

Medical Students Knowledge, Attitudes, and Perceptions regarding
the Affordable Care Act and Other Health Policy Issues

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ABSTRACT

BACKGROUND: Very little is known regarding medical student's attitudes and knowledge on the Affordable Care Act (ACA) and if they are willing to engage in its implementation as part of their future professional obligations.

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

DESIGN: A link to an IRB-approved online survey was emailed directly to students through their university-affiliated email addresses. Cross-sectional survey.

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

MAIN MEASURES: We measured students' levels of agreement with 4 questions targeting ACA viewpoints and ability to answer 9 knowledge-based questions regarding the ACA. Students also had the opportunity to answer 2 open-ended questions to give their opinions on positive and negative aspects of the ACA.

KEY RESULTS: The majority of respondents indicated understanding of the ACA (75.3%), support for its enactment (62.8%), and a professional obligation to assist with implementation of the ACA (56.1%). The mean number of correct answers on the knowledge-based questions was 6.9 ± 1.3 out of a possible 9 points. Those who anticipated going into a surgical or procedure-based specialty were less likely to support the legislation (OR=0.6 (0.4-0.7), OR=0.4 (0.3-0.6)), 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)), and more likely to have negative expectations (OR=1.9 (1.5-2.6), OR=2.3 (1.6-3.5)) when compared to those who plan to go into a medical or primary care specialty. Those who

identified themselves as political moderates, politically liberal, 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)) and a professional obligation toward implementation of the ACA (OR=1.9 (1.4-2.5), OR=4.7 (3.6-6.0), OR=1.2 (1.02-1.5))¹

Positive comments regarding the ACA from the quantitative section, showed themes focused on appreciation for increased access to care, focus on primary care, coverage for pre-existing conditions, and allowing children to stay on parents' insurance plans until 26 years of age.

Negative comments focused on lack of tort reform to lessen the burden of malpractice suits on physicians, no identifiable plan to alleviate physician shortage or reduce physicians' educational debt, and concerns about the economic implications of expanding Medicaid provisions.

CONCLUSIONS:

This study is one of the first national studies addressing medical students' knowledge and views on the ACA. The majority of student respondents support the ACA. We found that support towards the ACA was highest among students who anticipate a future career in a medical specialty, self-identify as political moderates and liberals, or had an above average knowledge score of the ACA. Strong support of the ACA by future physicians suggests they are willing to be involved with health care reform measures and health policy which may lead to improving access to care for many Americans. However, ongoing input from future physicians is critical as many of them have positive and negative opinions or possibly no opinion (lack of interest or knowledge) on the ACA that may ultimately affect individual health care practices.

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

INTRODUCTION

The Affordable Care Act (ACA), also known as the Patient Protection and Affordable Care Act or “Obamacare”, is a healthcare reform law signed by President Barack Obama on March 23, 2010. While physicians’ and physician organizations’ views toward health care reform are well documented as showing support for greater access to health care, improving quality, and decreasing cost; almost no attention has been paid to the views of medical students based on a review of the literature.²⁻⁶ This information is vital as these future physicians will engage in medical practice after implementation of the ACA’s key provisions have been instituted and will work in health systems shaped by this significant legislation. Therefore, the goals of health care reform outlined in this policy are more likely to be realized if current medical students are prepared and willing to be educated on its components, engage with implementation effort, and advocate for necessary refinements to current legislation.^{7,8} 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,” according to Fisher and colleagues.⁹ However, health policy training currently required in medical schools may be inadequate to prepare students to meet these challenges.⁷⁻⁹

Therefore given these findings, we sought to characterize medical students’ views and knowledge of the ACA in a nation-wide non-probability sample and examine whether medical students are willing to accept the implementation of the ACA as part of their professional obligations.

Based on previous survey findings and reported deficiencies in health care policy education,¹⁰⁻¹⁵ 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

LITERATURE REVIEW

The main purpose of this review was to provide a critical analysis of the recent literature focusing on the relationship between health care physicians and the Affordable Care Act. The main questions directed for search included:

1. How do physicians feel about the Affordable Care Act?
2. What knowledge base do practicing physicians have surrounding the Affordable Care Act?
3. Exclusively, what do medical students know about the ACA and what medical education exists surrounding the Affordable Care Act?

