (endometrial 2022, 12 women; $P = .007$; whole breast irradiation 2018, 10 women; $P = .002$; and liver 9, women; $P = .03$). In comparison to ASTRO demographics, there was no statistically significant difference for women representation as task force chairs ($P = .79$). When removing breast/gynecologic malignancy task forces, 73.7% of the remaining task force chairs were men, while 26.3% of task force chairs were women. Only 2 chairs identified as URM, on the accelerated partial breast irradiation task force and liver task force; these are 2 of the 7 guidelines with any URMs versus 18 guidelines without any URMs.

Demographic changes among task forces with updates

Of the 5 guidelines that underwent an update, when comparing demographics, all 5 had an improvement in representation of women between the original and updated task force, from a range of 17.6% to 46.7% in the original task force to a range of 37.5% to 71.4% in the update (Table 2). There was no documented improvement in URM representation in any of the task force updates, with the whole breast irradiation task force decreasing URM representation between the original and the update. There was a decrease in members with >12 years of experience among all disease site-based task force updates, except for endometrial, which increased from 47.1% to 52.9%.

Discussion

In this analysis of all ASTRO guideline task forces from 2010 to 2022, consisting of 20 de novo guidelines and 5 updates and a total of 366 individuals, there was a higher proportion of men participants compared with women, 63.7% versus 34.4% respectively, which did not differ significantly from the overall ASTRO membership demographics. Among all task force members with documented race/ethnicity, there were significantly fewer URM individuals compared with ASTRO members. In addition, the majority of task force members had more than 12 years of experience (38.5%) and were largely from academic institutions (82.5%). Finally, among those selected as chairs, approximately two-thirds were men and less than one-third were women, and only 2 URM individuals have served as chairs.

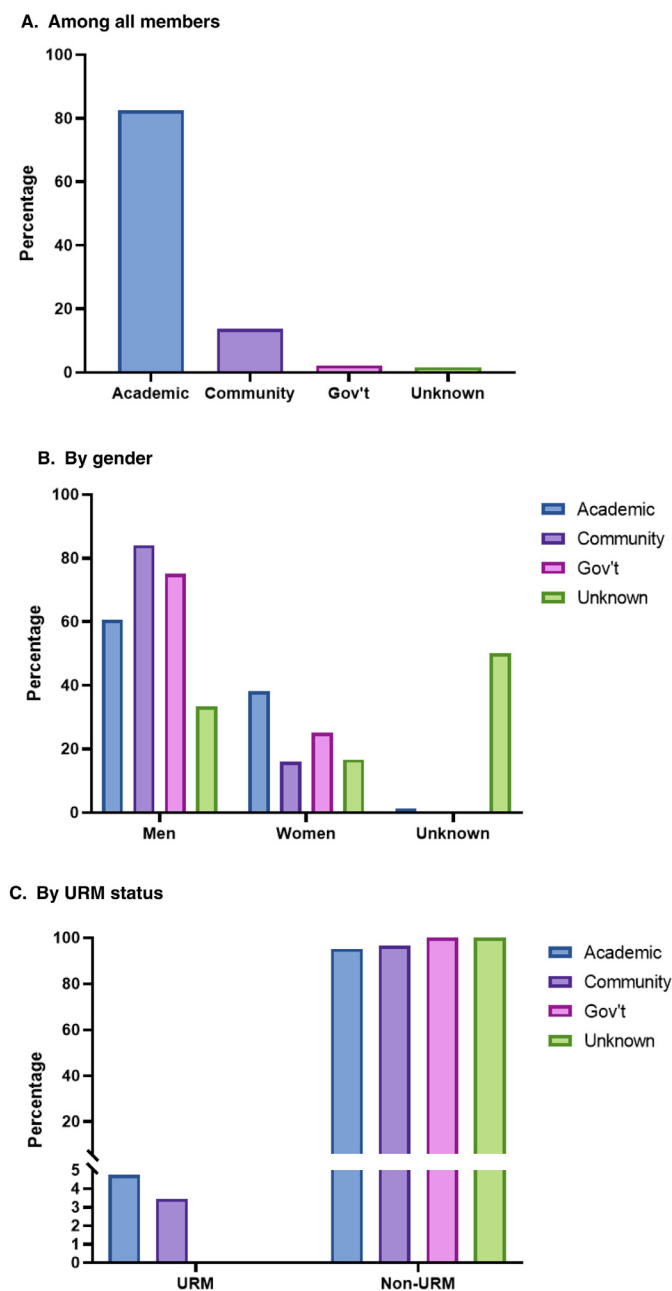


Fig. 4. Clinical guideline task force members by type of practice. (A) Most task force participants were from academic institutions ($n = 302/366$, 82.5%). (B) By gender, women were less likely to come from community practices ($n = 8/50$) compared with academic institutions ($n = 115/302$; $P < .002$). (C) Almost all underrepresented in medicine (URM) task force members were from academic institutions ($n = 8$), with 1 from community practice.

