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## Identifying Gender-Related Differences in Graduate Medical Education with the Use of a Web-Based Professionalism Monitoring Tool

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### Abstract

**Objectives:** Medical education is required to ensure a healthy training and learning environment for resident physicians. Trainees are expected to demonstrate professionalism with patients, faculty, and staff. West Virginia University Graduate Medical Education (GME) initiated a Web-based professionalism and mistreatment form (“button”) on our Web site for reporting professionalism breaches, mistreatment, and exemplary behavior events. The purpose of this study was to identify characteristics in resident trainees who had a “button push” activation about their behavior to better understand ways to improve professionalism in GME.

**Methods:** The West Virginia University institutional review board–approved quality improvement study is a descriptive analysis of GME button push activations from July 2013 through June 2021. We compared characteristics of all of those trainees who had specific button activation(s) about their behavior. Data are reported as frequency and percentage. Nominal data and interval data were analyzed using the  $\chi^2$  and the *t* test, respectively.  $P < 0.05$  was significant. Logistic regression was used to analyze those differences that were significant.

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**Results:** In the 8-year study period, there were 598 button activations, and 54% (n = 324) of the activations were anonymous. Nearly all of the button reports (n = 586, 98%) were constructively resolved within 14 days. Of the 598 button activations, 95% (n = 569) were identified as involving one sex, with 66.3% (n = 377) identified as men and 33.7% (n = 192) as women. Of the 598 activations, 83.7% (n = 500) involved residents and 16.3% (n = 98) involved attendings. One-time offenders comprised 90% (n = 538), and 10% (n = 60) involved individuals who had previous button pushes about their behavior.

**Conclusions:** Implementation of a professionalism-monitoring tool, such as our Web-based button push, identified gender differences in the reporting of professionalism breaches, because twice as many men as women were identified as the instigator of a professionalism breach. The tool also facilitated timely interventions and exemplary behavior recognition.

### Keywords

gender; medical education; professionalism; resident

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Medical education is required to ensure a healthy training environment for resident physicians. Trainees are expected to demonstrate professionalism with patients, faculty, and staff. Lapses in professionalism occur commonly. A growing body of literature addresses gender bias in medical education.<sup>1-7</sup> In a systematic review and meta-analysis, Fnaies et al<sup>8</sup> found that the prevalence for harassment and gender discrimination during residency training was 63%. Gender discrimination was the most common form of abuse, with a prevalence of 67%, followed by verbal harassment at 58% and racial discrimination at 26%.<sup>8</sup> Women resident physicians begin to experience discrimination, harassment, and bias early in residency, enough so that their counterpart male residents acknowledge this discrimination.<sup>9</sup> Furthermore, a majority of junior female residents report not feeling comfortable pointing out errors in patient care made by senior male physicians.<sup>9</sup> Female residents reported that their medical decision making is challenged more frequently than that of their male counterparts and that they receive negative feedback on residency evaluations for displaying assertive leadership behavior.<sup>1,2,10</sup> Compounding the problem is a concept of “stereotype threat,” where members of a group characterized by negative stereotypes perform below their actual abilities in situations in which the negative stereotype becomes noticeable.<sup>3,11</sup> Motherhood and maternity leave can accelerate these gender differences in residency training.<sup>3,12-14</sup> When female residents assume leadership roles and display agentic behavior defined by feeling compelled to obey orders from a higher authority in an organized status hierarchy, they may incur a professionalism penalty for violating expected gender roles (a phenomenon that has been described as “role incongruity” or the “like ability penalty”).<sup>3,4,11,12,15,16</sup>

Many studies have revealed differences in the evaluations of men and women residents across multiple specialties by both physician staff and allied health professionals.<sup>2,3,5,6,17-21</sup> Dayal et al<sup>3</sup> found that although male and female residents receive similar evaluations at the beginning of residency, the rate of milestone attainment throughout training was higher for male than for female residents across all emergency medicine subcompetencies, causing a gender discrepancy in evaluations that continued until graduation. The higher rate of attainment for men occurred after the first year of residency and persisted throughout

