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RESEARCH

CHRISTMAS 2015: FACE TIME

Plenty of moustaches but not enough women: cross sectional study of medical leaders

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Abstract

Objectives To draw attention to sex related disparities in academic medical leadership by investigating the representation of female leaders compared with leaders with moustaches.

Design Cross sectional analysis.

Setting Academic medical departments in the United States.

Participants Clinical department leaders (n=1018) at the top 50 US medical schools funded by the National Institutes of Health (NIH).

Main outcome measures The proportions of female leaders and moustachioed leaders across institutions and specialties (n=20). Additionally, the moustache index: the proportion of women compared with the proportion of moustaches, analyzed with multinomial logistic regression models.

Results Women accounted for 13% (137/1018) of department leaders at the top 50 NIH funded medical schools in the US. Moustachioed leaders accounted for 19% (190/1018). The proportion of female department leaders ranged from 0% (0/20) to 26% (5/19) across institutions and 0% (0/53) to 36% (19/53) across specialties. Only seven institutions and five specialties had more than 20% of female department leaders. The overall moustache index of all academic medical departments studied was 0.72 (95% confidence interval 0.58 to 0.90; P=0.004). Only six of 20 specialties had more women than moustaches (moustache index >1).

Conclusions Moustachioed individuals significantly outnumber women as leaders of medical departments in the US. We believe that every department and institution should strive for a moustache index ≥1. Known, effective, and evidence based policies to increase the number of women in leadership positions should be prioritized.

Introduction

Medicine, a historically male dominated discipline, has undergone considerable change in sex representation in recent decades. In 1960, women accounted for only 9% of medical students in the United States, but for the past 15 years, almost 50% of medical students have been women. The proportion of women in academic medicine, however, remains low and drops with increasing academic rank: 38% of full time faculty, 21% of full professors, and 16% of deans are women.[1 2] This is a problem not only because of the strong ethical argument for equality but also for practical reasons: in business having more women leaders has been linked with better performance. For example, one study found that top firms experience positive returns on the date that female directors are announced, and another found that the Fortune 500 companies (the 500 largest US corporations by total revenue) with the highest representation of women in senior management experience significantly higher returns on equity.[3 4]

We want to increase the representation of women in academic medical leadership by drawing attention to sex disparities. We compared the proportion of women in leadership positions with the proportion of individuals with moustaches. We chose to study moustaches as the comparator because they are rare (<15% of men from the most recent measures available),[5] and we wanted to learn if women were even rarer. Our hypothesis was that fewer women lead academic medical departments in the US than individuals with moustaches.

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Data supplements on bmj.com (see http://www.bmj.com/content/351/bmj.h6311?tab=related#datasupp)

Appendix 1: Moustache indices by specialty

Methods

Setting and participants

This was a cross sectional study of the leaders of academic medical departments in the US. We used publicly available data (http://report.nih.gov/award) to identify the top 50 schools of medicine in the US funded by the National Institutes of Health (NIH) in 2014 (table 1⇓). We used clinical specialties defined by NIH: anesthesia, dermatology, emergency medicine, family medicine, general surgery, internal medicine, neurology, neurosurgery, obstetrics and gynecology, ophthalmology, orthopedics, otolaryngology, pathology, pediatrics, plastic surgery, physical medicine and rehabilitation, psychiatry, radiology, radiation oncology, and urology.

We used institutional websites to identify the leader (such as chair, chief) of each specialty. Departmental structures vary between institutions, and regardless of structure (such as department, division), we identified the highest ranking leader in each specialty, which we refer to as a "department leader." For example, urology could be a department or a division of the department of surgery; in either case we included the highest ranking leader of urology. When institutions comprised multiple hospitals with more than one equally ranked leader in a specialty (n=2), we included all equally ranked leaders. Figure 1⇓ shows the search and inclusion strategy.

For each department leader we determined the URL of their institutional website and identified medical specialty, institution, name, and sex. To be included, leaders had to have a photo available on the webpage so we could check the presence and type of facial hair. Two authors (MRW, KTN) reviewed and collected data between 21 September 2015 and 3 October 2015. Both raters reviewed a subset of individuals (n=50), and the assessment of inter-rater reliability showed perfect agreement (κ=1).