It is established that the radiation oncology physician workforce is lagging in gender diversity.¹⁸⁻²⁰ Therefore, it is not surprising that there are more men than women serving on guideline task forces, because this is in line with ASTRO membership demographics. However, there are some notable outliers among certain guideline topics with substantially more men than women (>80%), including prostate, lung stereotactic body radiation therapy, NSCLC, glioblastoma, bone metastases, and the first palliative thoracic (2011) task forces. In addition, the oropharyngeal task force did not have any women represented. Because there are women in

radiation oncology treating and performing research on oropharyngeal malignancies, it suggests a need to investigate and mitigate the barriers and implicit (eg, gender stereotypes) or explicit (eg, sexism) biases that may affect their inclusion versus exclusion on these and other guidelines to assure gender equity in the guideline task force selection process. Prior data have demonstrated that women are underrepresented in general clinical practice guidelines based on an evaluation of 454 guidelines in 2018.²¹ Notably, in the more recent ASTRO guidelines, the gender ratio was found to be increasing and closer to parity. Still, intentional

Table 2 Comparison of clinical practice guideline task force participant demographics for task forces with an update

		Original WBI	Update WBI	Original Bone mets	Update Bone mets	Original Pall thoracic	Update Pall thoracic	Original Brain mets	Update Brain mets	Original Endometrial	Update Endometrial
Year		2010	2019	2011	2017	2011	2018	2012	2022	2014	2022
Total*		15	14	17	8	11	8	14	18	17	17
Gender	Men	8 (53.3)	4 (28.6)	14 (82.4)	4 (50)	9 (81.8)	5 (62.5)	9 (64.3)	11 (61.1)	10 (58.8)	5 (29.4)
	Women	7 (46.7)	10 (71.4)	3 (17.6)	4 (50)	2 (18.2)	3 (37.5)	4 (28.6)	7 (38.9)	7 (41.2)	12 (70.6)
	Unknown	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.1)	0 (0)	0 (0)	0 (0)
Race	White	9 (60)	9 (64.3)	5 (29.4)	4 (50)	6 (54.5)	3 (37.5)	4 (28.6)	2 (11.1)	11 (64.7)	10 (58.5)
	Asian	0 (0)	0 (0)	3 (17.6)	2 (25)	1 (9.1)	1 (12.5)	3 (21.4)	8 (44.4)	2 (11.8)	1 (5.9)
	Black	1 (6.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	AIAN	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Hispanic	1 (6.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	NA	4 (26.7)	5 (35.7)	9 (52.9)	2 (25)	4 (36.4)	4 (50)	7 (50)	8 (44.4)	4 (23.5)	6 (35.3)
URM†	Yes	2 (18.2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	No	9 (81.8)	9 (100)	8 (100)	6 (100)	7 (100)	4 (100)	7 (100)	10 (100)	13 (100)	11 (100)
Geographic location	US	15 (100)	13 (92.9)	14 (82.4)	7 (87.5)	8 (72.7)	7 (87.5)	10 (71.4)	17 (94.4)	17 (100)	15 (88.2)
	International	0 (0)	1 (7.1)	3 (17.6)	1 (12.5)	3 (27.3)	1 (12.5)	4 (28.6)	1 (5.6)	0 (0)	2 (11.8)
Region, if US	Northeast	5 (33.3)	4 (30.8)	2 (14.3)	2 (28.6)	2 (25)	1 (14.3)	0 (0)	2 (11.8)	3 (17.6)	3 (20)
	Midwest	5 (33.3)	2 (15.4)	7 (50)	2 (28.6)	3 (37.5)	3 (42.9)	6 (60)	5 (29.4)	5 (29.4)	4 (26.7)
	West	1 (6.7)	2 (15.4)	1 (7.1)	1 (14.3)	3 (37.5)	1 (14.3)	2 (20)	4 (23.5)	6 (35.3)	3 (20)
	South	4 (26.7)	5 (38.5)	4 (28.6)	2 (28.6)	0 (0)	2 (28.6)	2 (20)	6 (35.3)	3 (17.6)	5 (33.3)
	Unknown	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Years of experience	≤5‡	4 (26.7)	2 (14.3)	3 (17.6)	2 (25)	1 (9.1)	2 (25)	4 (28.6)	1 (5.6)	2 (11.8)	0 (0)
	6-12	0 (0)	4 (28.6)	2 (11.8)	3 (37.5)	1 (9.1)	4 (50)	2 (14.3)	8 (44.4)	3 (17.6)	4 (23.5)
	>12	9 (60.0)	5 (35.7)	8 (47.1)	3 (37.5)	7 (63.6)	1 (12.5)	5 (35.7)	5 (27.8)	8 (47.1)	9 (52.9)
	Unknown	2 (13.3)	3 (21.4)	4 (23.5)	0 (0)	2 (18.2)	1 (12.5)	3 (21.4)	4 (22.2)	4 (23.5)	4 (23.5)
Type of practice	Academic	12 (80)	13 (92.9)	12 (70.6)	6 (75)	9 (81.8)	6 (75)	11 (78.6)	13 (72.2)	15 (88.2)	16 (94.1)
	Community	2 (13.3)	1 (7.1)	4 (23.5)	2 (25)	2 (18.2)	2 (25)	2 (14.3)	4 (22.2)	2 (11.8)	1 (5.9)
	Govt	0 (0)	0 (0)	1 (5.9)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5.6)	0 (0)	0 (0)
	Unknown	1 (6.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7.1)	0 (0)	0 (0)	0 (0)
Task force chairs (2 per task force)											
Gender	Men	2 (100)	1 (50)	2 (100)	1 (50)	2 (100)	2 (100)	1 (50)	2 (100)	0 (0)	1 (50)

