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Research Paper

Actual and perceived gender differences in virtual tumor board participation☆

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ABSTRACT

Introduction: Participant characteristics are known to affect group discourse and discussion outcomes. In medicine, many decisions are made by group consensus, therefore an understanding of these factors is highly relevant. We aimed to measure the effects of participant characteristics on tumor board discussions.
Methods: We performed a prospective, multi-institution, quantitative study of multi-disciplinary virtual tumor board meetings. Participant characteristics included age, gender, and clinical discipline. Outcomes of interest were speech events, duration, and discourse style. Participant impressions was assessed by a post-hoc survey.
Results: A total of 361 cases were discussed across 32 virtual meetings. Of the 283 attendees, 66.4 % were women, and all moderators were men. Women comprised 43 % of the 54 speakers, thus speaking less than male attendees ($p < 0.001$). No significant differences were detected in the duration or style of speech between men and women. Women participants commented more frequently on cases where the clinical attending was a woman (4.09 comments by women vs. 2.99 comments by men, $p < 0.001$), and less frequently when the attending was a man (2.48 comments by women vs. 3.20 comments by men, $p < 0.001$). On post hoc survey, men responded that they introduced ideas, guided discussions, and succeeded in influencing decisions significantly more than women reported that they did.
Conclusion: Women physicians were underrepresented in tumor boards as moderators, speakers, and attendings of record. Women physicians commented less on men physicians' patients. Women felt less impactful than their men counterparts, despite having the same duration and style of speech. Prompted participation, moderator feedback, talking points, and limiting the number of cases can be used to balance representation in discussions.

Introduction

Equal representation among peers in conference discussions is important in many fields and various factors have been hypothesized to influence discursive patterns. Much of the literature focuses on the effects of gender on the decision-making process, and the impact of age, race, discipline, and hierarchy on such are described as well. Experimental evidence demonstrates that in mixed-gender discussions on political/legal issues, women tend to speak less, feel less confident, and exercise less influence than men, and that the fewer women present, the more this disparity grows [1]. Women being in the minority is associated with a decrease in their perceived status and authority in group discussion [2]. When there are fewer women in a group, they tend to speak less and their influence on discussion is decreased [3].

Position or hierarchy also heavily influences participation, and is interrelated with gender. Dominance is significantly associated with longer speaking time, and the effect size is larger for men than women [4]. A review of studies on political debate in the United States Senate as well as in experiments assigning different levels of power to men and women found a strong positive relationship between power and volubility among males, but this effect did not occur for females. Interestingly, the desire to establish rapport with colleagues was significantly more likely to be expressed by women as compared to men [5].

Speech style is another measurable factor when assessing the content of discourse and its impact on participation. For example, women legislators were found to participate less in legislative committees when

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competitive, aggressive communication behavior was utilized by their peers; the same impact on men's participation was not observed [6]. A recent analysis of online, science-based, student chat groups showed that male-dominated chats were significantly more likely to use an "oppositional/direct" (OD) discourse style (characterized as confrontational, seeking independence and dominance) while female-dominated chats were more likely to use an "aligned/indirect" (AI) style (characterized as non-confrontational and polite). Despite these different styles, uptake of ideas was not found to differ between the genders [7].

While most research has focused on in-person discussions, a great deal of professional communication is now conducted virtually, particularly during the COVID pandemic. How this newly widespread online format affects gender dynamics in discussion is still being examined. In a recent comparison of in-person and virtual academic medicine learning environments, women were found to ask and answer fewer questions than men, and were more likely to use deferential language in large class settings; these disparities were attenuated in smaller, discussion-based, and virtual classes [8].

That discussant characteristics influence outcome is of great relevance to the field of medicine since many clinical decisions are made by group consensus. Particularly in the field of oncology, multidisciplinary tumor boards are considered a best practice in the development of a patient's treatment plan. Relatively little research has been done on how tumor board composition affects clinical discussions. Thus, the objective of this study is to determine if any qualitative or quantitative discrepancies exist between physicians in group decision-making by observation of tumor board meetings and analysis of participant surveys. These findings may offer insight into what, if any, changes in the discussion processes should be implemented to promote inclusiveness and productive discussion.

Methods

We performed a prospective, multi-institution, quantitative study of weekly, hour-long, multidisciplinary virtual tumor board meetings of four subspecialties: Gastric/Pancreaticobiliary, Primary Liver, Colorectal, and Neuroendocrine. These meetings were designated for assessment and decision-making regarding treatment recommendations for cancer patients. All four tumor boards were previously conducted in person, but were converted to virtual meetings conducted using Zoom® software.