Definition of moustache

Figure 2⇓ shows the categories of facial hair. We defined a moustache as the visible presence of hair on the upper cutaneous lip and included both stand alone moustaches (for example, Copstash Standard, Pencil, Handlebar, Dali, Supermario) as well as moustaches in combination with other facial hair (for example, Van Dyke, Balbo, The Zappa). Department leaders with facial hairstyles that did not include hair on the upper lip (for example, Mutton Chops, Chin Curtain) were considered not to have a moustache. We evaluated each leader for the presence of facial hair regardless of sex.

Statistical analysis and moustache index

Our data represent a multinomial distribution with three mutually exclusive groups of leaders: women, men with moustaches, and men without moustaches. We used multinomial logistic regression analysis to compare the proportion of women with the proportion of moustachioed department leaders across institutions and specialties: the moustache index. Tests were considered significant if the two sided P value was <0.05. Analyses were performed with Stata version 12.0 (StataCorp, College Station, TX).

Results

There were 1018 department leaders who met inclusion criteria. Two (0.2%) did not have a photo available and were excluded. We found that women accounted for 13% (137/1018) of department leaders at the top 50 NIH funded medical schools in the US. Moustachioed individuals were all men and accounted for 19% (190/1018) of department leaders.

Figure 3⇓ shows the proportion of female department leaders by institution, which ranged from 0% (0/20) to 26% (5/19). Only seven institutions had more than 20% female department leaders. It also shows the proportion of female department leaders by medical specialty, which ranged from 0% (0/53) to 36% (19/53). Only five specialties had more than 20% female department leaders: obstetrics and gynecology (36%; 19/53), pediatrics (31%; 16/52), dermatology (23%; 12/53), family medicine (21%; 9/43), and emergency medicine (21%; 11/53).

Figure 4⇓ shows the proportion of moustachioed department leaders by institution, which ranged from 0% (0/20) to 37% (7/19). Nineteen institutions had more than 20% moustachioed department leaders. It also shows the proportion of moustachioed department leaders by medical specialty, which ranged from 2% (1/53) to 31% (17/54). Ten specialties had more than 20% moustachioed department leaders, with the thickest moustache density in psychiatry (31%; 17/54), pathology (30%; 16/53), and anesthesiology (26%; 14/53). Two specialties had fewer than 10% moustaches (general surgery (2%; 1/53) and plastic surgery (4%; 2/52)).

The overall moustache index, derived from multinomial logistic regression analyses, of all academic medical departments studied was 0.72 (95% confidence interval 0.58 to 0.90; P=0.004). Figure 5⇓ shows the moustache index across institutions and specialties. Six out of 20 specialties had moustache indices >1, indicating that there were more women than moustaches: pediatrics (1.33), dermatology (1.50), physical medicine and rehabilitation (1.50), obstetrics and gynecology (1.90), plastic surgery (2.0), and general surgery (3.0). Table 1⇓ and appendix 1 show individual institution and specialty level data used in the calculation of the moustache index.

Discussion

Individuals with moustaches outnumber women as department leaders in the US. Pediatrics, family medicine, obstetrics and gynecology, and dermatology have the highest proportions of women leaders and the highest moustache indices. General surgery and plastic surgery also have high moustache indices, but this was driven by the absence of moustaches rather than the number of women.

Our study builds on a recent analysis of over 90 000 academic physicians, which showed that women were less likely to be full professors even after adjustment for age and research productivity.[6] We believe that every department and institution should strive for a moustache index ≥1. There are two ways to achieve this goal: by increasing the number of women or by asking leaders to shave their moustaches. In addition to being discriminatory, the latter choice could have detrimental effects on workplace satisfaction and emotional wellbeing of moustachioed individuals. Deans are left with one option: to hire, retain, and promote more women.

Sex discrepancies in leadership are distressingly common across specialties. Many employers have taken steps to reduce these gaps by adopting policies against discrimination and sexual harassment, by introducing family friendly benefits, and by offering paid parental leave, which have been shown to considerably improve outcomes in the female labor force.[7 8] In medical academia, department leaders are familiar with the potentially effective strategies of mentoring, paid leave for childbearing (especially maternity leave), and tenure clock extensions, which allow new parents more time to meet requirements for promotion.[9-12]

