

**Maine Medical Center  
Department of Emergency Medicine  
Journal Club Summary Template**

<b>Date:</b> January 2021	<b>Presenter Name:</b> James Sledd
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**Article Citation:** Dayal A, O'Connor DM, Qadri U, Arora VM. Comparison of Male vs Female Resident Milestone Evaluations by Faculty During Emergency Medicine Residency Training. JAMA Intern Med. 2017 May 1;177(5):651-657. doi: 10.1001/jamainternmed.2016.9616. Erratum in: JAMA Intern Med. 2017 May 1;177(5):747. PMID: 28264090; PMCID: PMC5818781

**Country(ies):** USA

**Funding Source(s):**  None Stated

Purpose
<p><b>Research Question(s):</b> How does gender affect the evaluation of residents through EM training? <span style="float: right;"><input checked="" type="checkbox"/> None Stated</span></p>
<p><b>Hypotheses:</b> <span style="float: right;"><input type="checkbox"/> None Stated</span></p>
<p><b>Study Purpose:</b> To assess whether faculty evaluation of EM residents is affected by the resident's gender.</p>

Methods
<p><b>Study Design:</b> Longitudinal, retrospective analysis of faculty evaluation of residents' competencies.</p>
<p><b>Outcome(s) [or Dependent Variable]:</b> Faculty evaluation of residents' performance on a 1-5 scale in 23 EM residency subcompetencies.</p>
<p><b>Intervention [or Independent Variable]:</b> The gender of the resident physician.</p>
<p><b>Ethics Review:</b> <input checked="" type="checkbox"/> IRB Review   <input type="checkbox"/> IACUC Review   <input type="checkbox"/> Other:   <input type="checkbox"/> None Stated</p>
<p><b>Research Setting:</b> Eight three-year emergency medicine residencies in the United States.</p>
<p><b>Study Subjects:</b> PGY-1-3 emergency medicine residents.</p>
<p><b>Inclusion Criteria:</b></p>

n/a
<b>Exclusion Criteria:</b> n/a
<b>Study Interventions:</b> n/a
<b>Study Groups:</b> EM residents' evaluations were separated by post-graduate year and male/female gender.
<b>Instruments/Measures Used:</b> ACGME/ACEP's 23 EM residency competency milestones.
<b>Data Collection:</b> Data were collected using InstantEval, a mobile app for direct observation and milestone evaluation.
<b>Data Analysis:</b>  <b>A priori sample size calculation?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Described <input checked="" type="checkbox"/> N/A  <b>Statistical analyses used:</b>  <b>Adjustment for potential confounders?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Described <input checked="" type="checkbox"/> N/A <b>If yes, list:</b>

Results
<b>Study participants:</b> 33,456 evaluations of 359 EM residents. Of the residents, 66% were men and 34% women. These evaluations were evenly divided by post-graduate year.
<b>Brief answers to research questions [key findings]:</b> Over all milestones, female residents were evaluated at similar levels to male residents in intern year; in fact, female residents were evaluated as slightly more proficient, although this was not statistically significant. By PGY-3, male residents evaluation scores were higher across all 23 milestones at 7 of 8 training sites in the study.
<b>Additional findings:</b> Evaluations of procedural competencies were also higher for male residents; the authors speculated that these should be more objective.

**Limitations:**

The text comments obtained with each evaluation were not analyzed in this study. Resident gender was ascertained by looking at residents' names, and if ambiguous, by examining their photographs on residency webpages. This may have mis-classified some residents. This was also a retrospective, observational study. Finally, the developers of the app co-wrote the study and have financial investment in the app's success.

Clinical Implications
<p><b>Applicable?</b> Yes—as EM residents we are evaluated every day.  <b>Feasible?</b> N/a  <b>Clinically relevant?</b> No—this is not a clinical study  <b>Comments:</b></p>
Level of evidence generated from this study
<p><input type="checkbox"/> Ia: evidence obtained from meta-analysis of randomized controlled trials  <input type="checkbox"/> Ib: evidence obtained from at least one randomized controlled trial  <input type="checkbox"/> IIa: evidence obtained from at least one well-designed, controlled study without randomization  <input type="checkbox"/> IIb: evidence obtained from at least one other type of well-designed quasi-experimental study  <input checked="" type="checkbox"/> III: evidence obtained from a well-designed, non-experimental study  <input type="checkbox"/> IV: expert committee reports; expert opinion; case study; case report</p>
Additional Comments/Discussion/Notes
<p>The authors posit several possible causes of the difference in evaluation scores by gender. First, they suggest that since senior residents are expected to display attributes such as assertiveness and leadership that are stereotypically male, female residents evaluations suffer from “stereotype threat.” This is an example of implicit bias and would explain why PGY-1 evaluations are similar by gender. Another possibility the authors raise is the lack of mentorship opportunities by female faculty in a historically male-dominated specialty such as EM. Finally, systematic bias as simple as the design of laryngoscope handles or needle drivers (which may fit male hands better) could be one cause of the difference in procedural evaluations by gender.</p> <p>I found this study interesting as there has also been a growing body of research suggesting that female physicians have <i>better</i> patient outcomes than male physicians on a population level. One large study in JAMA in 2017 examined outcomes among Medicare patients admitted to hospital in the USA; it showed that patients of female physicians had a mortality rate 0.5% <i>lower</i> than male physicians, a NNT far better than many expensive medications. Research suggests that female physicians adhere more closely to evidence-based guidelines and provide better preventative care, among other differences. It may be that female physicians are <b>better</b> (at least in some respects) than male physicians, but EM evaluations are inadequate to show this due to implicit bias.</p>

