A Large Retrospective Multivariate Analysis of the Relationship Between Medical Student Debt and Primary Care Practice in the United States

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Mean Educational Debt of Indebted U.S. Medical Students, 1996 - 2012

86% of medical students borrowed money for medical school in 2012 (a record high)

Source: AAMC, Graduation Questionnaire, 1996-2011
So What?

- No clear linear relationship between debt level and primary care and specialty choice in several good studies
- Some studies have shown that primary care physicians graduate with more debt, especially at low levels of debt
- Does debt really impact the primary care workforce?
Limitations of Previous Studies

• Medical student socioeconomic status correlates with debt and with primary care specialty choice
  – Students from low income families are more likely to choose primary care
  – Students from low income families have more debt

• In many studies socioeconomic status has not been controlled
Limitations of Previous Studies

Some studies have found non-linear relationships (Rosenblatt, 2005)
Purpose:
Re-examine the relationship between debt and primary care specialty choice, using:
- large sample size
- control for student socioeconomic status
- non-linear analysis
Methodology

• Retrospective sample
• All medical students who graduated from allopathic U.S. medical schools between 1988-2000, practicing medicine in the United States in 2010
• Excluded:
  – International medical graduates
  – Osteopathic physicians
Data Sources

- AMA Physician Masterfile
- AAMC Graduate Questionnaire
- National Health Service Corps participant database (HRSA)
- Residency training data

- Data sources were combined to create a unique analysis file.
- Data de-identified before analysis.
- IRB approval from Georgetown University.
- Dataset used for previous analysis
Study Sample Characteristics

- N = 136,232
- 60.2% male
- 62.1% public medical school

Median Debt $85,000
Control Variables

- Demographic factors:
  - Rural birthplace (county)
  - Marital status (at med school graduation)
  - Age (at med school graduation)
  - Gender

- National Health Service Corps participation

- Medical school characteristics
  - Rural
  - Community based

- Graduation year

- All dollar amounts adjusted to 2010 dollars
<table>
<thead>
<tr>
<th>Loan</th>
<th>Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Loans for Disadvantaged Students</strong></td>
<td>Students must demonstrate exceptional financial need or be from a disadvantaged background.</td>
</tr>
<tr>
<td><strong>Perkins Loans</strong></td>
<td>Institutions are mandated to give “priority to the neediest students.”</td>
</tr>
<tr>
<td><strong>Health Professions Student Loan</strong></td>
<td>Must demonstrate financial need, including parents’ resources.</td>
</tr>
</tbody>
</table>
Outcomes

- Family Medicine practice in 2010
- Primary care practice in 2010
  - General practitioners
  - Family physicians
  - General pediatricians
  - General internists
  - Geriatricians
Percent of 1988-2000 Allopathic U.S. Medical Graduates in Family Medicine (univariate analysis)

- Health Professions Student Loans
- Perkins or Disadvantaged
- Non-Income Based

Adjusted Mean Medical School Debt
Odds of Primary Care or Family Medicine Practice (all students, multivariate analysis)
Odds of Family Medicine Practice by Loan Type (multivariate analysis)

- No Income-Based Loans
- Health Professions Student Loans
- Perkins or Disadvantaged

Data points:
- $1-50K: 0.853
- $50-100K: 1.0
- $100-150K: 0.92
- $150-200K: 0.9
- >$200K: 0.77
Socioeconomic Status Effect

Cumulative effect:

No clear linear relationship between debt and primary care

Positive relationship between debt and primary care at low debt levels \(\text{(socioeconomic status effect stronger)}\)

Negative relationship between debt and primary care at high debt levels \(\text{(deterrent effect stronger)}\)

lower SES medical student

more likely to choose primary care

fewer financial resources

more debt

less likely to choose primary care

Deterrent Effect

AAFP Center for Policy Studies
Likelihood of Choosing Primary Care

Educational Debt Level

Socioeconomic Status Effect

Cumulative effect
(not a direct summation)

Deterrent Effect
Medical Student Debt is Eroding the Primary Care Workforce… especially Family Medicine
Acknowledgements and Disclosures

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- The information and opinions presented here do not necessarily reflect the views or policy of the American Academy of Family Physicians.
- We are grateful to the American Association of Medical Colleges for the use of their data, but the findings and conclusions do not reflect their views or policy.
Study Sample Characteristics

- No income-based loans
- Perkins or Disadvantaged
- Health Professions
6 Multivariate Models for Each Outcome:

• All students*
• Public school grads*
• Private school grads*
• Each loan grouping
  – Perkins Loans or Loans for Disadvantaged Students
  – Health Professions Student Loans
  – No income-based loans

*Loan Types used as control variables in these models