Recent evidence from psychology, sociology, and economics, however, suggests that two additional strategies might be necessary to close the gap. Firstly, define hiring criteria in advance of evaluating candidates.[6 13] Without clearly defined criteria, evaluators unconsciously redefine what they are seeking to match the attributes of male candidates.[14] As a result, women, and especially mothers, tend to be evaluated more negatively than men with the same professional characteristics.[15 16] Secondly, increase temporal flexibility in job structures.[17] In many occupations, the ideal worker is one who works long hours each week over many decades. Women experience considerable penalties in status and pay for taking even a short time off to care for children.[17] This penalty differs by specialty: it is lowest in specialties like pharmacy, in which organizational innovations allow workers to easily substitute for one another.[18] In medicine, innovations such as creating larger practices to enable teamwork, computerized medical records, and shift work could also reduce sex inequality by reducing the premium for long hours and uninterrupted employment.[19] Further strategies that increase control over work schedules could promote retention and advancement of women: having control over total hours and when you work is a predictor of career satisfaction, work-life balance, and low burnout.[20] Accordingly, women physicians in "controllable lifestyle" specialties, such as dermatology and anesthesiology, tend to enjoy high levels of satisfaction.[21]

Limitations

To highlight the paucity of women in academic medical leadership, we wanted to choose a rare but easily identifiable comparator unrelated to promotion and achievement: the moustache. Facial hair, however, has been shown to enhance perceptions of maturity, responsibility, dominance, strength, and self confidence.[22 23] In addition, men who put on fake beards rate themselves as more masculine.[24] If moustaches are linked to success, this could bias our moustache indices. Additionally, the prevalence of moustaches among physicians is unknown. We were not able to control for age, and, given that leaders are older and moustache popularity has decreased over time,[5] our results might be confounded by age. Similarly, we were unable to account for the impact of ethnicity in our analysis. Misclassification of moustaches is another potential limitation, and our data are only as accurate as the institutional websites: photos might be out of date, especially for senior staff who might strive to look younger. Also, we could not confirm that moustaches in photos were real, although two authors are trained in dermatology and skilled at examining hair growth. Finally, our sample was limited to clinical departments in NIH funded US medical schools, which could limit its generalizability.

Conclusion

We conclude that there are more moustachioed individuals than women leading US academic medical departments. Two evidence based solutions that could be applied to improve this are the predefining of hiring criteria and innovations that allow women flexibility in scheduling their working days and years. We hope that these solutions will help increase moustache indices across all specialties by raising the number of women leaders while maintaining sufficient facial hair in our workplaces.

MRW and KTN contributed equally and are co-first authors. We thank Jon Dyer for use of figure 2, John Boscardin for statistical advice, and Natalie Linos and Elizabeth Linos for content advice and editing. EL thanks the American Academy of Dermatology 2015 Leadership Forum, and KL thanks the Hellman Family Fund.

Contributions: MRW, KTN, and EL conceived and designed the project and collected data. MRW and KTN analyzed the data. MRW, KTN, KL, and EL wrote the manuscript. EL is guarantor.

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Competing interests: MRW, KL, and EL are women. KTN is a man and does not currently have a moustache. All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare: no support from any organization for the submitted work; no financial relationships with any organizations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Ethical approval: This study used publicly available data and institutional review board was not required.

Transparency: The manuscript's guarantor affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned have been explained

Data sharing: Statistical code and dataset are available from the corresponding author.

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What is already known on this topic

The number of women in medicine has increased significantly since the 1960s, with women now accounting for nearly 50% of US medical students

The proportion of women in academic medicine is still low: only 21% of full professors are women

What this study adds

There are fewer women leading academic medical departments than individuals with moustaches

