

Limited Number of Surgeons Among Recipients of National Institutes of Health Grants Awarded for Back Pain Research

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INTRODUCTION: Surgeon scientists remain underrepresented among recipients of National Institutes of Health (NIH) grants despite their unique ability to perform translational research. This study elucidates the portfolio of NIH grants awarded for back pain and the role of spine surgeons in this portfolio.

METHODS: Using the NIH Research Portfolio Online Reporting Tools Expenditures and Results (RePORTER) database (2016–2023), total NIH funding was extracted for 25 clinical areas. Compound annual growth rates (CAGRs) were then calculated for each, and data between clinical areas was compared. Grants regarding back pain, an existing clinical area in the NIH database, were further analyzed regarding funding IC, grant mechanism, clinical area of interest, and amount. A retrospective cohort study of principal investigators (PIs) was also conducted.

RESULTS: The total NIH research budget increased from \$32 to \$48 billion over the 7-year period (CAGR 6.0%). A total of 344 unique grants totaling roughly \$523 million were awarded for back pain from 2016-2023 (CAGR 17.0%). Dementia (\$19.7 billion), Alzheimer's Disease (\$18.9 billion), diabetes (\$9.0 billion), obesity (\$8.8 billion), and chronic pain (\$5.2 billion) received the most funding. Most NIH funding for back pain research was awarded through the R01 (33%) grant mechanism. The National Institute of Neurological Disorders and Stroke was the institute awarded the most NIH funding (45%). Departments of Orthopaedics were awarded the most funding (18%). Among NIH back pain grants, pathology mechanisms (20%) and psychosocial (20%) categories received the most funding. Notably, surgeon scientists comprised roughly 4% of all PIs. Males, PhDs, full professors, and scientists had the highest median NIH funding in their respective classifications. Using an alpha of 0.05, there was no statistically significant difference in NIH funding totals with regard to PI sex ($p=0.725$) or archetype (i.e. scientist, clinician scientist, surgeon scientist, $p=0.175$). Statistical significance was found, however, regarding PI degree ($p<0.001$) and academic rank ($p<0.001$) over the study period.

DISCUSSION AND CONCLUSION: Given the significant financial and health burdens that back pain places on our population, it remains underfunded by the NIH, limiting progress toward meaningful and innovative advancements. Furthermore, only a small number of surgeon-scientists secure NIH grants for back pain research, despite spine surgeons being uniquely positioned to drive translational breakthroughs in this field. To accelerate progress, increased funding and expanded research opportunities for spine surgeons are essential. Notably, attaining full professorship and earning a PhD were associated with greater median NIH funding amounts for back pain research from 2016-2023.