Search Strategy

The search terms used were “healthcare physicians” AND “Affordable Care Act”, “doctors” AND “Affordable Care Act” which yielded 249 results in PubMed. After reviewing the 249 articles, I narrowed the search focusing particularly on articles available in full text (eliminating abstracts); articles focusing only on physicians; articles published on or after 2009 to reflect the most current literature on ACA implementation. I further narrowed my search to address the initial questions noted above- which refined the search results to 30 articles. I excluded commentary, perspectives, and editorial responses, and articles that discussed other national

healthcare systems (my review only focused on US healthcare system) that refined the search results to 8 articles. The identified themes in the literature review are the following: “physician views/attitudes towards the ACA”; “physician knowledge (and views if included) regarding the ACA”; “medical student views and knowledge towards ACA reform”; and “medical student education and the affordable care act” which I have summarized each article and evaluated below. Appendix A shows a flow diagram of the articles included in the systematic review. Appendix B displays tables of the articles summarized in the grouped themes.

Physicians Views Towards the Affordable Care Act

Antiel RM, et al. (2014). Specialty, political affiliation, and perceived social responsibility are associated with U.S. physician reactions to health care reform legislation.³

The primary objective in this study was to determine if U.S physicians’ views supported ACA reform including the fairness of reimbursement and if these reactions were related to their primary specialty choice, political views, or feelings of social responsibility as physicians. The study was a mailed-self reported survey from the American Medical Association database with survey compensation. The study design was a cross-sectional study conducted in the summer of 2012. The survey design included questions focused on a physician’s level of agreement on concepts including if ACA reform would improve healthcare delivery and if physician reimbursement would be fair with ACA reform. The study also included questions surrounding political self-identification, physician responsibility towards care of insured and uninsured, and demographics including clinical specialties.

2,556 physicians out of 3,897 U.S. physicians in the database responded (65% response rate).

The results concluded that 41% of physicians felt that the ACA would point the U.S healthcare system in a positive direction. However, the findings also showed that physicians felt reimbursement would be less fair (44 %). A majority of physicians did feel it was his/her professional duty to care for the uninsured or underinsured patients. From a political standpoint, liberals and independents were more likely to support the ACA (OR 33.0 [95 % CI, 23.6–46.2]; OR 5.0 [95 % CI, 3.7–6.8], respectively). The results also concluded that physicians who felt that health policy should be a physician importance (OR 1.5 [95 % CI, 1.0–2.0]), physicians should care for uninsured / under-insured (OR 1.7 [95 % CI, 1.3–2.4]), also showed that they supported the ACA. Surgeons and procedural specialists were less likely to support it. The primary conclusion of the study was that support for ACA reform is influenced by medical specialty, political characterization, and social responsibility perceptions.

The strengths of the study were that it was a large sample size of physicians that are primary and specialty trained. The survey had a 65% response rate. The study found that the majority of physicians responding felt optimistic about ACA reform, which was new information, and it was the first systematic report including physician political affiliation with relationship to ACA support.

Limitations of the study were that it did not include overall knowledge of the components of the ACA. The study only included how physicians felt about the ACA- having either an

optimistic or pessimistic reaction in health care direction. The study design used was also cross-sectional data and thus could not establish causal relationships between the variables assessed.

Keyhani S, et al (2009). Doctors on coverage — physicians' views on a new public insurance option and Medicare expansion.⁵

This study was a cross-sectional survey with the primary objective in determining physician views on Medicare expansion that is included as a component of the ACA reform. The study was conducted in April 2009 with data collection from the American Medical Association (AMA) Physician Masterfile- random sample of 6000 physicians. The researchers excluded doctors practicing in U.S. territories due to the feeling that health care reform questions may not be as relevant to them, leaving a sample size of 5157 divided into four groups: primary care (internal medicine, pediatrics, family practice); medical subspecialists, neurologists, and psychiatrists; surgical specialists and subspecialists; and the remaining, or other specialties.

A mailed survey was sent to the inclusion participants and the survey focused on respondents' views of three options of Medicare expansion—public and private options, private options only, or public options only. Physician demographics were also collected in the study including: clinical duties each week, ownership of practice, salary, and type of practice.

The results of the study showed that a majority of physicians (62.9%) supported public and private Medicare options. 27.3% physicians supported private Medicare options.

Furthermore, a majority of physicians supported (>57.4%) the inclusion of a public option

despite demographic findings of specialties, practice locations, and practice types. A majority of primary care physicians (65.2%) supported public Medicare options.

The conclusion of the study was that a majority of physicians in the study supported public and private Medicare approach with primary care physicians supporting public Medicare options and the expansion of Medicare to help insure the near-elderly population.

