Orthopedic Surgery Resident Debt Load and Its Effect on Career Choice

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abstract

Student loan debt has become a topic of discussion and debate among physicians and legislators. This study seeks to assess the level of debt of orthopedic surgery residents and to determine whether debt burden affects the career choice of orthopedic trainees. A 26-question, anonymous survey was distributed via email to resident trainees enrolled in different medical and surgical specialty training programs across the United States. Orthopedic trainees were compared with trainees in other specialties using comparative statistics. Of the approximately 13,503 residents who were sent the survey, a total of 3076 responded, including 167 of an estimated 580 orthopedic residents, for approximate response rates of 22.8% and 28.8%, respectively. On average, orthopedic surgery residents were at a later post-graduate year than overall respondents ($p<.025$). When asked if student loan debt would influence the next step in their career, nonorthopedic residents were statistically more likely to respond “yes” compared with orthopedic surgery residents (57.21% vs 49.08%, respectively; $p=.041$). More than 50% of all respondents agreed that student loan debt would affect their type or location of practice. The majority of orthopedic residents take student loan debt into consideration when determining their final location and type of practice, although less so for orthopedic trainees compared with other specialties. As medical education continues to become more expensive and the threat of dropping physician reimbursement looms on the horizon, student debt may become a primary driving factor for young American physicians’ career plans. [Orthopedics. 2016; 39(3):e438-e443.]

As the cost of medical education increases, so too does the debt burden of student loans on newly graduated physicians. In a 2011 study, more than half of all new residents had more than $150,000 in educational student debt at the initiation of their postgraduate training programs. Compared with the general population, new residents also carry more debt and have less savings to offset that debt than their nonphysician peers. A survey by the American Association of Medical Colleges in 2014 reported that average public medical school tuition was $33,220 for in-state residents and $56,998 for nonresidents. For private medical schools, average tuition per year was $51,980 for in-state residents and $52,918 for nonresidents. In 2013, mean debt of graduates from US medical schools was $171,814, and only 14.1% of graduates graduated with no student debt.

As with other medical and surgical specialties, orthopedic resident debt burden has become a topic of interest in the...
In a survey study by Hwang et al., debt burden was an area of serious concern to orthopedic residents. Internal medicine residents have demonstrated that resident debt was an independent risk factor for skepticism of health care reform and changes in physician compensation. In addition, increased debt burden has been demonstrated to be a risk factor for resident burnout.

Resident debt, as it relates to training, has been shown to be a hindrance to resident education and to buying educational supplies.

In this investigation, the current authors assessed levels of indebtedness and attitudes toward repayment among residents across all specialties in an attempt to determine whether these patterns were comparable with the orthopedic resident population.

**Materials and Methods**

Following institutional review board approval, an anonymous, online, 26-question questionnaire was distributed to orthopedic and nonorthopedic residency coordinators across the United States. These questions detailed demographic data, debt at various stages of training, attitudes toward future training, and the impact of debt on career decisions. This survey was then disbursed from the residency coordinators to the residents of these programs using web-based survey software (surveymonkey.com, Palo Alto, California). Incomplete survey responses were eliminated.

Results were reported and analyzed for the total number of individuals who answered each question. Descriptive statistics were used. Paired t tests were used to determine whether significant differences existed among the examined groups. A P value less than .05 was used to determine statistical significance a priori.

**Results**

**Demographics**

Of the approximately 13,503 residents who were sent the survey, a total of 3076 responded, including 167 of an estimated 580 orthopedic residents, for approximate response rates of 22.8% and 28.8%, respectively.

Of the nonorthopedic residents responding, 1613 (60.79%) were 30 years or younger, 982 (37.02%) were between 30 and 40 years, 58 (2.19%) were older than 40 years, and 13 (0.45%) were younger than 25 years. Of the orthopedic residents, 105 (62.5%) were 30 years or younger, 63 (37.5%) were between 30 and 40 years, and 0 (0%) were older than 40 years or younger than 25 years. Residents in the nonorthopedic resident group were a mean post-graduate year of 2.93, whereas residents in the orthopedic resident group were a mean post-graduate year of 3.23 (P = .024) (Figure 1).