Evidence based policies that increase women in leadership positions are needed

Table

Table 1| **Moustache indices by institution**

Institution	Moustache index (95% CI)	P value	No of moustaches	No of women	No of leaders
University of Utah*	0.00	—	4	0	20
Weill Medical College of Cornell University*	0.00	—	2	0	19
Johns Hopkins University	0.17 (0.02 to 1.38)	0.10	6	1	19
New York University	0.20 (0.02 to 1.71)	0.14	5	1	19
University of Maryland Baltimore	0.20 (0.02 to 1.71)	0.14	5	1	20
University of North Carolina Chapel Hill	0.25 (0.03 to 2.24)	0.22	4	1	20
University of Pittsburgh	0.25 (0.03 to 2.24)	0.22	4	1	20
Medical College of Wisconsin	0.29 (0.06 to 1.38)	0.12	7	2	20
University of Chicago	0.33 (0.03 to 3.20)	0.34	6	2	19
Baylor College of Medicine	0.33 (0.03 to 3.20)	0.34	3	1	20
University of California, San Diego	0.33 (0.07 to 1.65)	0.18	3	1	20
University of Washington	0.40 (0.08 to 2.06)	0.27	5	2	20
Indiana University-Purdue University at Indianapolis	0.43 (0.11 to 1.66)	0.22	7	3	19
Icahn School of Medicine at Mount Sinai	0.50 (0.13 to 2.00)	0.33	4	2	20
Vanderbilt University	0.50 (0.09 to 2.73)	0.42	4	2	19
University of Illinois at Chicago	0.50 (0.13 to 2.00)	0.33	4	2	18
University of Massachusetts Medical School Worcester	0.50 (0.09 to 2.73)	0.42	6	3	19
University of Alabama at Birmingham	0.50 (0.09 to 2.73)	0.42	6	3	20
Harvard University	0.55 (0.20 to 1.47)	0.23	11	6	52
University of California, Davis	0.57 (0.17 to 1.95)	0.37	7	4	20
Oregon Health and Science University	0.60 (0.14 to 2.51)	0.48	5	3	19
Northwestern University at Chicago	0.60 (0.14 to 2.51)	0.48	5	3	20
University of Florida	0.67 (0.11 to 3.99)	0.66	3	2	19
Case Western Reserve	0.67 (0.11 to 3.99)	0.66	6	4	34
Yale University	0.67 (0.11 to 3.99)	0.66	3	2	18
Medical University of South Carolina	0.67 (0.11 to 3.99)	0.66	3	2	19
Columbia University	0.67 (0.19 to 2.36)	0.53	3	2	19
University of Colorado Denver	0.75 (0.17 to 3.35)	0.71	4	3	20
Duke University	0.75 (0.17 to 3.35)	0.71	4	3	19
University of Southern California	0.75 (0.17 to 3.35)	0.71	4	3	19
University of Michigan	0.75 (0.17 to 3.35)	0.71	4	3	20
Stanford University	1.00 (0.20 to 4.95)	1.00	4	4	18
University of Miami	1.00 (0.25 to 4.00)	1.00	2	2	20
University of Virginia	1.00 (0.25 to 4.00)	1.00	3	3	20
Boston University	1.00 (0.14 to 7.10)	1.00	4	4	20
Cleveland Clinic Lerner College of Medicine-Case Western Reserve University	1.00 (0.20 to 4.95)	1.00	3	3	20
Albert Einstein College of Medicine	1.00 (0.25 to 4.00)	1.00	4	4	20
University of Rochester	1.25 (0.34 to 4.65)	0.74	4	5	20
University of Minnesota	1.33 (0.30 to 5.96)	0.71	3	4	19
University of Pennsylvania	1.33 (0.30 to 5.96)	0.71	3	4	20
University of Texas Southwestern	1.50 (0.25 to 8.98)	0.66	2	3	20
University of California, Los Angeles	1.50 (0.25 to 8.98)	0.66	2	3	19
University of Iowa	1.50 (0.25 to 8.98)	0.66	2	3	19
Wake Forest University	2.00 (0.37 to 10.92)	0.42	2	4	19
University of Wisconsin-Madison	2.50 (0.49 to 12.89)	0.27	2	5	19

Table 1 (continued)

Institution	Moustache index (95% CI)	P value	No of moustaches	No of women	No of leaders
Emory University	4.00 (0.45 to 35.79)	0.22	1	4	20
Dartmouth College	4.00 (0.45 to 35.79)	0.22	1	4	19
University of California, San Francisco	4.00 (0.45 to 35.79)	0.22	1	4	19
Washington University†	—	—	0	3	18
Ohio State University†	—	—	0	3	20

* P value could not be calculated around moustache index of 0.

† Moustache index could not be calculated (no moustaches).