Strengths of the study include a large sample size of a diverse physician study population including primary care and specialist physicians. The authors state that the findings of physicians were similar to a recent public opinion poll as well.

Limitations of the study were a response rate of 43.2%. Also physicians' opinions can change from initial survey to current time given the media or new information. The survey did reward responders that could have increased response rate.

Physician Knowledge and Views towards the Affordable Care Act

Rocke DJ, et al (2014) Physician knowledge of and attitudes toward the Patient Protection and Affordable Care Act.¹⁰

The primary objective of this paper was to determine Otolaryngologists' knowledge and attitudes regarding the ACA provisions. The study population included members of the American Academy of Otolaryngology to survey the Head and Neck Surgery Otolaryngologists (ENT). This was a cross sectional survey including 10 true or false questions specifically focusing on knowledge of the ACA provisions/reform. Email surveys were sent to 9972 otolaryngologists who were members of the Academy and 647 responses were obtained (6.5% response rate).

The study results showed that most participants did not favor the ACA – with findings showing “opposed” (48.8%) or “strongly opposed” (26.4%) to the reform. In regards to knowledge, 74% of the “knowledge” question responses were correct. However, a majority of the physicians (60%) answered questions - whether small businesses receive tax credits for providing health insurance, the effect of the PPACA on Medicare benefits, and whether a government-run health insurance plan was created correctly. The study findings also concluded that Otolaryngologists who worked in an academic setting, who had increased bias towards the ACA, and characterized themselves as democratic were significantly found to answer more correct survey responses.

The conclusion of the study was that ENT physicians show more knowledge than the general public regarding the ACA based on a Kaiser survey done on the general public in 2010 using the same ten knowledge survey questions. Knowledge gaps of ACA reform included tax credits for small businesses, Medicare benefits, and creation of new government-run insurance plan.

Strengths of the study included that this was the first reported study to include both knowledge and attitudes. It was also the first study to survey ENT physicians. The limitations of the study include sample representation of ENT physicians if not a member of the Academy. Also the survey only focused on otolaryngologists with most respondents being biased against ACA reform. ENT specialists do have higher salary for procedural tasks and may have more bias towards ACA reform in regards to physician salary that was not included in the survey question. The study response rate was also poor.

Anderson BL, et al (2014). Obstetrician-gynecologists' knowledge and opinions about the United States Preventive Services Task Force (USPSTF) committee, the Women's Health Amendment, and the Affordable Care Act: national study after the release of the USPSTF 2009 Breast Cancer Screening Recommendation Statement.¹¹

The primary objective of Anderson, et al.'s study was to determine the knowledge and opinions from Obstetrician/Gynecologists (OB/GYNs) regarding the USPSTF 2009 Breast Cancer screening recommendations and to determine their views on healthcare reform/ACA. The study was a national cross-sectional survey that was sent in May 2010 to 406 members of the Collaborative Ambulatory Research Network (CARN). 399 final participants were surveyed, with 212 who returned non-blank surveys (53.1% response rate). This survey focused its questions regarding the USPSTF recommendations but also included a section focusing on the Women's Health Amendment and the Healthcare Reform Bill.

The results of the questions targeting ACA reform showed majority of OB/GYNs supporting mammography coverage provided by the Women's Health Amendment with 88% saying "yes." However, when asked about their support for the ACA the responses on a scale from 0 to 10, showed 16.4% no support (0) but on the opposite extreme with 13% indicating full support (10). In regards to knowledge if the healthcare bill would impact their practice- 3.8% OB/GYN physicians indicated that that they had no awareness if it would have an impact, 3.8% respondents stated they had full awareness, with the remaining respondents having less than average knowledge score. The survey also revealed that some OB/GYNs were even considering

early retirement (23.1%) or quitting their practice (13.7%) secondary to implementation of the Affordable Care Act (13.7%).

The conclusion of this study was that most OB/GYNs support mammography coverage provided by the Women's Health Amendment however there was not as high rates of support for the ACA as seen with primary care physicians.

The strengths of the study were that this was also a national sample survey sent to OB/GYNs. OB/GYNs are also on the higher end salary with physician pay that provided more literature on how this particular class of physicians views the ACA. The survey being sent in response to release of new guidelines and during the implementation of the ACA captured time sensitive opinions. Limitations of the study however would include that it only included OB/GYN physicians. The survey did not include specific questions of knowledge regarding the ACA but only the guidelines specifically for mammography. The study respondents also were part of a collaborative research group that may have more interest in policy change and show responder bias.