their training. By graduation, men were evaluated approximately 0.15 milestone levels higher than women (equivalent to 3 to 4 months of additional training).<sup>3</sup> Likewise, Landau et al<sup>7</sup> noted no gender differences in initial milestone score, but they did discover significantly lower mean milestone scores for female residents at the final postgraduate year 5 assessment for several subcompetencies. In their study, multilevel mixed-effects linear modeling demonstrated that female trainees had strikingly lower rates of monthly milestone attainment in the subcompetency of medical knowledge, which was associated with a significant difference in training time of approximately 1.8 months.<sup>7</sup> This widening in gender discrepancy, especially in the later years of residency training, further highlights the cumulative effects of the repeated disadvantages women endure throughout their residency training.<sup>3</sup> A study surveying more than 1000 US academic medical faculty found that 70% of women perceived gender bias in the academic environment compared with 22% of men.<sup>3</sup> Hence, faculty should be cognizant of possible gender bias when evaluating medical trainees.<sup>3</sup> Because women currently represent half of the students enrolled in US medical schools, underrepresentation in medical schools cannot be the cause for gender discrepancies in medical education training.<sup>1</sup>

The discrepancies along gender lines described above are issues related to the competency of professionalism. By implementing a Web-based, professionalism monitoring tool, we aim to identify gender-related differences in resident trainees who had a “button push” activation about their behavior to better understand ways to improve professionalism in graduate medical education (GME).

## Methods

This descriptive analysis received local investigational review board approval. The Department of Graduate Medical Education developed a tool to collect observations from medical personnel about resident and faculty professionalism. This tool is an online professionalism and mistreatment form, which is located on our GME Web site (<http://medicine.hsc.wvu.edu/gme>) (Appendix). An online format was chosen because it is suitable for medical personnel participants, who are familiar with and frequently access the Internet.<sup>22</sup> The form also can be accessed with use of a cellular telephone, rendering it user friendly, readily accessible, and cost-effective as opposed to that with hotline utilization. The professionalism form includes two statements and four questions. The introductory statement on the form contains the following explanation: “*Physicians in training must be held to a high standard of professionalism in all areas of their lives. These standards are not intuitive, and must be taught and reinforced both by formal education and by constructive formative feedback. If you have witnessed a resident or fellow displaying either a lapse in professionalism or exemplary professionalism, please complete the information below and provide us with the details. Help us to improve our working and learning environment.*” There is then a prompt to indicate whether there was an episode of exemplary professionalism or lack of professionalism, and then a text box within which to describe the incident. The text box is followed by this verbiage: “*The e-mail field is now mandatory. These reports come directly to the GME Office, and your identity will be protected, if that is your choice. Please indicate your preference by making your choice below your e-mail address. If you do not indicate a preference, your e-mail address will be shared with the*

*investigators.*” A text box follows the verbiage in which the e-mail of the reporter can be typed, and the final question asks for the reporter to choose anonymity or not. All faculty, trainees, and other healthcare professionals are educated about the proper use of this tool. The completed form (known as a button push) is sent to the designated GME coordinator for processing, investigation, and follow-up. The GME coordinator verifies the information on the button push as well as demographic data (eg, resident, faculty, year in training, gender) and follows up with the reporter if additional information is needed. All of the data and follow-up information is entered into a GME database that is located on a GME-specific hard drive and password protected. If an event involves a resident, then the GME coordinator sends the button push details to the respective program director. Button push information about attending physicians is sent to the respective department chairperson, and if the button push is about nursing personnel, the chief nursing officer or chief medical officer are alerted. A summary of the event and resultant actions by the respective leadership of the involved party is returned to the GME coordinator within 2 weeks. All of the summary actions are viewed and discussed at monthly GME taskforce meetings, and it is determined whether further intervention is needed or whether the issue has been satisfactorily resolved.

Data are presented as number (n) and percentage (%) across each theme for both residents and faculty by gender. X<sup>2</sup> or exact *P* values are presented for all dependent variables by male (or nonmale) offender. Unadjusted odds ratios (ORs) with accompanying 95% confidence intervals (CIs) also are reported. All of the analyses were conducted using SAS statistical software 9.4 (SAS Institute, Cary, NC).