Approval for this study was obtained from the Institutional Review Board with a waiver of written consent. Prior to initiation of the study, an email was sent to each of the meetings' invited participants informing them of the study outline, including the use of recordings and an option to opt-out of the study at any time. In addition, study information sheets were e-mailed to all subjects before each of the meetings, and an informational slide was also presented at the beginning of each meeting.

Recordings were performed between April and July 2021 with a goal of reaching 32 meetings with equal distribution among subspecialties. Meetings were recorded using (Open Broadcaster Software®) screen capture software. The recordings were stored on a password protected shared drive, accessible only to key study personnel, and were deleted after data analysis. Two trial recordings were performed and the data from these tumor boards were not included in the analysis.

Data from meetings were collected using pre-defined abstraction sheets [Appendix A]. Individuals who logged into conference for any duration were counted as attendees; individuals who spoke were counted as speaking participants. Data from non-physician participants, physicians of medical fields other than the defined disciplines, and study personnel involved in data collection and analysis were excluded from the study. Data from the presenting fellow and the attending radiologist who presented the imaging were not included in speaking duration tabulations since these were assigned roles with speaking requirements.

Subject participation was analyzed by each patient discussed. Subjects were categorized according to their age, gender, medical specialty, academic rank, and by role (e.g., presenter, moderator, clinical attending of record, discussant). Gender was categorized through participants' self-selected gender specific pronouns on their hospital profile. Medical disciplines were categorized as surgeon, medical oncologist, radiation oncologist, radiologist, interventional radiologist, or gastroenterologist. Age, academic rank, and discipline were obtained via public resources such as the hospital directory website.

Primary endpoints included number of speaking events and speaking duration measured in minutes. Secondary endpoints included agreements and disagreements with others, interruption of others, being interrupted by others, pace of speech, and "aligned/indirect" (AI) and "oppositional/direct" (OD) discourse styles. Examples of AI discourse include "I think", "maybe", "please", "sorry", "thank you", etc. Examples of OD discourse include "by no means", "obviously", "it is clear", "never", etc. [7] AI and OD modes of discourse were discussed between abstractors to achieve uniformity and increase validity in abstractions. Note was also made of whether participant's camera was on or off during meetings.

Three co-authors performed data abstraction. Personnel performing abstraction of the data each received clear instructions on data collection. To increase inter-rater reliability and ensure consistency and clarity of the collection process, a practice session was held wherein one tumor board recording was abstracted by all three personnel; the data were compared, and differences were discussed and resolved. During the study period, each meeting was primarily analyzed by two abstractors; any discordance in abstraction was resolved through re-analysis of the recordings by the third abstractor.

After all recordings were complete, tumor board participants were sent an anonymized survey containing 28 questions used to assess participants' subjective experiences during the meetings [Appendix B]. Questions were adopted from validated surveys in the published literature on the subject [3,5].

Statistical analysis was performed with SPSS 23 using one and multiple-way analysis of variance (ANOVA) to compare variances across means (or average) of different groups; independent-samples *t*-test was used to compare means of two groups; Mann-Whitney-*U* test was used to compare distributions; Kruskal-Wallis test was utilized in cases of multiple comparisons; Spearman correlation was used to evaluate relationships; and Chi Square or Fisher's Exact tests were used to determine whether statistically significant differences exist between expected and observed frequencies, as appropriate. A value of $p < 0.05$ was considered statistically significant.

Results

A total of 32 meeting recordings were analyzed, with equal distribution between the four subspecialties. Cases were presented from five regularly participating institutions within our health system. No requests were made to opt-out of the study. There were 361 individual patient cases discussed with the number of cases ranging from 7.5 to 15.8 patients discussed per tumor board meeting. There were 283 unique attendees, of whom 66 % were women. In total, 54 individuals spoke during conferences, fewer speakers (43 %) were women ($p < 0.001$) [Table 1] There was no difference between women and men speakers in regards to academic rank, age, or specialty (surgical vs non-surgical) [Table 1].

All tumor boards had men moderators holding senior academic ranks: two from medical oncology, two from surgical specialties, and one from interventional radiology (one tumor board had a surgeon and interventional radiologist serving as alternating moderators). The prominence of the moderator varied considerably, with some moderators commenting after each case, and others only commenting occasionally or briefly. Median total speaking duration for moderators was 7.58 min (IQR 7.3, 14.2), representing 36.7 % of the total discussion time.

