HEALTH POLICY

Medical Students' Views and Knowledge of the Affordable Care Act: A Survey of Eight U.S. Medical Schools

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BACKGROUND: It is not known whether medical students support the Affordable Care Act (ACA) or possess the knowledge or will to engage in its implementation as part of their professional obligations.

OBJECTIVE: To characterize medical students' views and knowledge of the ACA and to assess correlates of these views.

DESIGN: Cross-sectional email survey.

PARTICIPANTS: All 5,340 medical students enrolled at eight geographically diverse U.S. medical schools (overall response rate 52 % [2,761/5,340]).

MAIN MEASURES: Level of agreement with four questions regarding views of the ACA and responses to nine knowledge-based questions.

KEY RESULTS: The majority of respondents indicated an understanding of (75.3 %) and support for (62.8 %) the ACA and a professional obligation to assist with its implementation (56.1 %). The mean knowledge score from nine knowledge-based questions was 6.9 ± 1.3 . Students anticipating a surgical specialty or procedural specialty compared to those anticipating a medical specialty were less likely to support the legislation (OR=0.6 [0.4–0.7], OR=0.4 [0.3–0.6], respectively), less likely to indicate a professional obligation to implement the ACA (OR=0.7 [0.6–0.9], OR=0.7 [0.5–0.96], respectively), and more likely to have negative expectations (OR=1.9 [1.5–2.6], OR=2.3 [1.6–3.5], respectively). Moderates, liberals, and those with an above-average knowledge score were more likely to indicate support for the ACA (OR=5.7 [4.1–7.9], OR=35.1 [25.4–48.5], OR=1.7 [1.4–2.1], respectively) and a professional obligation toward its implementation (OR=1.9 [1.4–2.5], OR=4.7 [3.6–6.0], OR=1.2 [1.02–1.5], respectively).

CONCLUSIONS: The majority of students in our sample support the ACA. Support was highest among students who anticipate a medical specialty, self-identify as political moderates or liberals, and have an above-average

knowledge score. Support of the ACA by future physicians suggests that they are willing to engage with health care reform measures that increase access to care.

KEY WORDS: Medical students; Health care reform; Affordable Care Act; Survey.

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INTRODUCTION

While physicians' and physician organizations' views regarding health care reform are well documented,^{1–5} little attention has been paid to the views of medical students. These future physicians will begin medical practice after implementation of the Affordable Care Act's key provisions has begun, and will spend their careers working in health systems shaped by the legislation. Therefore, the goals of health care reform are more likely to be realized if current medical students are prepared and willing to engage with implementation efforts, and to advocate for necessary refinements to the current legislation.^{6,7} According to Fisher and colleagues, physicians have a unique opportunity to "become our most credible and effective leaders of progress toward a new world of coordinated, sensible, outcome-oriented care".⁸ However, health policy training in medical school may be inadequate to prepare students to meet these challenges.^{9,10}

In our previous study of Minnesota medical students, we found a lack of both support for and knowledge of the Affordable Care Act (ACA).¹¹ Only 47 % of medical students indicated support for the legislation, and only 48 % reported an understanding of the law. Whether the same would be true of a national sample of medical students is unknown. It is also unclear whether future physicians, nationally, are willing to engage in the policy process as part of their professional responsibilities. Therefore, we sought to characterize views

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and knowledge of the ACA in a national sample of medical students, and to examine whether medical students were willing to accept implementation of the ACA as part of their professional obligations. We also assessed correlates of students' views, including anticipated specialty, medical school year, and student loan debt. Based on our previous survey findings and reported deficiencies in health care policy education,^{9–11} we hypothesized that knowledge and understanding of ACA measures among a national sample of medical students would be low, while their sense of professional obligation to assist with ACA implementation would be high.