Medical student Views and Knowledge towards the Affordable Care Act

Huntoon KM, et al. (2011) Healthcare reform and the next generation: United States medical student attitudes toward the Patient Protection and Affordable Care Act.¹²

The primary aim of this study was to assess future physicians on their knowledge and understanding of the ACA. The specific set of medical students surveyed were those “currently

enrolled at one of ten accredited allopathic or osteopathic United States medical schools” (p. e23557). The survey also collected demographics and views regarding the ACA. This was a cross-sectional survey using electronic surveys being sent to 10 medical schools during the timeframe October-December 2010. The study received 1232 student responses (18% response rate). The survey questions included demographic information from the medical students including age, sex, year in school, political identification, and state in which the respondent was registered to vote. Questions on attitude and ACA understanding were based on a 5-point Likert-scale.

The results of the study showed that a majority of the students felt that the healthcare system in the US needs reform. Majority of respondents stated they supported the ACA (80.1%) and this was despite school year, political identification, or intended specialty. Majority of students opposed a repeal of the ACA (58.8%) [95% CI 56.1%–61.6%]. However a large group of medical students were undecided (26.1%) [95% CI 23.8%–28.7%] with a select few of medical students responding they favored repeal of the ACA (15.0%) [95% CI 13.1%–17.1%].

Within the students wanting to repeal the law, one third of students represented this category because they felt the ACA did not go far enough to help reform the U.S. health system. In regards to knowledge of the ACA, one-third of medical students responded that they did not understand the major provisions of the ACA (30.2% [95% CI 27.7%–32.8%]) with 15.9% [95% CI 14.0%–18.1%] choosing “Undecided” as their response of understanding.

The conclusion of this study was that a majority of medical students support health care reform and also support the ACA. However, one third of medical student participants did not understand the components of the ACA.

One of the main strengths of the study was that it focused on future physicians which previous work did not do. The study also sampled medical students nationally from ten

varying medical schools and incorporated demographic information including political view, year of school, and voting state with similar findings to the demographics of the Association of American Medical Colleges. The limitations of the study were that the survey response rate was very low (18%) and the survey went out to a listserv that may not be the primary email accounts of the student and confirmation of email receipt was unknown. Survey bias could also have contributed with those who are more interested in healthcare and policy to participate in the study. The study did not provide any incentives to enroll subjects that could have played a role in medical student participation.

Winkelman TA, et al. (2012). Medical students and the Affordable Care Act: uninformed and undecided.¹³

The objective of this study was to focus on medical students' knowledge and attitudes toward the ACA. This study, like Huntoon et al, focused on the early trainee within the medical profession. This study was a cross-sectional study using an electronic survey mailed to 1235 Minnesota medical students in January 2011 including 3 medical campuses in Minnesota. The study had 843 of the 1235 medical students respond (68%). The study design focused on three main questions regarding the ACA using a 5-point Likert scale for response. The questions included basic response to understanding, support, and physician obligation to the new healthcare bill. This study also included demographic characteristics: specialty type, medical school year, and political self-characterization (liberal, moderate or conservative). A new survey marker not asked in the previous Huntoon survey included a response to the statement “Medical school debt and potential earnings have or will influence my choice of specialty.”

Overall, the study revealed both a lack of support and knowledge for the ACA. Only 46.5% of medical students responded that they supported the ACA and 13% who did not support the legislation. The results revealed that 48% of medical students stated they felt they understood the law. Demographic findings showed that most medical students self-characterized as liberal (55%) and majority of the students (52%) were planning to pursue primary care specialties. Furthermore, the future physicians also felt a professional obligation to play a role in implementing the ACA (69%). This study did show significant association of ACA knowledge and support for the ACA ($P < .001$).

Strengths of the study include that the authors asked medical students about their views and their self-assessment of knowledge of the ACA. The survey also included a new question that other studies on this topic did not address -medical school debt and potential earnings having a choice of medical student career path. Limitations to the study were that it was only a single site study and that the study did not truly evaluate the knowledge base of medical students regarding the ACA and its provisions. Although many students stated they did not understand the law; questions remain about what parts of the law the students do not understand.