(Continued)

Table 2 (Continued)

	Original WBI	Update WBI	Original Bone mets	Update Bone mets	Original Pall thoracic	Update Pall thoracic	Original Brain mets	Update Brain mets	Original Endometrial	Update Endometrial
Women	0 (0)	1 (50)	0 (0)	1 (50)	0 (0)	0 (0)	1 (50)	0 (0)	2 (100)	1 (50)
URM	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Abbreviations: AIAN = American Indian/Alaska Native; mets = metastases; NA = not applicable/unknown; Pall thoracic = palliative thoracic; URM = underrepresented in medicine; US = United States; WBI = whole breast irradiation.
 * Patient representative not included.
 † Only includes individuals with known self-reported race/ethnicity; excludes individuals with unknown or unreported race/ethnicity.
 ‡ Including residents.

efforts by the Society and its committee leaders moving forward can affect sustained improvements in representation. An example from the American Society for Microbiology demonstrated that it was possible to improve gender diversity among annual meeting presenters in a short time frame when awareness of disparities was made to leadership.^{22,23}

Among those who did self-identify their race/ethnicity, there were 9 individuals who identified as URM, of which 8 were women. URM representation among task force members was significantly lower compared with URM representation among ASTRO members. These findings are consistent with a recent study showing the lack of inclusion of racialized individuals (via socially assigned race) in guideline panels published in high-impact journals, although that study showed a greater absence of non-White women instead of men.³ The 2 guidelines with URM chairs were among the guidelines (7 of 25) with any known URM. Separately, most URM task force members were from academic institutions (8 of 9 URM members). These findings demonstrate a need for improved capturing of race and ethnicity through membership self-disclosure and intentionality around the recruitment of women and URM, including from the community environment where even greater disparity in inclusion was noted.

ASTRO guideline task force participants were predominantly from academic institutions and tended to be more senior. Historically, task force members were selected because of their years of experience and presumed topical expertise with the assumption that this was necessary or a primary way to ensure a credible and respected guideline. This selection process was fraught with inherent bias and minimal accountability to ensure equity and fairness in selection on a task force. The de facto consequence is that task forces represented mostly non-URM men with >15 years of experience from an academic institution. However, if guidelines represent the best and most modern evidence to date, it begs the question whether having mostly senior leaders serving on task forces is singularly representative of expertise and ultimately best for the field,²⁴ and an improved balance of junior, midlevel, and senior individuals (with presumably the most clinical experience) may contribute to better consensus guidelines overall. Similarly, this analysis suggests that the inclusion of community specialists on these task forces needs improvement, given their unique perspectives and that they ultimately comprise a large proportion of radiation oncologists.