METHODS

Participants

Between April and June 2014, we emailed questionnaires using SurveyMonkey to all medical students ($n=5,340$) enrolled at eight medical schools: University of Minnesota Medical School (Twin Cities and Duluth campuses), University of Colorado School of Medicine, Vanderbilt University School of Medicine, Harvard Medical School, University of Louisville School of Medicine, University of Cincinnati College of Medicine, University of Arizona College of Medicine (Tucson and Phoenix campuses), and Johns Hopkins University School of Medicine. These programs were chosen because of their geographic location, mix of public and private settings, and presence of a local investigator willing to distribute the survey instrument. Complete medical student email lists were obtained after IRB approval and authorization by the administration at each participating medical school. Responses were anonymous, and participants were not given an incentive for completing the survey. Three reminders were sent via email to non-responders at each institution after the initial survey invitation. The institutional review board at each participating institution approved this study.

Survey Instrument

The survey tool was adapted from previously published surveys of practicing physicians and medical students, as well as from questions developed by a non-profit health policy organization.^{3,11,12} We performed cognitive testing to enhance the validity and usability of the survey, and it was pilot-tested among Minnesota medical residents to determine survey time.

As part of the survey, students were asked to indicate their level of agreement with four questions regarding support for, knowledge of, professional obligation toward, and expectations of the ACA. Responses were measured using a five-point Likert scale (strongly disagree, disagree, no opinion, agree, strongly agree) for each item.

To assess objective knowledge of the ACA, respondents were asked nine true/false questions regarding a number of provisions within the ACA. We chose these nine questions

because they encompass the most significant provisions enacted under the legislation.^{13,14}

Students were also asked to provide demographic characteristics (age, gender, race, year in medical school); anticipated specialty type, categorized as medical (e.g., family medicine, internal medicine, pediatrics), surgical (including surgical subspecialties), procedural (e.g., anesthesiology, radiology), nonprocedural (e.g., neurology, psychiatry), or non-clinical (e.g., pathology, administration); political self-characterization (liberal, moderate, conservative); and level of educational debt.

Statistical Analysis

Responses to survey items were tabulated and summarized with frequencies and percentages. Chi-square tests were used to identify significant associations among health care policy opinions, knowledge, and student demographic characteristics, as well as other key predictors. A cumulative knowledge score was calculated for students who answered all nine true/false questions. Multiple logistic regression models were used to assess associations between key anticipated predictors (specialty choice, political affiliation, year in medical school, knowledge score, and educational debt) and respondents' opinions regarding the ACA, adjusted for age, race, and gender. A p value <0.05 was considered statistically significant. Analyses were performed using the SAS version 9.3 software program (SAS Institute Inc., Cary, NC, USA).

RESULTS

Sample

Of the 5,340 medical students who were sent an invitation to participate in our study, 2,761 responded to the survey (51.7 %). A total of 2,593 students (48.6 %) answered all nine knowledge questions, allowing us to calculate their knowledge scores. Respondents' self-reported demographic characteristics are summarized in Table 1. Race and gender distributions of respondents were similar to nationally reported medical student demographics.^{15,16} A smaller proportion of second-year medical students (17.1 %) completed the survey compared to first-, third-, and fourth-year students (25.9%, 24.7 %, and 28.6 %, respectively). Response rates varied by medical campus, ranging from 39.1 to 78.5 % (mean, 53 %); there were no consistent predictors of institutional response rates. Survey methodology was consistent across participating sites, and institutional factors (public vs. private, number of students, region) were not associated with response rates. Over half of respondents identified themselves as politically liberal (57.6 %), and nearly half (45.1 %) anticipated a medical

Table 1 Characteristics of Study Population*

Sociodemographic characteristic	No. (%)
Gender	
Female	1,248 (48.7)
Male	1,317 (51.4)
Age (years)	
20–24	7,62 (29.6)
25–29	1,486 (57.6)
30 and older	330 (12.8)
Race	
Black/African American	99 (4.0)
White, non-Hispanic	1,694 (67.5)
Hispanic, white/unspecified	144 (5.7)
Asian	390 (15.6)
Mixed	123 (4.9)
Other	58 (2.3)
Year in medical school	
First	667 (25.9)
Second	441 (17.1)
Third	635 (24.7)
Fourth	735 (28.6)
Masters/PhD/other [†]	95 (3.7)
Intended specialty	
Medical	1,161 (45.1)
Surgical	590 (23.0)
Procedural	235 (9.1)
Nonprocedural	153 (6.0)
Non-clinical	30 (1.2)
Unknown/other	403 (15.7)
Political ideology	
Liberal/somewhat liberal	1478 (57.6)
Moderate	545 (21.2)
Conservative/somewhat conservative	424 (16.5)
Other	121 (4.7)
Estimated educational debt	
None	352 (13.7)
Less than \$100,000	483 (18.8)
\$100,000–\$200,000	855 (33.3)
\$200,000 or more	881 (34.3)

*Categories may not total 2,761 due to partially completed surveys.

