Many orthopedic residents accrue considerable debt by residency graduation. These debts for graduating medical students continue to increase due to the yearly increase of medical school tuition. The purpose of this study was to examine the causes of financial debt, as well the effects of debt on orthopedic residents.

Orthopedic residents from postgraduate years 1 to 5 (N=27) completed an anonymous, optional financial survey. The survey asked questions regarding the characteristics of the residents’ debt and their concern caused by their debt. All residents from our institute (N=27) voluntarily participated in the survey. The residents consisted of 4 (15%) women and 23 (85%) men, with 14 (56%) single residents and 12 (44%) married residents. No statistically significant difference existed in total debt >$100,000 between single and married residents or men and women. Forty-eight percent (n=13) of the residents had medical educational debt >$100,000, whereas 45% (n=12) had total debt >$200,000. Residents with total debt >$100,000 were concerned about their debt, whereas 1 of 4 residents with <$100,000 of total debt reported concern (P<.001).

Debts affect orthopedic residents financially and may cause stress and hinder their medical training. Appropriate measures should be taken to help residents properly manage their debt and to provide supplemental assistance with their financial struggles.
As aspiring physicians transition from medical students to residents, many are faced with the difficulties of financial debt. Medical school tuitions increase yearly, and the number of residents in debt due to these increases grows congruently. A survey by the Association of American Medical Colleges in 2009 reported that 13% of graduating medical students had no medical school loans. From loans obtained during medical school to debt accrued during residency, these financial obligations continue to pile up for many unprepared residents.

These financial difficulties pose multiple burdens for residents in training, ranging from stress caused from accumulating debt to concern due to the inability to purchase educational tools (eg, books) for residency training. It is crucial to understand the possible concerns and hindrances that financial debt may cause residents.

The purpose of this study was to analyze various elements that contribute to orthopedic residency debt and to examine the effects these financial burdens pose on residents. We hypothesized that a significant number of residents were affected by financial debt and that those financial stressors affected residents’ performance in training. This study may benefit residents by acknowledging the importance of understanding orthopedic resident debt.

**Materials and Methods**

Exempt approval was received from our Institutional Review Board, and data were collected from the orthopedic residency database. Information obtained from the database included the age, sex, and postgraduate year of the residents. An anonymous optional financial inventory was given to all orthopedic residents, and a retrospective study was performed on the responses. The survey assessed the characteristics of the residents’ debt, as well as the concerns and hindrances caused by this debt. The inclusion criteria were orthopedic residents who fully completed the financial inventory survey. All survey information was anonymous.

Total debt was defined as the accumulation of debt from all causes, including medical school loans, credit card balances, home mortgage loans, and car loans. Significant total debt was defined as total debt >$100,000. Residents rated their overall levels of concern regarding the total debt by selecting 1 of the following choices: none, mild, moderate, or severe.

All completed surveys were inputted into a database and analyzed by a blind third party. Graphpad Prism (GraphPad Software, La Jolla, California) was used for statistical analysis. Fischer’s exact test was used to analyze categorical data, with the level of significance set at $P < .05$.

**Results**

One hundred percent of the orthopedic residents at our program participated in the study. All surveys were fully completed. Four women and 23 men participated, with a mean age of 30 years. Wide ranges of total debt existed between the varying age groups (Figure 1). Among the 4 women, the total debt ranged from $1 to $300,000, whereas the total debt for men ranged from $1 to >$600,001 (Figure 2). No statistical significance existed in total
debt between men and women. Fifteen residents were single, and the remaining 12 residents were married. No statistical difference existed in significant total debt between the single and married residents.

Fifty-nine percent (n=16) of the residents had medical school loan balances (Figure 3), and 52% (n=14) of the residents had credit card balances (Figure 4). Eighty-two percent (n=23) of the residents had some type of debt, which included, but was not limited to, medical school loans, credit card balances, home mortgage loans, and car loans (Figure 5). In addition, 48% (n=13) of the residents had medical educational debt >$100,000, whereas 45% (n=12) had total debt >$200,000. Although a wide variation of assumed debt pay-off time existed among residents, 58% (n=10) of the residents with significant total debt expected to pay off their debt within 6 to 15 years (Figure 6).

All residents with significant total debt (n=17) were concerned about the debt (Figure 7), whereas 1 of 4 residents with <$100,000 of total debt reported concern (P<.001). Residents with >$200,000 in total debt considered their levels of concern to be moderate or greater (Figure 7). In addition, 65% (n=11) of residents with significant total debt reported that their debt affected their ability to pay for work-related items (eg, books, equipments, license fees). Regardless of the varying range of debt, all residents reported that their financial situation would not have been a factor in selecting their orthopedic specialty.

**Discussion**

When medical students transition to residency, they are provided with many new responsibilities. Many residents are also burdened with the responsibilities of their debt from medical school loans. These considerably large loans are only the beginning of their debt as they struggle financially through residency. Many residents accrue credit card debt, mortgage loans, car loans, and other forms of debt. Understanding the causes of debt in orthopedic residency, as well as its effects on residents, plays an important role in improving overall residency training.