Medical student education and Affordable care act reform

Mou D, et al (2011). The state of health policy education in U.S. medical schools.¹⁴

In this study, the authors' surveyed deans of US medical schools regarding medical student curriculum focused on health policy and ACA. The study included 93 of the 160 deans eligible for a 58% response rate. The study design was a national cross-sectional survey. The results showed that 94% of schools had some policy education but that there

was variation in regards to the curriculum. The average time spent was 14 hours on health policy. The authors also reported that 58% of medical school deans surveyed felt their institution had “too little” health policy education and that 50% of the schools surveyed spend ≤ 10 hours of teaching instruction over the four years focusing on health policy education. Most deans reported that quality improvement was the most important health policy topic with health costs being second of importance. However, deans reported that physician reimbursement and insurance design were the least important. This is despite the specific components of the ACA focusing on insurance reform. Main constraints reported from deans regarding health policy curriculum were “curricular flexibility” and “faculty interest” along with school budget constraints. Although the study did report 52% of schools stating they were in the process of increasing health policy curriculum. The study conclusions were that small gains have been made in health policy curriculum in medical schools, further work needs to be done. Course design and course content needs to be restructured. The authors felt that case base learning may be of use for health policy that would stimulate conversation.

The strengths of this study was that it targeted the deans of schools where many decisions for health care curriculum are made. It was sent to all medical schools nationally where different curriculums exist. The survey had a good response rate and allowed deans to report strengths/weaknesses/limitations of each program. Limitations of the study included that it did not include open-ended questions in which these differences in curriculum could be explored more. It also did not compare actual student performance in health policy to the set curriculum.

Patel MS, et al (2014). A framework for evaluating student perceptions of health policy training in medical school.¹⁵

In this study, the authors report that there is a lack of instruction on health policy in medical school education. They also feel that there is a lack of standard core curriculum and evaluating student satisfaction. This was a retrospective study using the responses from the Association of American Medical Colleges' (AAMC) graduation questionnaire from years 2007-2008 and 2011-2012. The authors looked at four main themes in medical curriculum in support of health policy education: systems and principles; value and equity; quality and safety; and politics and law. The outcomes of the study reported that the 2011-2012 students' perceptions of training showed an increase by 11.7% for systems and principles curriculum, 2.8% for quality and safety, and 6.8% for value and equity. However, the study also showed that there was a decline of 4.8% in politics and law as compared to the 2007-2008 group. Satisfaction with training over time were noted for the all domains including systems and principles; value and equity; and quality and safety; with the notable exception of medical economics.

The strengths of the study were that it used medical student assessment of health policy curriculum with the inclusion of self-satisfaction. The limitations are that it was a retrospective analysis of student perceptions of health policy that may be an inaccurate reflection of feelings towards different aspects of health policy and could not identify causal factors for these trends.

Analysis

President Barack Obama signed the Affordable Care Act as law on March 23, 2010 and physicians will determine a large part of its success. One key group to play a major role in the sustainability of the current health care reform will be the future physicians – also known as medical students. Few studies have addressed how physicians feel and how much knowledge they have on the ACA. A small set of studies show there is mixed feeling from physicians towards the ACA.^{4,5} One study, which included diverse range of physician types, showed that overall the responders supported the ACA.⁴ However, studies which focused on physicians by specialty revealed that there was a difference between primary care physicians versus specialists in support for the ACA.^{4,5,10,11} Specialists were less likely to support the bill.^{4,10,11} However, these studies did not provide open-ended questions to specifically address reasons why opposition was noted. Most primary care providers showed the most support for components of the ACA including public Medicare options.⁵ Demographic findings also showed that liberal or democratic characterization showed higher support for ACA reform than more conservative affiliation.^{4,12}

In order to support or denounce the ACA, a basic knowledge of its components should be known to make a thoughtful decision. There were few studies specifically addressing physician knowledge surrounding the ACA. Two studies focusing on specialty physician groups (ENT and OB/GYN) concluded that physicians in practice do have gaps of knowledge surrounding the ACA.^{10, 11} Key areas where gaps were identified

were how the ACA addresses tax credits on small businesses, Medicare benefits and insurance plans, and impact on clinic practices.^{10, 11} Only one “knowledge” study actually asked specific questions (10 knowledge survey questions) to really delineate whether physicians understood the ACA and its components.¹² The other “knowledge” study only asked a “yes/no” question in regards to knowledge base which may be prone to personal bias.¹¹

Two studies focused on medical students’ knowledge and views towards the ACA.^{12,13} The studies showed opposite results for support towards the ACA. In one study, the sample was taken from medical students at ten different medical schools and the results showed overall support for the ACA.¹² The second study was conducted at the same medical school institution and showed lack of support for the ACA.¹³ This result may only reflect school teaching or bias within the school system towards the ACA. Also in one study, a large number of respondents answered “undecided” about their feelings towards the ACA.¹² Given the survey design; the study participants were unable to answer exactly why they felt this result.