[†]Represents students currently completing additional degree or research

residency. The majority of students estimated having more than \$100,000 in educational debt (67.6 %) by the time they graduated.

Views Regarding the ACA

Survey responses to the four opinion statements regarding the ACA are summarized in Table 2. A majority of respondents agreed with the statements “I understand the basic components of the Affordable Care Act” (75.3 %) and “I support the Affordable Care Act” (62.8 %). Only 16.7 % of students indicated opposition to the legislation. Over half of

respondents agreed that physicians were professionally obligated to play a role in implementing the ACA (56.1 %). Approximately one-third of students (36.5 %) indicated uncertainty as to whether the ACA would have a negative influence on their careers, while 42.5 % believed that the legislation would not have a negative influence.

Knowledge Regarding the ACA

Responses to the nine questions testing knowledge of the ACA are reported in Table 3. Correct responses were summated to create an overall knowledge score for each respondent. A majority of respondents answered at least seven of the nine questions correctly (61 %). Eleven percent of students responded incorrectly to four or more questions. Two questions were answered incorrectly by more than half of respondents: “The Affordable Care Act creates a new government-run insurance plan to be offered along with private plans” (53.3 %) and “The Affordable Care Act allows the federal government to expand Medicaid in every state” (50.5 %). The mean knowledge score was 6.9 ± 1.3 .

Unadjusted Analyses and Associations

In unadjusted analyses, there was a significant association between knowledge scores and support for the ACA ($p < 0.0001$); 68 % of those with above-average knowledge scores indicated support for the legislation, while only 56 % with below-average knowledge scores indicated support. There was also a significant association between students' knowledge scores and the anticipated impact of the ACA on their future careers ($p < 0.0001$); respondents with above-average knowledge scores were more likely (49 % vs. 33 %) to indicate that the ACA would *not* have a negative impact on their career. Objective knowledge of the ACA was significantly associated with self-reported knowledge ($p < 0.0001$); those with above-average knowledge scores reported higher levels of knowledge (“I understand the basic components of the ACA”) compared to those with below-average knowledge scores (81 % vs. 67 %).

In addition, there were significant associations between individual institutions and self-reported understanding of ($p < 0.0001$), support for ($p < 0.0001$), professional obligation toward ($p = 0.004$), and expectations of the ACA ($p < 0.0001$).

Table 2 Self-Reported Opinions Regarding the Affordable Care Act among Medical Students from Eight U.S. Medical Schools*

	No. (%)		
	Disagree/(strongly disagree)	No opinion	Agree/(strongly agree)
I understand the basic components of the Affordable Care Act.	526 (19.1)	155 (5.6)	2,077 (75.3)
I support the Affordable Care Act.	461 (16.7)	564 (20.5)	1,731 (62.8)
Physicians are professionally obligated to assist with implementation of the Affordable Care Act.	480 (17.5)	728 (26.5)	1,543 (56.1)
The Affordable Care Act will have a <u>negative</u> influence on my future career in medicine.	1,173 (42.5)	1,006 (36.5)	579 (21.0)

*Categories may not total 2,761 due to partially completed surveys.