Figures

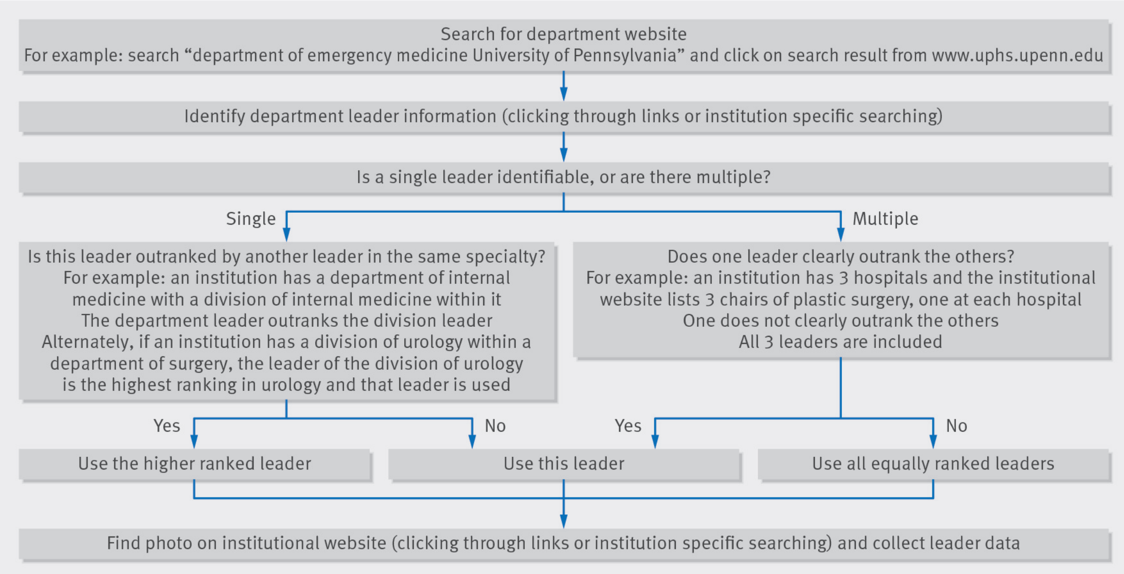

Fig 1 Flow chart of data collection

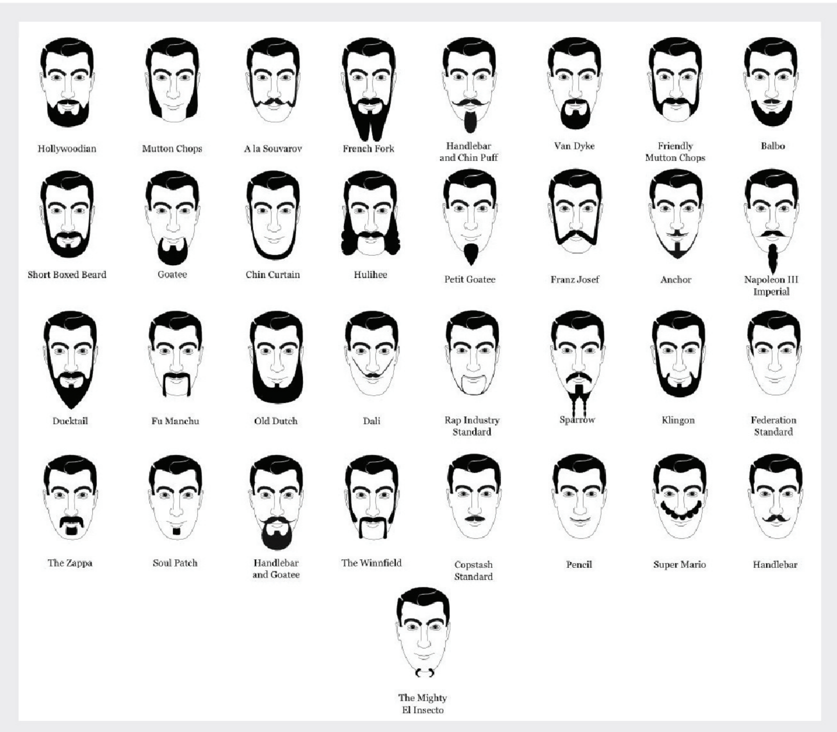

Fig 2 Facial hair categories

[Image: Image courtesy of Jon Dyer/dyers.org, with permission]

