Avoiding Gender Bias Using a Gender Neutral Scoring System: The Case Western Plastic Surgery Resident Application Assessment

Sven Gunther, MD. Katherine Grunzweig, MD, Lisa DiNardo, PhD, Edward Davidson, MD, Ali Totonchi, MD, Anand Kumar, MD
Case Western Resident Application Assessment (CWRAA)

Tripartite weighted system in:
• USMLE Step 1 scores
• Publications/posters/presentations
• Academic achievements including AOA and school ranking
• Each category is assigned points and adds to a max score of 15
Hypothesis

• We hypothesized that an objective merit-based gender-neutral algorithm results in a gender distribution of interviewees proportional to the applicant pool.
Methods

5 years of applicant data was assessed:

• Gender
• Interview invites
• Ranking
• Matching within our institution
Statistics

- Welch two sample t-tests were used to assess average scores
- Chi-squared test was used to assess gender proportions
- Effect size was assessed using means and pooled standard deviations.
Results

• 829 applicants
  – 61.9% male, 38.1% female
Results

- Average CWRAA score for all applicants was 6.68, median 7
  - No significant difference in mean scores between genders (p=0.62)
Results

• Those offered interviews not statistically different $p=0.13 \ [CI \ -0.1 \ to \ 0.7]$.
  – Male average was 6.8 (SD 2.83)
  – Female average 6.48 (SD 3.02)
Results

• Genders granted interviews
  – 18.1% of male applicants invited
  – 16.8% of female applicants invited
Results

• Applicants present on interviews showed no difference in scores $p=0.77$ [CI -0.5 to 0.4]
  – Male 6.66
  – Female 6.72
Results

• Ranked applicants had no difference in score or gender proportion $p=0.3$ [CI -0.2 to 0.6]
  – Male 6.76
  – Female 6.55
Results

- Significantly more females than males matched into our program compared to males (p=0.049)
- Scores were not significantly different p=0.76 [CI -0.3 to 0.5]
  - Males 6.73
  - Females 6.66
Conclusion

CWRAA score system uses non-gender specific metrics, accounting for differences in opportunity for research, test-taking, and academic awards.
Conclusion

Using an objective metric to filter applicants does not result in unequal gender proportions, suggesting an objective merit-based algorithm helps avoid gender bias in the application process.
Thank You