Table 3 Medical Student Responses to Nine True/False Questions Regarding ACA Provisions*

The Affordable Care Act...	No. (%)	
	True	False
Requires individuals to have health insurance or else pay a fine.	2,539 (95.9) [†]	108 (4.1)
Increases payments to primary care physicians for 2 years.	1,609 (61.2) [†]	1,021 (38.8)
Creates a new government-run insurance plan to be offered along with private plans.	1,406 (53.3)	1,232 (46.7) [†]
Allows the federal government to expand Medicaid in every state.	1,330 (50.5)	1,302 (49.5) [†]
Requires large businesses (More than 100 employees) to provide health insurance for their employees or else pay a fine.	2,420 (91.7) [†]	219 (8.3)
Includes an overhaul of tort reform law.	768 (29.3)	1,858 (70.8) [†]
Defines benefits that private insurance companies must include in their insurance plans.	2,233 (85.0) [†]	395 (15.0)
Creates health insurance exchanges or marketplaces where small businesses and individuals can purchase insurance and compare prices and benefits.	2,530 (95.8) [†]	111 (4.2)
Prevents people from being denied coverage due to a pre-existing condition.	2,576 (97.7) [†]	61 (2.3)

*Answers do not sum to 2,761 due to partially completed surveys.

[†]Represents correct answer

Objective knowledge scores also varied significantly among institutions ($p < 0.0001$). The ranking of institution by level of support was nearly identical to the ordering of institutions by the proportion of students who identified as liberal.

Predictors of Views Regarding the ACA

In multiple logistic regression models, students who anticipated a surgical specialty were significantly less likely to indicate support for (OR=0.6 [0.4–0.7]) or a professional obligation toward the ACA (OR=0.7 [0.6–0.9]), and were more likely to have negative expectations of the legislation (OR=1.9 [1.5–2.6]) compared to students who anticipated a medical specialty (Table 4). Students who selected a procedural specialty for their future career were also less likely to support the legislation (OR=0.4 [0.3–0.6]), less likely to indicate a professional obligation to implement the ACA (OR=0.7 [0.5–0.96]), and more likely to have negative expectations (OR=2.3 [1.6–3.5]). Students who self-identified as liberal were more likely to indicate an understanding of the law compared to those who characterized themselves as conservative (OR=2.2 [1.7–2.9]). Compared to conservatives, both liberals and moderates were more likely to indicate support for the ACA (OR=35.1 [25.4–48.5], OR=5.7 [4.1–7.9], respectively) and a professional obligation toward its implementation (OR=4.7 [3.6–6.0], OR=1.9 [1.4–2.5], respectively), and were less likely to have negative expectations of the legislation (OR=0.06 [0.04–0.08], OR=0.25 [0.19–0.34], respectively). Third- and fourth-year students were less likely to support the ACA than first-year students (OR=0.7 [0.5–0.9], OR=0.7 [0.5–0.98], respectively), although the main effect for medical school class was marginally significant ($p = 0.075$). Finally, students

with an above-average knowledge score were significantly more likely to indicate an understanding of (OR=2.0 [1.6–2.4]) and support for (OR=1.7 [1.4–2.1]) the ACA, and a professional obligation toward its implementation (OR=1.2 [1.02–1.5]).

DISCUSSION

Whether health care reform achieves its objectives depends, in part, on support from and engagement by key stakeholders, including the next generation of physicians.¹⁷ In this national study of medical students' views and knowledge of the ACA, the majority of students (63 %) indicated support for the ACA, with higher levels of support among students anticipating a medical residency and self-reported moderates and liberals. A majority (56 %) also endorsed a duty to assist with ACA implementation as part of their professional obligations. Our respondents' views of the ACA indicate that future physicians are willing to support and engage with health reform legislation that expands coverage and support previous statements that physicians are likely to be an integral part of efforts to redesign the health care system.^{18–20}

We also found that medical student support for the ACA (63 %) was much higher than support among the general public, and that it did not vary by level of educational debt. In a recent public opinion poll by the Kaiser Family Foundation, only 36 % of respondents had a favorable view of the ACA.²¹ We hypothesize that the high level of support among students stems from the ACA's primary goal of improving access to health care through Medicaid expansion, health insurance exchanges, and the individual mandate.²² Advocacy by physicians for improved access to care has long been encouraged by several medical codes of ethics,^{23–25} and may be a position that students in our sample were also endorsing through their support of the ACA. Stronger support among medical students compared to the general public may also reflect increased levels of knowledge among medical students. Public understanding of the law remains low;^{26,27} while in our study, we found that students with above-average knowledge scores were more likely to support the ACA than those with below-average scores.