The analysis of participant speaking duration, number of

Table 1
Tumor board attendee demographics.

	n	Women	Men	*P* value
Patient cases	361			
Tumor board sessions	32			
Total attendees[a]	283	187 (66.4 %)	96 (33.6 %)	<0.001
Speakers	54	23 (42.6 %)	31 (57.4 %)	
Speaker rank				0.78
Professor	21 (39 %)	9 (17 %)	12 (22 %)	
Associate	11 (20 %)	3 (5.5 %)	8 (15 %)	
Assistant	16 (29 %)	6 (11 %)	10 (19 %)	
Fellow/resident	6 (11 %)	3 (5.5 %)	3 (5.5 %)	
Speaker age				0.16
<40 years	20 (37 %)	9 (17 %)	11 (20 %)	
41–60 years	29 (53.7 %)	12 (22 %)	17 (31 %)	
>60 years	5 (9.3 %)	0 (0 %)	5 (9.3 %)	
Speaker discipline				0.27
Non-surgeon	23 (42.6 %)	7 (13 %)	16 (29 %)	
Surgeon	31 (57.4 %)	14 (26 %)	17 (31 %)	

[a] Any individual who was present during any portion of the tumor board meetings. Data from non physician participants, physicians of medical fields other than the defined disciplines surgery, medical oncology, radiology, radiation oncology, interventional radiology or gastroenterology and study personnel involved in data collection and analysis were excluded from the study analysis.

agreements/disagreements, interruptions/being interrupted, and AI/OD discourse is presented in Table 2. Speech events and speaking duration were greater for surgeons than non-surgeons, although this did not reach statistical significance [24 attempts (IQR 14.5–84.5) vs. 11.5 attempts (IQR 3.8–68.8) and 7.4 min (IQR 3.3–16.7) vs. 2.4 min (IQR 0.8–22.3), respectively]. Surgeons were found to interrupt other speakers more frequently than non-surgeons [median 1.5 (IQR 0.5–3) vs. 0.5 (IQR 0–1.5), respectively; $p = 0.047$]. Participants over 60 years of age disagreed significantly more [median 0.001 (IQR 0–1.5); $p = 0.006$], were interrupted more frequently [median events 3 (IQR 1–3.5); $p = 0.0478$], and left their cameras on more frequently [median 0.969 (IQR1.873–1); $p < 0.001$] as compared to other age groups.

Analysis of the effect of gender showed no statistically significant differences between men and women participants for any of the recording variables. Although women spoke proportionally less than men, the speech duration among speaking participants was similar. Discourse styles such as the use of AI and OD phrases was not significantly different between genders. However, men were noted to have interrupted others (72.8 % vs. 27.2 %, p = NS) and were interrupted (73.1 % vs. 26.9 %, p = NS) more frequently than women.

The clinical attending of record was a woman in 34 % of the cases presented. Women commented more frequently than men on cases where the clinical attending was a woman (4.09 comments by women vs. 2.99 comments by men, $p < 0.001$), and less frequently than men when the attending was a man (2.48 comments by women vs. 3.20 comments by men, $p < 0.001$); whereas men commented equally irrespective of the gender of the attending of record (Table 3).

Survey responses were received from 51 anonymous attendees: 20 % of responders were under 40 years of age, 42 % were faculty members, 22 % were surgeons, and 47 % were women (Table 4). Men responded that they felt that they fueled conversation (19 % vs. 7 %, respectively; $p = 0.003$) and guided discussions (14 % vs. 4 %, respectively; $p = 0.018$) more often than women reported they did. Men also reported that they attempted (17 % vs. 5 %, respectively; $p = 0.002$) and succeeded in (16 % vs. 4 %, respectively; $p = 0.004$) influencing opinion more than women respondents felt they did. When compared to surgeons, non-surgeons felt that they participated more, (8 % vs 2 %, respectively; $p = 0.027$), 'tried to guide discussion and help it move effectively' (13 % vs 4%respectively; $p = 0.002$), 'made tactful comments to heal any hurt feelings that might arise during discussion' (8 % vs. 2 %, respectively; $p = 0.027$) and attempted to 'harmonize differences of opinion' (9 % vs. 3 %, $p = 0.037$). Non-faculty members were more concerned than faculty members about being perceived as "acting out of line" (3 % vs. 1 %,

Table 2
Speaker characteristics.