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dependent, and 47 (27.97%) had 2 or more dependents.

In the nonorthopedic group of residents, 39 states of residence were represented, whereas in the orthopedic resident group, 25 states were represented. Of nonorthopedic residents, 1359 (53.13%) of respondents attended public medical schools and 1199 (46.87%) attended private medical schools. Of orthopedic residents, 88 (52.38%) attended public medical schools and 80 (47.62%) attended private medical schools.

**Debt Characteristics**

Of all nonorthopedic residents who responded, 1879 (73.6%) had less than $25,000 in student loan debt when starting medical school, 411 (16.1%) had between $25,000 and $100,000 in debt, and 263 (10.3%) had more than $100,000 in debt. Of the orthopedic resident group, 120 (71.86%) had less than $25,000 in student loan debt when starting medical school, 28 (16.76%) had between $25,000 and $100,000 in debt, and 19 (11.36%) had greater than $100,000 in debt.

In terms of average interest on student loans, in the nonorthopedic resident group, 414 (17.50%) respondents had interest rates below 4%, 610 (25.78%) had interest rates between 4% and 6%, and 1342 (56.72%) had interest rates higher than 6%. In the orthopedic resident group, 25 (15.24%) respondents had interest rates below 4%, 48 (29.27%) had interest rates between 4% and 6%, and 91 (55.49%) had interest rates higher than 6%.

**Repayment**

In the nonorthopedic resident group, 728 (61.96%) respondents who were repaying loans spent less than 20% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans, 327 (27.83%) spent between 20% and 40% of their income repaying student loans.

When asked if debt load influenced their specialty choice, 554 (22.28%) nonorthopedic residents responded “yes;” 1578 (63.45%) responded “no,” and 355 (14.27%) responded “maybe.” In the orthopedic resident group, 39 (23.78%) residents responded “yes;” 101 (61.59%) responded “no,” and 24 (14.63%) responded “maybe” (P=.31). When asked if their debt load was influencing the next step of their medical career, 873 (35.14%) nonorthopedic residents said

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**Figure 2:** Incidence of moonlighting for nonorthopedic (A) and orthopedic (B) residents.
“no,” 1421 (57.21%) said “yes,” and 190 (7.65%) said they had “not thought that far ahead.” In the orthopedic resident group, 71 (43.6%) residents said “no,” 80 (49.08%) said “yes,” and 12 (7.36%) said they had “not thought that far ahead” ($P=.041$) (Figure 3).

When asked if their type of or state of practice would be influenced by their debt repayment options, 682 (27.53%) nonorthopedic residents said “no,” 1273 (51.39%) said “yes,” and 522 (21.07%) said they were “unsure.” In the orthopedic resident group, 45 (27.44%) residents said “no,” 77 (46.95%) said “yes,” and 42 (25.61%) said they were “unsure” ($P=.175$) (Figure 4).

**DISCUSSION**

Most student loans do not require repayment while the student is in medical school; thus, the first year of residency is often the first time student loan repayment becomes a budgeting concern for newly graduated medical students. The amount of money being managed in these situations may appear insurmountable: more than 60% of total respondents in this study reported a total student debt load of greater than $150,000, and 12% had a debt load of greater than $300,000.

The affordability of medical education is rapidly becoming an important topic

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**Figure 3:** Next step of training affected by debt for nonorthopedic (A) and orthopedic (B) residents.

**Figure 4:** Effect of debt on final practice for nonorthopedic (A) and orthopedic (B) residents.
of debate. In 2014, the average per-year cost of medical education was $52,918 for out-of-state students and $51,980 for in-state students at private medical schools, and $56,998 for out-of-state students and $33,220 for in-state students at public medical schools. This shows an increase of $8504 (19.5%) for private and $8382 (33.74%) and $13,455 (23.6%) for in- and out-of-state public medical schools, respectively, since 2009. Given these increases in medical cost, student debt may be a deterrent to people attending medical school.