Another notable finding was the fact that there were 25 individuals who served on multiple different task forces, thus reducing opportunities for others or for “fresh” voices to be represented on the task force. Repeat representation on an updated guideline has been a deliberate part of the process to promote consistency and provide historical context. However, this was only the case for 3 individuals, as 22 individuals were on multiple different disease-site task forces, not just the updated guideline, thus serving as an expert in many different topics. Such hoarding of opportunities is ultimately counter to the principles of inclusivity, equity, and justice. Serving on

a guideline task force is helpful for building a national reputation and promotion, thus allowing more opportunities for junior individuals to give back to the field and aid in their promotion, which can propel them to future leadership positions within ASTRO. Such strategies to mitigate bias have previously been advised to achieve gender and racial equity in radiation oncology.^{20,25,26}

To our knowledge, this is the first evaluation of the diversity of task force participants for ASTRO guidelines. Given the changing field and our diversifying cancer population, it is important to determine whether task forces are reflective of this modern perspective. Previous analyses into general clinical practice guidelines have demonstrated low representation of women and racialized people, with a call to increase transparency surrounding selection processes and efforts to improve diverse representation on guideline panels.^{3,21} Notably, these studies did not include radiation oncology-specific guidelines, but, recognizing this limitation, called for future evaluation of guidelines published by specialty-interest societies such as ASTRO. Improvements can be made within our ASTRO guideline task forces and thus are ongoing. A goal of the selection process should be to recognize and attempt to remove biases and inequitable demographic imbalances in task force representation. The ASTRO Guideline subcommittee has initiated some efforts to improve the selection process for future members that serve on a task force. An online application initiative to recruit and draw a broader pool of participants as task force members may increase the diversity of future task forces.²⁷ In addition, self-nomination to serve on a task force has been proposed to further tackle the inequities associated with the selection process. Representation will be assessed on each guideline panel prospectively to ensure demographic diversity reflective of the ASTRO membership.

There are several limitations that must be addressed in this analysis. The data were collected and rely on the ASTRO membership database, which is entered by each individual member. However, there are many gaps and unknowns within the data set, particularly for race and ethnicity. At this time, we do not have the granular breakdown of the ASTRO general membership along intersectional demographic variables such as gender and URM status (eg, number of women URM), academic versus community practice, physician versus nonphysician, and others. In addition, the groups are too small to accurately determine any patterns of missingness. It is crucial that members, especially members serving on task forces, committees, or in other leadership roles, self-report these data, so that the community can understand the demographic composition of task forces that are creating guidelines. In the future, more initiatives from ASTRO may collect additional sociodemographic parameters about its members and volunteers, such as ableness, veteran status, sexual orientation, generation of tertiary learning, and other factors, all variables that were missing in this study, to ultimately ensure the representativeness and inclusion of diverse populations on the task forces. These data could then be used to further evaluate the diversity of future task force members and

further facilitate assessment of inequity and bias in the task force selection process to the benefit of all our patient communities. The ASTRO membership database does not have reliable data on disease-site subspecialization, thus a comparison between those who serve as disease-site subspecialists versus the task force composition could not be performed. In addition, we acknowledge that gender is nonbinary, however, data beyond “man” or “woman” is not available for this analysis. The NPI database only allows one to select “male” or “female,” thus those who do not identify as either are not appropriately captured. Additionally, we are unable to capture those who were invited to serve on a task force versus those who declined or had relevant disclosures that prevented participation—it is possible that more women or junior faculty were invited but declined at disproportionate rates. Finally, participants nominated by other societies are accepted by ASTRO uncontested, except when disclosures represent a conflict, and their race and ethnicity were not provided. Guidelines with a larger contingent of multidisciplinary participants from other societies contribute significantly to task force demographics but historically are not subject to ASTRO selection processes, and this related process should be reviewed. Nevertheless, these data provide a modern snapshot of the current composition of guideline participants and can serve as a benchmark for future analyses to evaluate the changing demographics over time.

Conclusions

Overall, we found that current ASTRO task force participants reflect the current ASTRO membership data with respect to gender, yet there are imbalances when removing task force disease sites that include breast/gynecologic cancers and some guidelines with little to no representation of women. In addition, URM representation among task force members lags behind URM representation among ASTRO members, with most guidelines having no URM representation. Intentional efforts are also needed to ensure the inclusion of community practitioners and those with varying years of practice. Re-evaluation of task force participants in the future will help determine whether these efforts have contributed to improved diversity, inclusion, and representation in the ASTRO guideline panels.

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