	Total	Proportional	Distribution median (IQR)	*P* Value
Speaking duration (minutes)	794.1	14.7/speaker	5.5 (1.6, 18.9)	
Women ($n = 23$)	330.9	41.7 %	4.3 (1.4, 28.2)	0.86
Men ($n = 31$)	463.3	58.3 %	5.9 (2.0, 14.5)	
Surgeon (n = 31)	546.1	68.8 %	7.4 (3.3, 16.7)	0.08
Non-surgeon (n = 23)	248.1	31.2 %	2.4 (0.8, 22.3)	
Age				
<40 ($n = 22$)	257.8	32.5 %	7.2 (1.4, 18.5)	0.91
41–60 ($n = 27$)	400.8	50.5 %	5.1 (2.4, 21.0)	
>60 ($n = 5$)	135.6	17.1 %	4.4 (3.1, 13.8)	
Speech events	3245	60.1 / speaker	19 (8.1, 74.5)	
Women	1142.5	35.2 %	19.5 (7.5, 104.3)	0.94
Men	2102.5	64.8 %	18.5 (8.3, 63.8)	
Surgeon	2171.5	66.9 %	24 (14.5, 84.5)	0.11
Non-surgeon	1073.5	33.1 %	11.5 (3.8, 68.8)	
Age				
<40	734.5	22.6 %	15.25 (4.6, 50.5)	0.37
40–60	1858.5	57.3 %	19.5 (10.0, 104.3)	
>60	652	20.1 %	23 (16, 128)	
Agreements (events)	468.6	8.7 / speaker	2.5 (1, 7.8)	
Women	146.1	31.2 %	2 (0.5, 4.5)	0.20
Men	322.5	68.8 %	3 (1, 8)	
Surgeon	291.5	62.2 %	3 (2, 7.5)	0.08
Non-surgeon	177.5	37.3 %	1 (0.3, 6.5)	
Age				
<40	78	16.7	2 (1, 5)	0.49
40–60	345.1	73.7	2.5 (1.3, 17.3)	
>60	45.5	9.7 %	1 (1, 7)	
Disagreements (events)	28.5	0.5 /speaker	0 (0,0)	
Women	6	21.1 %	0 (0, 0)	0.76
Men	22.5	79.0 %	0 (0, 0)	
Surgeon	24	84.2 %	0 (0, 0.8)	0.17
Non-surgeon	4.5	15.8 %	0 (0, 0)	
Age				
<40	0	0 %	0 (0, 0)	0.006
40–60	22.5	79.0 %	0 (0,1)	
>60	6	21.1 %	0 (0, 1.5)	
Was interrupted (events)	193.5	3.6 /speaker	1 (0, 3.4)	
Women	52	26.9 %	0.5 (0, 3.25)	0.27
Men	141.5	73.1 %	1.5 (0.25, 3.25)	
Surgeon	129	66.7 %	1 (0, 3.25)	1
Non-surgeon	64.5	33.3 %	1 (0,3)	
Age				
<40	34	17.6 %	0.25 (0, 1.75)	0.0478
40–60	110	56.9 %	2 (0.75, 3.25)	
>60	49.5	25.6 %	3 (1, 3.5)	
Interrupted another speaker (events)	189.5	3.5 / speaker	0.75 (0,2)	
Women	51.5	27.2 %	0.5 (0, 2)	0.57
Men	138	72.8 %	1 (0.3, 2.5)	
Surgeon	143	75.5 %	1.5 (0.5, 3)	0.0468
Non-surgeon	46.5	24.5 %	0.5 (0, 1.5)	
Age				
<40	14.5	7.7 %	0.3 (0, 0.9)	0.0035
40–60	117	61.7 %	1.5 (0.5, 6)	
>60	58	30.6 %	1.5 (1,21)	
Aligned indirect style (events)	1623	30.1 / speaker	9.5 (4, 31.8)	
Women	611	37.6 %	8 (1, 40.5)	0.60
Men	1012	62.4 %	11 (5, 30.5)	
Surgeon	1068	65.8 % /speaker	14 (5.5, 32.5)	0.18
Non-surgeon	555	34.2 %	8 (1, 31.5)	
Age				
<40	310	19.1 %	9 (1.3, 28)	0.47
40–60	1045	64.4 %	10 (5.5, 44.5)	
>60	268	16.5 %	6 (5, 18)	
Oppositional defiant style (events)	244	4.5 / speaker	1 (0, 6.5)	