A major deterrence factor for those wanting to pursue careers as physicians is the affordability of medical education. According to data published by the Association of American Medical Colleges in 2009, medical tuition was $44,287 for private schools and $24,809 and $43,543 for public schools for in-state residents and out-of-state nonresidents, respectively. Using constant 2008-dollar terms, between 1999 and 2009, tuition increased by 21% in private schools and by 80% for in-state residents of public medical schools. The mean debt amount of debt for graduating medical students in 2008 was $158,061, with 68% having >$100,000 of debt.1 Our data also demonstrated high levels of medical educational debt; 48% of our orthopedic residents had medical educational debts >$100,000.

Although large medical school loans can be deferred until the completion of residency, a maximum of $34,000 ($8,500 per medical school year) of the total medical school loan can be federally subsidized. Although the interest on the federally subsidized portion of the loan will not accrue during residency, all remaining debt will accrue interest. This is troubling for ortho-
pedic residents because most orthopedic residency programs are accredited to a minimum of 5 years. Orthopedic residents who choose deferment during residency with $150,000 of unsubsidized loans and an annual percentage rate of 7% will have accrued approximately $60,000 in additional debt during those 5 years. After residency graduation, new physicians are usually obligated to pay off their loans within 10 years. The short pay-off period and large loan amounts lead to monthly payments that encompass a significant portion of their salaries. For many, financial freedom as an adult is difficult to obtain for a minimum of 23 years following high school graduation (4 years of undergraduate school, 4 years of medical school, 5 years of orthopedic residency, and 10 years of loan repayment).

Seventeen of 27 (63%) residents from our study had total debts >$100,000. Our survey demonstrated that all 17 residents with >$100,000 in total debt were concerned about their debt, whereas 1 of 4 residents with <$100,000 in total debt reported concern (P<.001). With more than half of all graduating medical students having debt >$100,000, these new residents enter residency with financial preoccupations and stress prior to their first patient encounter.

In addition, 11 of the 17 residents with >$100,000 in total debt reported that their debt affected their ability to pay for work-related items. Collier et al2 examined the financial situation of internal medicine residents and reported that 52% could not afford work-related items (eg, books and equipment), whereas 30% could not afford licensing fees. The continued increases in medical school loans and other debt cause concern and stress for residents and also hinder proper medical training during residency.

Students in modern society often choose to pursue careers in medicine for altruistic reasons, with the knowledge that the field may not provide the financial security that it once did. Future physicians hope to impact the lives of those in need but soon realize that their debt accumulations impact their choice of specialty and practice location.

Currently, physicians are most needed in the rural areas of the United States. The rural population accounts for approximately one-fourth of the US population, with many of these citizens being elderly and poorer and sicker than those in more urbanized areas. A recent study reported that 7% of orthopedic residents planned to practice in rural areas, whereas 37% and 36% of residents planned to practice in suburban and urban areas, respectively.4 Another study on general surgery residents reported that 5% of residents planned to work in a rural hospital setting.5 One reason for the lack of desire to work in these areas may be the lower income of rural physicians. Many citizens of rural areas are insured by Medicare and Medicaid, which provide lower rates than the majority of private insurers.6 Also, some of these citizens are unable to afford insurance but do not meet the governmental criteria for poverty to be federally insured. When health care is needed, these patients are unable to pay their bills, which leads to physicians’ not being able to be reimbursed for their services. Although in theory lower income should not be a major influencing factor for an orthopedic physician’s choice of practice.
location, the financial debt accumulated during schooling and training, as well as that obtained to support one’s practice in these areas, make practicing in these locations difficult.

The financial burden of orthopedic residents also plays role in these residents’ choices of medical specialty. Specialties that provide lower incomes may deter residents with large debt from pursuing these particular fields. Although our study demonstrated that residents’ choices of specialty were not affected by debt, other studies have shown different results. A recent study reported the decreased number of residents choosing adult reconstruction specialties despite the fact that the need for these reconstructions are increasing significantly with the growing elderly population. The lack of reimbursement with these surgeries hinders residents from choosing specialties in adult reconstructions. Researchers reported that, although the decrease in residents in adult hip reconstruction is a short-term variability, the consequences of the lack of orthopedic surgeons in the field will become more pronounced in the upcoming years as the elderly population continues to increase.

Orthopedic residents, as well as residents from other specialties, face the challenge of managing their financial responsibilities throughout their careers as physicians. The impact of debt begins early, in residents’ accrual of interest from their current debt, in their inability to purchase educational tools, and in the possibility of their debt influencing their choice of specialty and location practice. Although reform on medical education tuition is unlikely in the near future, measures can be taken to help residents with debt. Due to the long years of training necessary to become a practicing physician, many physicians are not exposed to financial management and the stressors that occur with financial planning until much later compared with those who pursue most other professions. Few residents are exposed to what many would consider mundane tasks, such as repaying debt, purchasing real estate, or owning cars. It is important that residency programs provide residents with the ability to seek guidance from experienced personal financial advisors. Advisors could help manage their debt and optimize their use of income. Programs could also incorporate financial education and support into their academic curriculum. In addition, residency programs could provide supplemental funding for essential resident training items and licensing fees to lessen the financial burden on residents.

CONCLUSION
Understanding and addressing residents’ concerns regarding financial debt should be essential components of orthopedic residency programs. Programs tailored to teach residents financial responsibility can help manage their debt and improve resident education, morale, and stress levels. Until major reform occurs in the medical field, financial debt will continue to be problematic for residents.

REFERENCES