The medical school studies also reported differences in medical career path (primary care versus specialists) and feelings towards the ACA as seen in the practicing physician studies noted above.^{4, 11} One study found that students who were choosing primary care as a future specialty were more likely to support the ACA than colleagues who were planning on choosing a specialty or undecided.¹³ The same study also noted that specialists or future specialists were found to be less likely to support the ACA than physicians in primary care tracks.¹³

One study showed no difference in year of age for support of the ACA but the other study showed that third-year students were less likely to agree that physicians are obligated to play a role in implementation of the ACA versus the first-year students.^{12, 13} Therefore, this shows that some discrepancy may exist given further medical school education and this question needs to be better defined.

Both studies showed at least one-third of medical students surveyed having a lack of knowledge regarding the ACA.^{12, 13} Both surveys only asked students if they had a lack of knowledge towards the ACA; however neither study asked specific questions about the ACA to determine accuracy of this statement.

In order for medical students to make smart education decisions and opinions regarding the ACA, this group needs health policy curriculum as part of the broad medical school curriculum. The studies that focused on medical student education on ACA concluded that health policy curriculum needs to be improved with findings showing that medical school deans and students both support health care policy curriculum.^{14, 15} However, neither study focused on what the exact curriculum components need to be or included any open ended questions from students addressing this question.

In addition, the primary study design used in the majority of studies was cross sectional surveys. Attitudes and knowledge may have changed during medical school, media attention, or continuing medical education; however, these studies focus only on gathering data at one point in time. Most studies also included databases for their data such as the AMA or the Association of American Medical Colleges' (AAMC), which could introduce measurement or confounding bias as a limitation.

Conclusion of Literature Review

This literature review highlights the work that has been done focusing on physician views, knowledge, and attitudes towards the Affordable care act. Overall there is limited amount of data regarding this topic given the daily encounters physicians have with healthcare delivery and the ACA specifically. Furthermore, there is also sparse data about how future physicians feel towards the ACA and if medical student curriculum across the nation is teaching medical students about the ACA and its provisions. There are no existing studies that include medical students nationally and that survey medical students about knowledge, attitudes, and perceptions towards the ACA along with offering medical students an opportunity to add their views/opinions to the survey. Also there are no surveys that also include questions regarding medical school curriculum focused on health policy in addition to the previous statement.

Thus, the objective of this study is to address these comprehensive issues and formulate and distribute a survey directed at medical students nationally, which included both a qualitative and quantitative section in order to gain a better understanding and analysis on these topics.

Participants

During a two month period in 2015, we emailed invitations to an online Survey Monkey™ questionnaire to all medical students (n=5,340) enrolled at eight accredited allopathic 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.¹

These programs were chosen because of their disparate geographic locations, mix of public and private settings, and presence of a local investigator willing to distribute the survey instrument. 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 questions developed by a non-profit health policy organization.^{4, 13,16} We performed cognitive testing to enhance validity and usability and pilot-tested the survey among medical residents to determine survey time.

The first arm of the survey was focused on assessing the participant's level of agreement with four statements regarding support for, knowledge of, professional obligation toward, and expectations of the ACA. Responses were measured using a 5-point Likert scale (strongly disagree, disagree, no opinion, agree, strongly agree) for each item.

The second arm of the survey assessed the participant's knowledge of the ACA through fact-based questions. We included nine true/false questions focusing on a limited number of provisions within the ACA. We chose these nine questions because they encompass the most significant provisions enacted under the Affordable Care Act.^{17,18}

In the third arm of the survey we collected inform regarding characteristics about the student participants themselves including: demographics (age, gender, race, year in medical school); future career path--categorized as medical (e.g. family medicine, internal medicine, pediatrics), surgical (including surgical subspecialties), procedural (e.g. anesthesiology, radiology), nonprocedural (e.g. neurology, psychiatry), and nonclinical (e.g. pathology, administration). We also collected data on the respondents' political self-characterization (liberal, moderate, conservative) and level of personal educational debt.

Finally, the last two questions of the survey allowed the responder to write freely about their opinion regarding positive and negative aspects of the ACA. Two researchers identified the most pertinent themes from the data for thematic analysis.