(*continued on next page*)

Table 2 (*continued*)

	Total	Proportional	Distribution median (IQR)	*P* Value
Women	91	37.3 %	1 (0, 6.5)	0.72
Men	153	62.7 %	1 (0, 6)	
Surgeon	166	68.0 %	1 (0, 5)	0.74
Non-surgeon	78	32.0 %	1 (0, 7.5)	
Age				
<40	57	23.4 %	1.5 (0, 4)	0.90
40–60	153	62.7 %	1 (0, 8.5)	
>60	34	13.9 %	0 (0, 8)	

Table 3
Commenting patterns between genders.

Total cases = 361	Case with man attending ($n = 238$)	Case with woman attending ($n = 123$)	*P* Value
Comments by men participants, mean, per all men	3.20 (95 % CI 2.96–3.44)	2.99 (95 % CI 2.59–3.39)	NS
Comments by women participants, mean, per all women	2.48 (95 % CI 2.19–2.77)	4.09 (95 % CI 3.65–4.52)	<0.001
p-Value	<0.001	<0.001	

Table 4
Survey analysis.

	Total $n = 51$	Men $n = 27$ (53 %)	Women $n = 24$ (47 %)	*P* Value
% Feel they fuel discussion	26	19	7	0.0033
% Try to influence the group's opinion	22	17	5	0.0024
% Feel they strongly try to guide discussion and help it move effectively	18	14	4	0.0176
% Feel successful in influencing the group's opinion	20	16	4	0.0036

respectively; $p = 0.008$). Faculty members felt significantly more contributive to the meetings than non-faculty members in fueling discussion (25 % vs. 1 %, respectively; $p = 0.021$), successful in influencing the group's opinion (20 % vs. 0 %, respectively; $p = 0.016$) and keeping relationships between members cordial and friendly (37 % vs. 4 %, respectively; $p = 0.017$).

Discussion

In this study of discourse at virtual tumor boards, there were several findings, most notably regarding the impact of gender on participation and impression. Women physicians were underrepresented in tumor boards as moderators, speakers, and clinical attendings of record at this multi-institution health system. Among speaking participants, no differences in the duration or patterns of speech were detected between men and women; nevertheless, the post-hoc survey revealed that men felt they introduced ideas, guided discussion, attempted and succeeded in influencing opinion significantly more than women felt that they did. In other words, women felt less impactful, despite contributing an equal amount of speaking time. Lastly, women tumor board participants were significantly more likely to comment on a case when the clinical attending for the patient was a woman, and less likely to comment when the clinical attending was a man, whereas comments by men were not impacted by gender of the clinical attending.

Recent clinical studies have demonstrated that input from female physicians is critical, with measurable differences in patient outcomes. A population based cohort by Wallis et al. [9] of patients undergoing surgical procedures in Ontario, Canada found fewer deaths, readmissions, and 30-day complications in patients treated by female surgeons (11.1 % composite event rate vs. 11.6 %, respectively; adjusted odds ratio 0.96, $p = 0.02$). Tsugawa et al [10] demonstrated in an analysis of >1.5 million cases that patients had both lower 30-day mortality and 30-day readmissions when treated by female versus male physicians after accounting for potential confounders (11.07 % vs 11.49 %; and 15.02 % vs 15.57 %; $p < 0.001$ for both, respectively). Interestingly, a study by Greenwood et al [11] demonstrated that physician-patient gender concordance had a significant positive effect on survival ($p < 0.01$) with gender concordance reducing probability of death by 5.4 %; conversely, increased mortality was found when male physicians treated female patients [11]. The study further indicates a decrease in mortality rates when male physicians practice with more female colleagues, again highlighting the need for gender-balanced participation in tumor boards.

As noted, all tumor board moderators in this study were men holding senior academic ranks. This is consistent with other studies demonstrating a paucity of women in leadership positions. Wu and colleagues [12] showed that in the leading surgical societies of North America and Europe, women comprised only 16.7 % of individuals on committees and subcommittees. Women were also under-represented in academic ranking, number of leadership positions, number of citations, total publications, and h-index (metric used to measure cumulative impact of an author's scholarly output and performance) [12]. Our finding that women physicians spoke up less frequently in men-run tumor boards mirrors a study of upper-level life-science courses which showed that females participated more in classes when the instructor was female [13]. Interestingly, the participation gap was narrowed simply by calling on most students whose hands were raised – regardless of whether the called upon student was male or female. Therefore, participation from women physicians can be promoted/validated by having more female moderators, but also by asking male moderators to encourage more participation by all.

