The relationship between education debt and career choices in professional programs

The case of dentistry

Kamyar Nasseh, PhD; Marko Vujicic, PhD

Relative to average annual dentist earnings, dental school debt has increased substantially over the past 20 years. The ratio of debt to income has increased from approximately 70% in 1996 to approximately 97% in 2010.[1] As one of us has written, some speculate that dentistry might be showing signs of an education bubble.[1] Since 2000, inflation-adjusted annual dentist earnings have remained flat. Although dentists reported increased busyness levels in 2015 compared with those in previous years, there is still unused capacity in the dental care system.[2] Since 2005, the supply of dentists per capita has expanded and is projected to increase in the future.[3] The demand for dental services among working-age adults has decreased steadily since 2003.[4] These combined trends could put downward pressure on future dentist earnings.

There is mixed evidence about whether education debt has an association with career choice. For physicians, results from some studies did not indicate a statistical relationship between education debt and residency preferences.[5-7] However, results from other studies, such as that by Colquitt and colleagues,[8] showed that education debt can induce students to choose a career in family practice or internal medicine. Results from other studies have shown that

ABSTRACT

Background. The authors examined the relationship between education debt and career choice, particularly dentists' decisions to specialize, participate in public health insurance programs, and join dental management service organizations (DMSOs).

Methods. The authors used data from the American Dental Association 2015 office database, which contains dentist demographic information and identifies dentists who participate in public health insurance programs for pediatric dental care services. The authors merged this database with the 2002-2015 American Dental Association Survey of Dental Graduates, which contains information about education debt, to assess the relationship between education debt and career choices. The authors used probit and multinomial logit models to determine the relationships among education debt, demographic characteristics, and dentist career choices.

Results. For each $10,000 increase in education debt, dentists were 0.9% more likely to join a DMSO (relative risk ratio, 1.009; 95% confidence interval, 1.0021 to 1.0164) and 0.6% less likely to join a non-DMSO group practice (relative risk ratio, 0.994; 95% confidence interval, 0.9897 to 0.9987) over a solo practice. Education debt did not have a statistically significant association with the decision to participate in public health insurance programs, but it did have a statistically significant association with the decision to specialize.

Conclusions. Education debt had a modest association with some career choices among dentists. Demographic characteristics, such as race and sex, had a greater association.

Practical Implications. Dental education debt has increased substantially in recent years. Debt had only a modest association with some career choices. Policy makers could consider this when considering education debt relief.

Key Words. Education debt; dental management service organizations; career choice; Medicaid participation.

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increased medical school debt deters graduates from pursuing a career in primary care or internal medicine.[9-16] However, Frintner and colleagues[17] showed that increased education debt among pediatrics medical residents was associated with an increased likelihood of entrance into a primary care practice and a lower likelihood of matriculation into a fellowship program. Salter and Kimball[18] found that education debt does not affect the choice to enter a solo practice but could affect the decision to enter into a fellowship. Results from another study showed that education debt has only a small overall effect on specialty choice.[19]

Investigators also have analyzed the potential of dental school debt to influence dentists' career choices,[20-23] including Medicaid participation or practice ownership.[24,25] Nicholson and colleagues[26] concluded that dentists with high education debt were more likely to enter private practice and work longer hours. However, the authors did not find a relationship between education debt and practice ownership, setting of practice, or the decision to participate in Medicaid. Wanchek and colleagues[27] found that increased debt makes dental graduates more likely to choose private practice over government service, advanced education, and teaching. These study investigators concluded that the overall association of education debt with dentist career choice is small. Demographic characteristics such as sex and race have a bigger association with dentists' career choices.[26,27] Investigators in other studies also concluded that increased education debt levels make it less likely for dentists to specialize.[22,26,28]

In this article, we examine the relationship between education debt and 3 career choices. The first is whether to join a dental management service organization (DMSO) or a non-DMSO group practice or practice as a nonaffiliated solo dentist. DMSOs are entities that offer management services to dental practices.[29] A number of characteristics distinguish DMSOs from other dental organizations.[30] Many DMSOs identify under a particular brand name. Depending on state law, a DMSO practice can be owned by a single dentist, a group of dentists, a private equity firm, or an outside corporation. Some states require dentists to own a dental practice. Dentists employed by a DMSO can be owners, partners, or employees of a corporation. To our knowledge, investigators have not attempted previously to measure the relationship between education debt and graduates' likelihood of joining a DMSO.

The second career choice is whether to participate in pediatric public health insurance programs (Medicaid or the Children's Health Insurance Program [CHIP]). Although previous researchers examined the link between education debt and Medicaid participation[26] and between Medicaid reimbursement and Medicaid participation,[31,32] we also control for practice type (for example, DMSO) in our analysis. Finally, we measure the relationship between education debt and the decision to specialize.

METHODS

Data and sample selection. Previous researchers primarily used survey data to measure education debt, Medicaid participation, practice type, and specialization. However, in our research, the main outcome variables are based on administrative data rather than being self-reported by dentists. We use Medicaid provider participation data from the Centers for Medicare & Medicaid Services (CMS), DMSO data from a list of DMSO companies, dentist office data from the American Dental Association (ADA) 2015 office database, and education debt data from the 2002-2015 ADA Survey of Dental Graduates (SDG). We believe that these sources of data are more representative of the dentist workforce in the United States.

The 2015 ADA office database is based on a snapshot of professionally active dentists listed in the ADA master file as of November 2015. The ADA master file, a census of dentists in the United States, is used as the primary source of all business addresses in the office database. Business addresses are fed into the ADA master file via the ADA Distribution of Dentists survey, the 2002-2015 ADA SDG, and state and local dental associations. We also merged business address data from the National Provider Identifier dentist registry, which is maintained by CMS.[33] From the ADA master file, we merged demographic data, including dentist specialty, race or ethnicity, sex, age, year of graduation, and school of graduation, into the office database. We identified DMSO group practice locations and dentists by using a list of companies provided by the Association of Dental Support Organizations (ADSO).[34] From September through December 2015, we visited the websites of 138 group practices, including all ADSO members based in the United States for whom we could find websites identifying dentists and office locations. We considered a dentist to be affiliated with a DMSO if at least 1 of his or her 2015 practice locations was a member of ADSO or part of American Dental Partners, Western Dental Services, or Kool Smiles (3 large DMSOs that are not members of ADSO). We considered a dentist to be affiliated with a non-DMSO group practice if his or her practice consisted of more than 1 dentist or more than 1 location. Using exact and fuzzy matching methods, we

ABBREVIATION KEY. **ADA:** American Dental Association. **ADSO:** Association of Dental Support Organizations. **CHIP:** Children's Health Insurance Program. **CMS:** Centers for Medicare & Medicaid Services. **DMSO:** Dental management service organization. **FQHC:** Federally Qualified Health Center. **GP:** General practice. **IKN:** Insure Kids Now. **SDG:** Survey of Dental Graduates.