Statistical Analysis

Responses to survey items were calculated and summarized with frequencies and percentages. Chi-square tests were used to identify significant associations between 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 each of the 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 SAS version 9.3 (SAS Institute, Cary NC).

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%). Respondents' self-reported demographic characteristics are summarized in **Table 1**¹. Race and gender distributions of respondents were similar to nationally reported medical student demographics.^{19,20}

Of the respondents, 2,593 (48.6%) answered all nine knowledge questions and received a generated knowledge score. We found that the second year medical students (17.1%) were less likely to complete the survey than their colleagues in the 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. Consistency was maintained in survey methodology across participating sites and institutional factors (public vs. private; number of students; geographical region) were not associated with response rates. Nearly half of the student participants (45.1%) anticipated a medical residency and a majority of students estimated having more than \$100,000 in personal educational debt (67.6%) by the time they graduated from medical school. In regards to political ideology, over half of respondents identified themselves as politically liberal (57.6%).

Views Regarding the ACA

Survey responses to the four opinion statements about the ACA are summarized in **Table 2**¹. 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 are 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 career, while 42.5% believe the legislation will not have a negative influence on their careers.

Knowledge Regarding the ACA

Responses to the nine questions testing knowledge of the ACA are reported in **Table 3.1**. 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. The two questions which were answered incorrectly 50% of the time by respondents were: “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 the knowledge score and support for the ACA ($p < 0.0001$); 68 % of those with above average knowledge scores indicated support for the ACA, while only 56 % who had below average knowledge scores indicated support. There was also a significant association between the knowledge score and anticipated impact of the ACA on one’s future career ($p < 0.0001$); respondents with above average knowledge scores were more likely (49% vs. 33%) to indicate the ACA will *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 self-reported higher rates of knowledge (“I understand the basic components of the ACA”) compared to those with below average knowledge scores (81% vs. 67%).¹

Additionally, there were significant associations between individual institutions and self-reported understanding of (p<0.0001), support for (p<0.0001), acceptance of professional obligations toward (p=0.004), and expectations of the ACA (p<0.0001). Objective knowledge scores also varied significantly between institutions (p<0.0001). Ranking of institution by level of support was nearly identical to ordering institutions by the proportion of students who identify as liberal.¹

Predictors of Views Regarding the ACA

In multiple logistic-regression models, students who anticipate a surgical specialty were significantly less likely to indicate support for (OR=0.6 (0.4-0.7)) and a professional obligation toward helping implement the ACA (OR= 0.7 (0.6-0.9)). They were also more likely to have negative expectations of the legislation (OR=1.9 (1.5-2.6)) compared to students who anticipate a medical specialty (**Table 4**¹). Students who selected a procedural specialty for a 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)). Self-identified liberal students, compared to students who characterized themselves as conservative, were more likely to indicate understanding of the ACA (OR=2.2 (1.7-2.9)). Compared to conservative students, both liberal and moderate students were more likely to indicate support for (OR=35.1 (25.4-48.5), OR=5.7 (4.1-7.9), respectively) and a professional obligation toward implementing the ACA (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 ACA (OR=0.06 (0.04-0.08), OR=0.25 (0.19-0.34), respectively). Third and fourth year students, compared to first year students, were less likely to support the ACA (OR=0.7 (0.5-0.9), OR=0.7 (0.5-0.98), respectively), however, 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 understanding of (OR=2.0 (1.6-2.4)), support for (OR=1.7 (1.4-2.1)), and a professional obligation toward implementation of the ACA (OR=1.2 (1.02-1.5)).¹

Provisions of the Affordable Care Act Supported

The four main themes represented from the provisions most supported on the ACA were: improving access to care, including those with pre-existing conditions, covering children (up to age 26) on the parents' insurance plans, and supporting primary care and prevention.

Better access to care:

One of the most common and emphasized themes in this section was a focus on universal health care and increased access to care for previously excluded or marginalized populations. One student wrote simply, "It tries to get everyone covered." whereas another student commented, "I support the fact that the ACA makes healthcare more accessible to the American people. I believe that the right to healthcare is a fundamental right that everyone should be entitled to and that the ACA is a step towards achieving this goal. I am in full support of the provision prohibiting insurers from denying people based on preexisting conditions as well as the insurance marketplace that makes seeking insurance and comparing between plans much easier for the lay person." Another student described her own personal clinical experience and its relation to the ACA when stating,

“A physician I was doing a preceptorship with said that they had seen over 600 new patients since January, most hadn't been to a doctor in years - I support whatever provisions that allowed that to happen.” Another student wrote, “It speaks to a moral understanding that in a developed country universal coverage is expected.”