Not only is the total amount of debt a concern for those entering the medical field, but interest rates have become a significant factor as well. Of those responding to the survey, the majority (56%) of residents had interest rates over 6% for their student loans, as compared with mortgage rates, which have had an average high of 4.69% since 2010.

Comparing orthopedic trainees to all trainees, the 2 groups in this study were similar, with little difference noted in age, marital status, attendance of private vs public medical school, and number of dependents. Significantly more orthopedic residents who responded to the survey were male, and the average post-graduate year level was higher in the orthopedic resident group, which is not surprising given that the average orthopedic training path is a minimum of 5 years, whereas many primary care specialties have a minimum length of 3 years. However, this difference affects the length of time spent repaying student loans. Given the longer length of training, the average orthopedic surgery resident in this study will be paying back his or her loans later in life than nonorthopedic residents. Also, this is more time spent in training, during which interest will compound on orthopedic surgery residents’ student loans, increasing their debt burden at the completion of their training.

Examining survey responses regarding repayment, it does not appear that specialty selection was greatly affected by student loan debt in either group. In each group, less than a quarter of respondents took student loan debt into consideration when choosing a specialty. However, a significant difference existed between the orthopedic resident group and the nonorthopedic resident group regarding the issue of moonlighting while training. Many orthopedic programs do not allow moonlighting. Although nearly 25% of all respondents in the overall group participated in moonlighting activities, only 10% of surveyed orthopedic residents participated in moonlighting, potentially due to less concern in the orthopedic resident group over repaying loans after graduation, given higher reimbursement for orthopedic surgeons.

An additional interesting finding in this study was the significant difference between orthopedic and other residents that exists regarding the next step in their careers. Orthopedic residents responding to the survey were less likely to determine their next step based on debt repayment than their counterparts in the nonorthopedic resident group. This difference was apparent when deciding the next step of the respondents’ professional lives (eg, fellowship, private practice, academic medicine) and may similarly be related to the relatively higher reimbursement and potential income of orthopedic surgeons.

Given that orthopedic surgeons have the ability to earn substantial income following residency training, they may be less inclined than trainees in less well-reimbursed specialties to base training decisions on debt repayment. Nearly 50% of respondents in both groups (51% of non-orthopedic residents and 47% of orthopedic residents) were concerned enough about their debt load that it would play a part in their final decision, either for state of practice or type of practice. Although there was no significant difference between the 2 groups, it is telling that half of the respondents considered student debt enough of a factor to influence the type or location of their specialty practice. A previous study among internal medicine residents demonstrated that residents with greater than $150,000 in debt were more likely to allow their debt to affect their career choice. A similar trend has been demonstrated previously in the orthopedic literature; a study by Ahn et al demonstrated that potential debt relief was a strong factor among residents deciding to become clinician scientists.

This study has several potential limitations. It is survey based as opposed to being based on tax-reported statistical data. This can lead to recall bias on the part of the person responding to the survey. In addition, the study was able to collect responses from only a percentage of residents in nonorthopedic and orthopedic residency training programs. However, responses were drawn from a wide geographical area: respondents from 39 separate states responded to the survey, and the orthopedic respondents came from 25 different states, providing a representative cross-section of residents across the country. Representatives from every geographic region in the country were present in both the orthopedic and nonorthopedic resident groups, with no obvious geographical bias, negating the effect of resident salary variation on the participants’ responses. Also, the respondents in the nonorthopedic resident group came from a diverse group of subspecialties. Although the largest groups responding to the survey were primary care subspecialties (internal medicine and pediatrics), the largest response group was only 15% of respondents. This provides a diverse group of respondents in the non-orthopedic resident group, hopefully preventing any response bias by providing a heterogeneous group of respondents. Despite these limitations, the authors believe this information provides important data regarding the indebtedness of orthopedic trainees and its effect on career choice.
CONCLUSION
Student loan burden is substantial and growing, causing serious concerns for resident trainees. The level of resident debt may deter young Americans from pursuing medical careers. This study demonstrated that concern over student loan debt is a significant driving force among orthopedic surgery residents and residents of other subspecialties when considering their careers.

REFERENCES
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