Scholastic Activity among Radiation Oncology Residents at U.S. Academic Institutions: a Benchmark Analysis of H-Index

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Introduction:

Residency programs encourage trainees to interpret and produce scientific abstracts and manuscripts during the course of their training as both the quantity and quality of publications are important factors potential employers consider when hiring new residency graduates. One useful metric for training programs to evaluate their long-term track record of generating productive members of the larger scientific community is the h-index. The h--index includes the number of papers (Np) published greater than or equal to *h* times (Hirsch 2005).

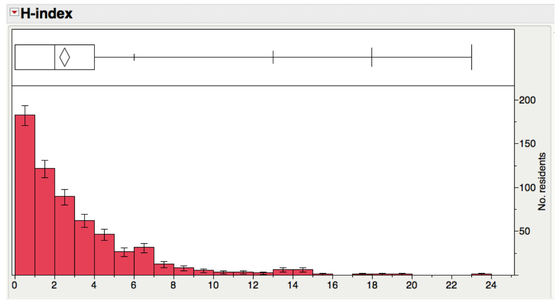
Purpose/Objective(s):

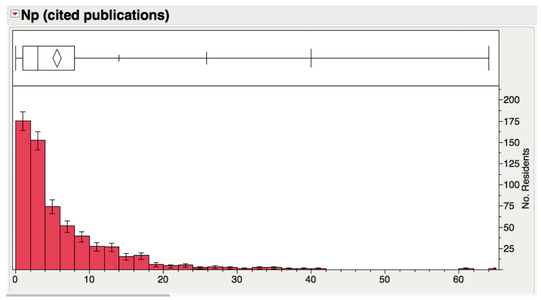
Objective assessment of trainee academic productivity is a useful benchmark for radiation oncology training programs. The specific aims of this study are to analyze the number of publications and Hirsch (h) index among radiation oncology residents and recent program graduates at U.S. academic programs.

Methods:

Names and institutions for physicians who were currently residents during the 2010 academic year (n=607) were collected from the Association of Residents in Radiation Oncology 2010 Directory. Total number of publications, total number of citations, and the H-index from the period between 1/1996-2/2012 were collected from a commercially available database (SCOPUS). Residency programs (n=80) were then ranked. Further analysis of h-index included stratification by gender, residency program size, and whether 2010 residents were still current residents, had entered private practice or taken academic medicine positions.

Distribution of h-index and number of cited publications among 2010 radiation oncology residents

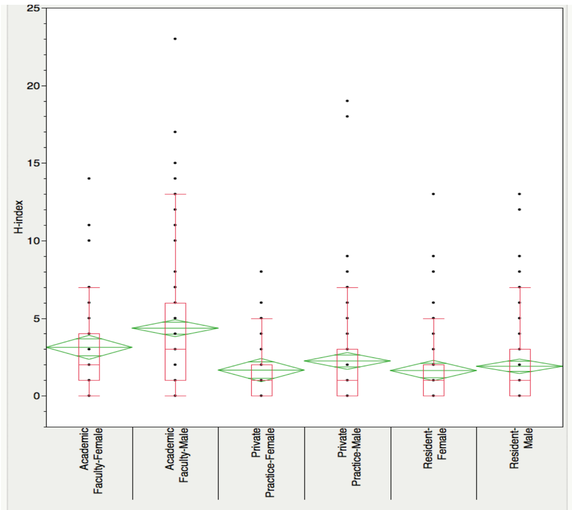


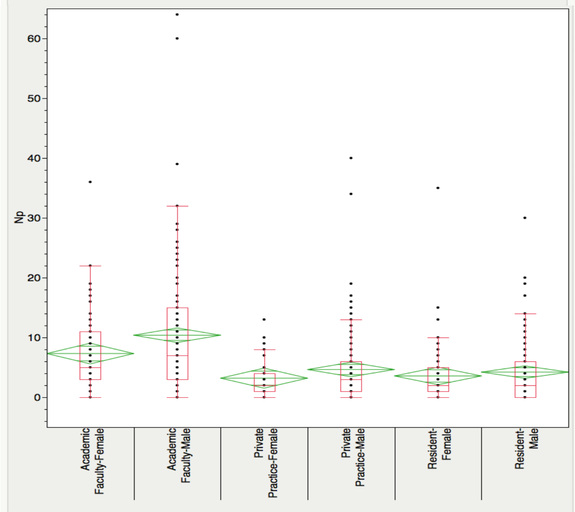


Factors affecting h-index and number of publications

	n, (%)	Mean h-index (95% CI)	Mean # of pubs (95% CI)
Total	607 (100%)	2.5 (2.2-2.8)	5.5 (4.8-6.5)
Residency Program Size			
>6	38 (47.5%)	2.50 (2.10-2.90)	**5.46 (4.52-6.40)**
≤6	42 (52.5%)	1.90 (1.53-2.27)	**4.44 (3.47-5.40)**
Gender			
Male	404 (67%)	2.7 (2.4-3.1)	**6.0 (5.2 – 6.8)**
Female	203 (33%)	2.1 (1.7-2.4)	**4.5 (4.0-5.0)**
Career Position			
Current Residents	245 (41%)	1.8 (1.48-2.17)	3.95 (3.33-4.55)
Private Practice	184 (30%)	2.0 (1.67-2.40)	4.22 (3.43-5.01)
Academic Faculty	178 (29%)	**3.9 (3.3-4.6)**	**9.35 (7.92-10.79)**

Comparison of h-index and number of cited publications by position and gender





Results

Mean resident h-index per institution ranged from 0-5.31, with top 10% of academically productive residency programs institutions ranging from 4.17±3.2to 5.25±5.4, while the bottom decile ranged from 0.0±0.0 to 0.75±1.4 .

Among 607 radiation oncology residents, 67% were men and 33% were women. Residency size was correlated with h-index with a small coefficient of determination ($p < 0.01$, $R2 = 0.08$). For 362 recent graduates, those in academic exhibited a higher mean h-index [3.9(3.3-4.6)] compared to private practice [2.0 (1.67-2.40); $p<0.05$]. No difference was seen for career choice by gender ($p=0.8$). Gender, residency size, and post-graduate position remained correlates of h-index (all $p \leq 0.2$) on multivariate analysis.

Conclusion

Using h-index to measure academic productivity demonstrates radiation oncology trainees continue to pursue scholarly endeavors. However, there exists a large disparity among institutions. Additioanlly, female residents had fewer total publications and slightly lower h-indices when compared to males, suggesting effort is needed to encourage early career development for future female physician-scientists. Barriers to effective mentoring and prioritization of the research mission for trainees require further analysis, for which this analysis provides a useful baseline.

References

1.) Hirsch JE. An index to quantify an individual's scientific research output. *Proc Natl Acad Sci*. USA 2005; 102: