

August 23, 2017

Does the Mean Number of Publications Tell the Full Story?

Chad Arthur Krueger

Orthopaedic Surgeon

Womack Army Medical Center

I would like to congratulate the authors of this study for their work. Determining the value of dedicated resident research time is important as we continue to work toward maximizing the limited time residents have to train. While publications may not be the only way to measure value, it would make little sense to give residents time off for research if it is not used in a manner that yields a published manuscript.

However, I am concerned that the results of the study may be unintentionally misleading. The largest mean difference between the groups was 1.3 publications per resident, when the residents in the longitudinal-time research group (mean of 1.9 publications) were compared to those in the no dedicated research time group (mean of 0.6 publications). This difference, while statistically significant, may not have much clinical applicability because only the mean values were reported.

For example, if one resident published 30 articles during residency at a program of 20 residents with protected research time, the mean number of articles published per resident at that program would be 1.5 publications—without any other residents publishing a single article. So, in essence, one “outlier” at a residency program or a relatively small percentage of residents at different programs who published significantly more than the norm could account for the differences in this study. One or two residents at a residency with protected research time publishing significantly more publications than all other residents, no matter how much research time is given, is a much different finding than implying that the majority of residents at residencies with protected research time publish more articles than those in programs without dedicated research time. Unfortunately, we have no idea which finding is true based on the data presented in the current study.

Such “outliers” have been identified in other publications (1), and it is likely that many residencies have some residents who perform substantially more research than others. This is even hinted at in the current study, where the mean number of publications at programs with protected longitudinal research time was

1.9 publications, but with a standard deviation of 1.8, suggesting a wide variation. Similar wide variation from the mean was also found in the other two groups.

What this manuscript may be showing is that protected research time allows for more outliers (one or two residents who publish an inordinate amount of research) than programs without dedicated research time. In addition, the authors state that no correlation was found between the number of weeks of research available during residency and the number of publications per resident. This seems to further indicate that a few residents might be skewing the mean for the entire program's research productivity, instead of all of the residents producing more research.

If this data were reported in median values, box plots, or some other manner in which we could see the actual number of publications for the average resident of each program, instead of the mean number of publications from each program, it would help solidify the authors' argument or change the findings altogether.

References

1) Krueger CA, et al. Protected Resident Research Time Does Not Increase the Quantity or Quality of Residency Program Research Publications: A Comparison of 3 Orthopedic Residencies. *J Surg Ed.* 2017. 74: 264-70. Level 3.

Conflict of Interest: None Declared