Medical student support for the ACA is also higher than support among practicing physicians. Shortly after passage of the ACA, only 41 % of U.S. physicians believed that the law would move U.S. health care in the right direction.² In that study, primary care providers and political moderates and liberals were significantly more likely to endorse the ACA than surgeons, proceduralists, or political conservatives. We found that these predictors also influenced medical students' attitudes toward the legislation.

Support for the ACA among medical students in our study varied significantly by anticipated specialty, with those

Table 4 Odds of Agreement with Four Statements Regarding the Affordable Care Act (ACA) among Medical Students from Eight U.S. Medical Schools

	I understand the basic components of the ACA.	I support the ACA.	Physicians are professionally obligated to assist with implementation of the ACA.	The ACA will have a negative influence on my future career in medicine.
	OR (95 % CI)	OR (95 % CI)	OR (95 % CI)	OR (95 % CI)
Year in medical school				
First	1.0	1.0	1.0	1.0
Second	1.1 (0.8–1.5)	1.0 (0.7–1.4)	0.9 (0.7–1.2)	1.0 (0.7–1.5)
Third	0.8 (0.6–1.1)	0.7 (0.5–0.9)*†	0.8 (0.6–1.0)	1.2 (0.8–1.7)
Fourth	0.9 (0.7–1.2)	0.7 (0.5–0.98)*†	0.8 (0.6–1.0)	1.2 (0.8–1.8)
PhD/Masters/other	2.9 (1.3–6.6)*	1.0 (0.5–2.1)	1.1 (0.7–2.0)	0.8 (0.3–1.8)
Anticipated specialty				
Medical	1.0	1.0	1.0	1.0
Surgical	0.7 (0.6–0.9)*†	0.6 (0.4–0.7)†	0.7 (0.6–0.9)*	1.9 (1.5–2.6)†
Procedural	0.8 (0.6–1.1)	0.4 (0.3–0.6)†	0.7 (0.5–0.96)*	2.3 (1.6–3.5)†
Non-procedural	0.6 (0.4–0.9)*†	0.8 (0.5–1.2)	1.3 (0.8–1.9)	1.2 (0.7–2.1)
Non-clinical	0.7 (0.3–1.8)	1.0 (0.4–3.1)	0.9 (0.4–1.9)	1.4 (0.4–4.3)
Unknown/other	0.8 (0.6–1.1)	0.6 (0.4–0.8)*	0.7 (0.5–0.9)*	1.2 (0.9–1.8)
Political affiliation				
Conservative	1.0	1.0	1.0	1.0
Moderate	1.2 (0.9–1.7)	5.7 (4.1–7.9)†	1.9 (1.4–2.5)†	0.25 (0.19–0.34)†
Liberal	2.2 (1.7–2.9)†	35.1 (25.4–48.5)†	4.7 (3.6–6.0)†	0.06 (0.04–0.08)†
Other	1.2 (0.9–1.7)	2.1 (1.3–3.5)*	1.1 (0.7–1.8)	0.8 (0.5–1.2)
Knowledge score [§]				
Mean and below	1.0	1.0	1.0	1.0
Above mean	2.0 (1.6–2.4)†	1.7 (1.4–2.1)†	1.2 (1.02–1.5)*	0.8 (0.6–1.0)
Educational debt				
Less than \$100,000	1.0	1.0	1.0	1.0
\$100,000–\$200,000	0.9 (0.7–1.1)	0.9 (0.7–1.1)	0.9 (0.7–1.1)	1.0 (0.8–1.4)
\$200,000 or more	1.0 (0.7–1.2)	1.0 (0.7–1.2)	1.0 (0.8–1.2)	1.2 (0.9–1.6)

Odds ratios are from multiple logistic regression models adjusted for factors reported above in addition to gender, age, and race.