In this study, there were no planned pauses or regular prompts to elicit comments about cases, it was left up to the moderator and to the participants to interject or ask for clarification. A study on discourse in American Society of Clinical Oncology committees found that certain characteristics of leader behavior greatly influenced the climate and behavior within groups, including explicitly encouraging and inviting input, openness to new ideas, and inviting nurse managers to coordinate the involvement of all members, which tended to break down hierarchy [14]. Multiple tools [15,16] have been developed to assess moderator skills during in person and virtual tumor boards; valued criteria included: time management, communication, encouraging contribution, case prioritization, keeping meeting focused, facilitate discussion, conflict management, creating good working atmosphere, recruitment for clinical trials, and clinical decision-making consistency. Thus, regular feedback of moderator conduct might be a useful method for promoting inclusiveness as well.

In our study, while men and women participants contributed an equal amount of speech duration, women felt their input was not considered as strongly as men's. Although we did not assess why women participants felt this way, evidence from the business literature suggests that the issue is pervasive. In a study of executives from top companies, women reported feeling unable to advocate forcefully for their perspectives in meetings [17]. Researchers suggest that women can increase their impact at meetings by preparing in advance: recommendations include preparing “talking points” with key evidence and holding “pre-meetings” where plans are informally discussed with stakeholders beforehand [17].

Improvements in the structure of tumor board meetings also need to be considered. This study provides examples of four tumor boards with variable dynamics including the number of cases discussed. Conferences in this study averaged 7.5–15.8 patients discussed per hour-long session. Other tumor boards reported in the literature suggests that presenting

5–8 patients per hour is a more optimal case load to allow for detailed discussions [18,19]. While this may be considered impractical due to clinical demands, other high-volume centers with >10 years' experience have demonstrated feasibility. Allowing more time for each presentation may allow for more inclusive discussion, suggesting that mandating a standardized number of patients for conference should be considered.

The virtual format of the tumor boards in this study might have been expected to ameliorate representation disparities since identities are arguably less apparent. Indeed, most attendees did not have their video cameras on during conferences. However, some evidence in the literature suggests greater performance disparities favoring men are seen in virtual, synchronous lecture formats [20]. This is a concerning finding given the mandatory adoption of virtual formats during peaks of the COVID pandemic, and because many institutions appear to now prefer virtual, or at least hybrid conference formats [15,21].

The strengths of this study include the prospective nature of the recordings, the rigorous methodology of data collection, the inclusion of tumor boards of different subspecialties, and the use of a post-hoc survey for feedback from participants. Limitations include the lack of generalizability of findings to other institutions and the subjective nature of the participant surveys. In addition, our study did not characterize the content of participant comments, limiting assessment.

There is also a potential for bias by the Hawthorne Effect as participants of tumor board were aware of the ongoing study. However, since the participants were observed over several tumor boards spanning four months, this bias was likely reduced as the subjects became accustomed to being recorded. Lastly, several numerical differences were noted between genders in speaking attempts, agreements, interruptions, and use of AI discourse, although none reached statistical significance, suggesting that the study is underpowered for these outcomes.

In conclusion, in the virtual multidisciplinary tumor board discussions analyzed in this study 1) women physicians were underrepresented as moderators, speakers, and clinical attendings of record at this multi-institution health-system; 2) women physicians commented less on men physicians' patients; and 3) women physicians overall felt less impactful, despite contributing an equal duration of speaking time. The establishment of numerical equality of women physicians in leadership roles is an important long-term goal, however the effect of this gender disparity can be ameliorated in the short-term by expecting moderators to prompt for greater participation, which may be facilitated by limiting the total number of patients discussed and providing regular moderator feedback. Underrepresented physicians may also increase their imact at meetings by preparing talking points in advance.

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Ethics

All study activities were conducted in accordance to the regulations set by the Institutional Review Board and was approved for waiver of written consent.

CRediT authorship contribution statement

Concept and Design: Berger, Sarpel.

Acquisition, analysis, or interpretation of data: Berger, Buseck, Imtiaz, Horn.

Drafting of the manuscript: Berger, Buseck.

Critical revision of the manuscript: all authors.

Declaration of competing interest

We know of no conflict of interested associated with our publication.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.sopen.2023.09.004.

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