## Results

In the 8-year study period, there were 598 professionalism button activations, and 54% (n = 324) of the activations were submitted anonymously. Nearly all button pushes (n = 586, 98%) were constructively resolved between parties within 14 days (Table). Of the 598 button activations, 95% (n = 569) were identified as involving 1 sex, with 66.3% (n = 377) identified as men and 33.7% (n = 192) as women. Of the 598 activations, 83.7% (n = 500) involved residents and 16.3% (n = 98) involved attendings. One-time offenders comprised 90% (n = 538), and 10% (n = 60) involved those who had previous button activations. Exemplary reports accounted for 25% (n = 145) of all of the reports, with no differences noted between the sexes.

Regarding gender trainee differences, a male was more likely to report on a female trainee (11.3% vs 19.8%, *P* = 0.005, OR 0.5, 95% CI 0.3–0.8) (Table). A male trainee also was more likely to have a repeat report from a faculty attending (4.7% vs 1.4%, *P* = 0.04, OR 3.5, 95% CI 1.0–11.9) (Table). A male trainee also was more likely to have a report generated from an inpatient (98.2% vs 92.5%, *P* < 0.001, OR 4.4, 95% CI 1.8–10.8), whereas a female trainee was more likely to have a report generated from an outpatient (1.3% vs 4.7%, *P* = 0.03, OR 0.3, 95% CI 0.1–0.8) (Table).

With respect to specific departments, a male trainee was most likely to be reported upon in general surgery (24.0% vs 17.0%, *P* = 0.04, OR 1.6, 95% CI 1.0–2.4) and orthopedics (6.0% vs 0.9%, *P* = 0.002, OR 6.7, 95% CI 1.6–28.9) (Table). A female trainee was more likely

to be reported upon in pediatrics (3.6% vs 10.9%,  $P < 0.001$ , OR 0.3, 95% CI 0.2–0.6), obstetrics/gynecology (2.1% vs 5.7%,  $P = 0.03$ , OR 0.4, 95% CI 0.1–0.9), and nursing (0.3% vs 7.1%,  $P < 0.001$ , OR 0.03, 95% CI 0.01–0.3) (Table).

## Discussion

Medical educators must model professionalism and, as such, foster humanistic learning and working environments in which professionalism flourishes unabated. The button push is a replicable monitoring tool to help expeditiously identify actions and behaviors indicative of objectionable or commendable professionalism amid GME residents and attendings.

Our findings that difference exists along gender lines regarding professionalism among GME trainees adds to the medical literature on this topic.<sup>1,2,8-10</sup> Newly identified information is that gender plays a strong role in specific department program button activations. Orthopedic surgery is a specialty predominantly composed of male clinicians, and most of the activations in that department involved men. Obstetrics and gynecology is a specialty with a predominance of female clinicians, and most activations in that department involved women.

We found that button activations in the nursing realm were more likely to involve a male trainee ( $P < 0.001$ ). This gender pattern related to nursing professionalism has been noted in prior studies. In general, female nurses have greater satisfaction when communicating with female physicians than when communicating with male physicians.<sup>10,23,24</sup> Porter<sup>25</sup> found that nurses believe that most female physicians are considerably more egalitarian (ie, the principle in the belief that all people are equal and deserve equal rights and opportunities) than most of their male counterparts.

Even though approximately 8 in 10 button pushes involved residents, professionalism breaches by attendings are equally noteworthy, particularly when coupled with gender differences in evaluation. As reported by Dayal et al<sup>3</sup> and Landau et al,<sup>7</sup> gender-biased evaluation by faculty can delay trainee milestone attainments throughout the training program, therefore negatively influencing their trajectory toward graduation.

All of the reports of unprofessionalism in this study were promptly investigated, addressed, and resolved within 14 days of a button push. The finding of only 10% repeat offenders may signify the effectiveness and validity of button push strategies in curtailing future occurrences of unprofessional behavior.

Our study has several limitations. This database may not have included all of the observable button pushes that could confound the association between gender and professionalism. In addition, reporter anonymity can restrict garnering detailed information in the investigatory phase. Even though all faculty, trainees, and other healthcare professionals are oriented to the button push purpose and procedures before use, no advanced calibration occurs to ensure uniformity in gathering circumstantial information about reported breaches or providing feedback on unprincipled or exemplary professional behavior. Our results are limited to one institution and may not be representative of other institutions. In addition, the amount of

patient contact may not be evenly distributed among men and women, clinical services, residents, and faculty.