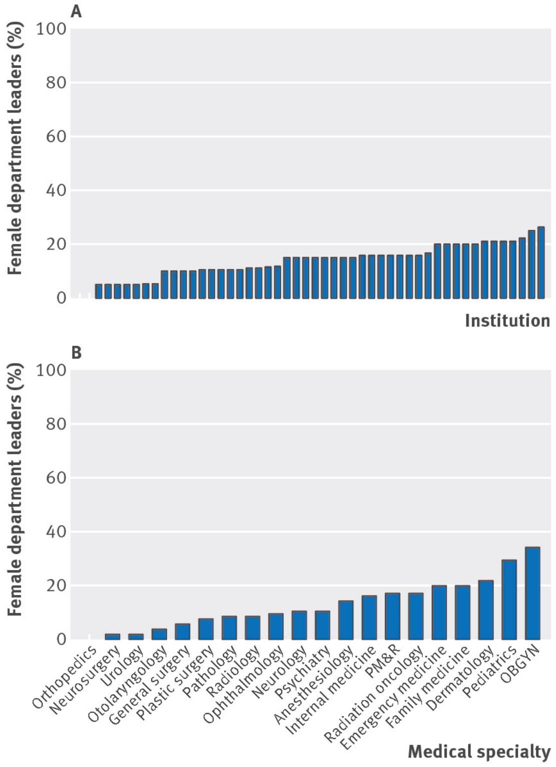

Fig 3 Percentage of female department leaders by institution and specialty. OBGYN=obstetrics and gynecology; PM&R=physical medicine and rehabilitation

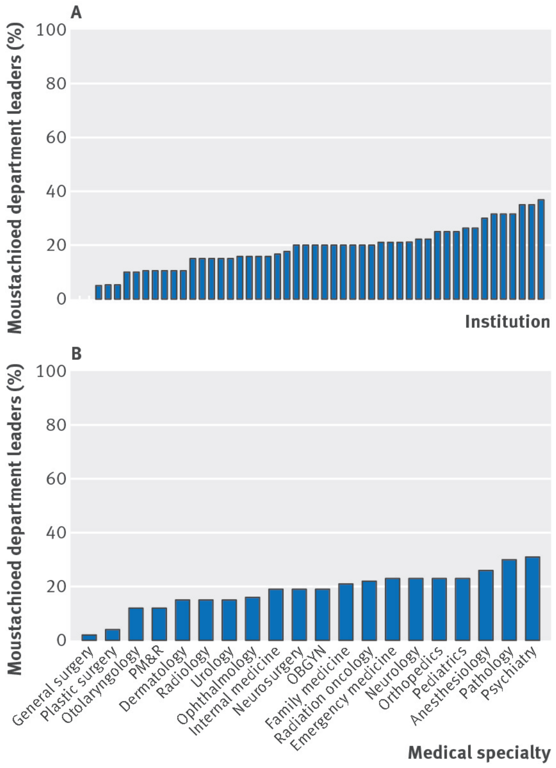

Fig 4 Percentage of moustachioed department leaders by institution and specialty. OBGYN=obstetrics and gynecology; PM&R=physical medicine and rehabilitation

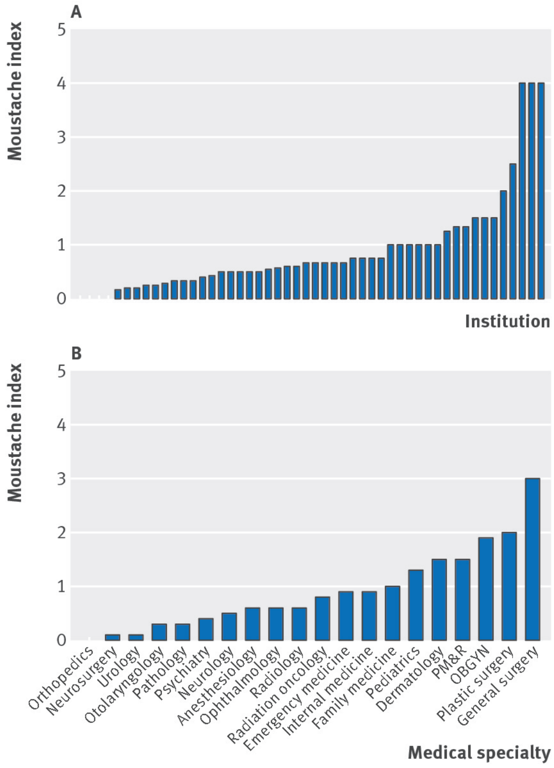

Fig 5 Moustache index (percentage of women/percentage moustachioed individuals) by institution and specialty. OBGYN=obstetrics and gynecology; PM&R=physical medicine and rehabilitation