*Indicates $p < 0.05$

†Indicates $p < 0.0001$

‡Indicates marginally significant main effect ($0.05 \leq p < 0.08$)

§Mean score: 6.9 ± 1.3 (9 questions total)

anticipating a surgical or procedural specialty less supportive of the law and more likely to believe that the ACA would have a negative impact on their careers. One concern among students who are less supportive of the law may be financial. These students may be hesitant to fully endorse legislation that, over time, could diverge from more familiar and more lucrative fee-for-service payment models toward alternative payment models.²⁸ Students' views may also simply reflect the views of their mentors or faculty members. For example, practicing surgeons are much more resistant than primary care physicians to changes in reimbursement models.³ On the other hand, our finding of support for the ACA by future physicians who are considering medical specialties is reassuring in light of predicted physician shortages due to expanded insurance coverage.²⁹

Students' self-reported level of understanding in our sample was high (75 %), much higher than in our 2011 regional study in which only 48 % of students indicated an understanding of the ACA.¹¹ There may be several reasons for this finding, including the substantial media coverage the ACA has received since its inception,³⁰ a natural interest in the topic by students, and, perhaps, new health policy education initiatives across the country.^{31,32} However, despite these high levels of self-reported knowledge, there was significant confusion

among students regarding two key ACA provisions: Medicaid expansion and health insurance exchanges. Fifty-three percent of students erroneously believed that a public option was offered on the health insurance exchanges. While a public option garnered overwhelming physician support during the 2009–2010 health reform debate, it was not included in the final legislation.⁴ A majority of students (51 %) were also ignorant of the federal government's inability to expand Medicaid in individual states. With the exception of Vanderbilt University, all of the institutions included in this study reside in states that have expanded Medicaid coverage. Students in such states may be ill-informed because they are unaware of the 2012 Supreme Court decision in which states were exempted from mandatory participation,³³ or because expansion passed in their states with little public debate. While we found that a majority of students answered at least seven of the nine questions correctly, student ignorance of these two fundamental provisions of the ACA may be reflective of other important gaps in their knowledge.

Knowledge of health care reform, as indicated by individually calculated knowledge scores, was a key predictor of student support for the ACA and their attitudes toward its implementation. Students with

above-average knowledge scores were more likely to support the law and to endorse a professional obligation to assist with implementation. Whether this is because those who support the bill seek to better understand the ACA or because a more comprehensive understanding of the law leads to support cannot be determined with this cross-sectional study design.

Finally, self-reported political ideology was a significant predictor for all statements regarding the ACA. Self-reported moderates and liberals were significantly more likely than conservatives to indicate support for and an obligation to implement the ACA. In addition, moderates and liberals were less likely to agree that the ACA would have a negative impact on their careers in medicine. In contrast to national studies of practicing U.S. physicians, the medical students in our sample were more likely to self-identify as liberal.² This may represent either a generational change or a response bias not observed in national physician surveys with similar response rates.^{2,3} A majority of our sample self-identified as either liberal or moderate, suggesting that future physicians may be more accepting of health care reform, in part, due to political affiliation or identity.

Our study has several important limitations. First, associations from cross-sectional studies cannot establish causal relationships. Second, our sample is not random, but represents geographically diverse public and private institutions. Therefore, results from this non-random sample may not generalize to the overall medical student population. Fortunately, the demographic characteristics of student respondents are similar to national medical school demographics provided by the Association of American Medical Colleges (AAMC),^{15,16} although we cannot verify that the demographics of non-respondents were similar. Third, states that have chosen not to expand Medicaid are underrepresented in our study. Students in states where there is active debate regarding Medicaid expansion may be more aware of state autonomy with regard to expansion. A key strength of our study, however, is the large sample size. In addition, our response rate is significantly higher than those in previous studies that attempted to characterize students' views regarding the ACA.³⁴

The majority of medical students in this study indicated both support for the ACA and a professional obligation to assist with its implementation. Medical student support for the ACA, particularly among medical students who anticipate a medical specialty, indicates that future physicians are willing to engage with legislation that aims to improve access to care and increase the primary care workforce.³⁵ Whether students are informed enough to effectively engage in implementation or modification of health care reform legislation is less clear. By embracing calls for policy education in medical curricula,^{10,36} medical schools can ensure that students are adequately prepared to engage with health care reform measures that

expand access, decrease costs, and improve the quality of care for their patients.

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