## Conclusions

Implementation of our Web-based button push professionalism monitoring tool identified gender differences in the reporting of professionalism breaches and allowed for timely, focused interventions and recognition of exemplary behavior. Although no gender distinction was identified regarding exemplary professionalism reports, it is important to note that men were identified as the instigator of professionalism infractions twice as often as women. This gender difference finding demonstrates a need to enhance awareness of gender-related bias in GME through tailored development workshops and policies denouncing bias in the academic, clinical, and workplace settings. Other institutions should consider the implementation of a Web-based monitoring tool to gain a better understanding of professionalism issues that promote or hinder humanistic learning and working environments. The challenge would be to determine how to positively affect, modify, and change professional behavior in the clinical work environment, where differences in social cultural norms still exist. The button push Web-based tool reinforces policies and complements other practices that foster professionalism, and, as such, cultivates superior learning, working, and patient care environments. Future research is needed in three main areas: to better understand the reasons behind gender differences in professionalism breaches, to determine the optimal training to address this issue, and to determine whether training changes the frequency and types of reported breaches.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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### Key Points

- Gender differences do exist regarding professionalism among graduate medical education trainees, in which twice as many men compared with women are identified as the instigator.
- Gender plays a major role in specific department program button activations.
- Implementation of a professionalism Web-based monitoring tool can be used to monitor professionalism in graduate medical education.



**Table.**

Contingency table of all dependent variables by male offender reports

Dependent variable	Male offender		Not male offender (female or unknown)		$\chi^2$ or exact <i>P</i>	OR	
	N	%	N	%		OR	95% CI
Resident	302	79.89	138	67.65	0.0012	1.90	1.29–2.80
Attending	69	18.02	28	13.15	0.12	1.45	0.90–2.34
Resolved	249	98.03	129	98.47	0.76	0.77	0.15–4.04
Anonymous reporter	213	55.61	110	51.64	0.35	1.17	0.83–1.64
Male reporter	43	11.26	42	19.81	0.005	0.51	0.32–0.81
Female reporter	127	33.16	60	28.30	0.22	1.26	0.87–1.81
Type of button push							
Mistreatment	48	12.53	25	11.74	0.78	1.08	0.64–1.80
Supervision	5	1.31	1	0.47	0.43	2.80	0.33–24.16
Professionalism	231	60.31	132	61.97	0.69	0.93	0.66–1.32
Exemplary	98	25.59	51	23.94	0.66	1.09	0.74–1.61
Other	1	0.26	4	1.88	0.06	0.14	0.02–1.23
Departments ( <i>P</i> < 0.05)							
Surgery	92	24.02	36	16.98	0.04	1.55	1.01–2.37
Pediatrics	14	3.66	23	10.85	0.0007	0.31	0.16–0.62
Ob-Gyn	8	2.09	12	5.66	0.03	0.36	0.14–0.88
Nursing	1	0.26	15	7.08	<0.0001	0.03	0.01–0.26
Orthopedics	23	6.01	2	0.94	0.002	6.74	1.57–28.88
Reporter by reportee							
Resident reported attending	35	9.14	21	9.91	0.76	0.91	0.52–1.61
Resident reported resident	19	8.92	36	9.40	0.85	1.06	0.59–1.90
Resident reported nurse	14	6.57	3	0.78	<0.0001	0.11	0.03–0.40
Nurse reported resident	83	21.67	43	20.19	0.67	1.09	0.72–1.65
Attending reported resident	5	1.31	3	1.41	0.92	0.93	0.22–3.91
Repeat attending abuse	18	4.70	3	1.41	0.04	3.45	1.00–11.86
Repeat resident abuse	54	14.10	28	13.15	0.75	1.08	0.66–1.77
Inpatient	376	98.17	197	92.49	0.0008	4.36	1.77–10.78
Outpatient	5	1.31	10	4.69	0.025	0.27	0.09–0.80

Percentages are of male offender reports. Example interpretation for percentage: 79.9% of male offender reports and 67.7% of nonmale offender reports were reported by a resident. The probability of the recipient being a resident is higher for male than female/unknown offenders (*P* = 0.001). CI, confidence interval; Ob-Gyn; obstetrics and gynecology; OR, odds ratio.