One responder even compared this current healthcare policy with other systems globally by describing, “I admire that the ACA tries to alleviate the problem of lack of access to health insurance in particular and healthcare in general to marginalized sections of the US population (e.g. the poor, those with pre-existing health conditions, etc.). Moreover, I am fascinated and cautiously supportive of the attempt to address this issue with a market-based approach with the health insurance exchanges (as opposed to the nationalized health systems of countries such as Canada and the United Kingdom).”

Pre-existing conditions

One student commented, “I support the fact that coverage cannot be denied for pre-existing conditions...However, I anticipate much uncertainty in the next decade or more as all of these initiatives are implemented; that is assuming it is even possible to implement them successfully. This is actually pretty scary for me as a young medical student still in my preclinical years.” Many other medical students also indicated that they were unsure whether this coverage would be sustainable and the uncertainty of ACA long-term.

Another student also included a focus on women's health when describing, “I strongly support the concepts that insurance providers can no longer deny health insurance to persons based on pre-existing conditions, that women's health is more comprehensively covered, and that all people are must have health insurance.”

Child Coverage on Parental Insurance

One responder stated, “I think nearly every kid and parent - though it didn't impact me at all, I was already too old - was pleased with the extended health coverage to age 26 under their parents' insurance plan.” Many other students included in their comments a sentence praising coverage of dependents up to 26 years of age but did not expand further.

Primary Care and Prevention

A medical student shared their comments on the ACA and focus on primary care, “ I strongly support many of the provisions in the ACA including, but not limited to: provisions that improve access to preventative care, an emphasis on ACO structure, incentivizing careers in primary care, and a focus on patient rights/protection.” Another medical student shared his/her views by stating, “I support insuring more patients and improving payments to primary care providers. I support the general concept that everyone should be insured and no one should be denied coverage.”

Provisions of the Affordable Care Act NOT Supported

The main themes upon review of medical student answers were: lack of tort reform inherent in the legislation, initiating pay-per-performance model, and making Medicaid expansion a state-level decision rather than a federal mandate.

No Tort Reform

Many students commented that one negative component of the ACA was lack of tort reform or setting of caps on malpractice payouts through legislation. A student comments, “I worry about the omission regarding tort reform, as "defensive medicine" and ordering unnecessary tests can be a source of wasteful healthcare spending.” Another student noted, “Failure to change the litigious nature of medicine with an effective tort reform.

Defensive medicine and malpractice insurance are factors that EVERY physician faces and yet were horribly addressed.”

Pay for Performance Model

Another key theme illustrated in the open-ended response was on implementation of “pay for performance” model where physicians are compensated based on positive patient outcomes rather the current “fee for service” model. One student shared, “I worry about "pay for performance" based on things like Press-Ganey surveys that in many cases are flawed because they are so subjective and often oversimplify very complex issues....I am disappointed that the ACA does not address expanding the number of residency positions and [does not] provide adequate incentives for medical students to enter primary care in order to lessen the shortage.” Another student stated, “If physicians are paid less then we need help with loans.”

Also, one student expressed worry that this model may be focusing on the wrong outcomes by writing; “I am concerned with the aspects of the ACA which are aimed at improving health efficiency through essentially grading physicians' performance. I think this may make a physician more concerned with patient satisfaction and hitting their performance marks than on assessing the patient in a more objective scenario.”

Some medical students felt another option should be available for physician reimbursement. “It is only a half effort. This needs to be a single payer system”, commented one medical student, while another mentioned, “I worry that it will not be fiscally sustainable. Also, I don't know what physician reimbursement will be like. In my opinion, a single payer system would more effectively address the issues of health equity in this country than the ACA.”

Medicaid Expansion

Students also noted that they did not agree with how Medicaid expansion was addressed in the ACA. A medical student commented, “If the federal government wants to expand Medicaid which is both state & federal funded, all states should be required to participate, they should participate to the degree that their population bills to Medicaid.” Another student felt that, “Insurance law should not be subject to state alterations leading to coverage gaps. In addition, there should be stipulations of Medicaid emphasizing preventative measures.”

DISCUSSION

The success of health care reform highly depends 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 political 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 to previously uninsured populations and supports previous findings that physicians are likely to be integral in redesigning the health care system.²¹⁻²⁴

Medical students versus general public support

Our results also indicate that medical student support for the ACA (63%) is much higher than support among the general public and does not vary by level of educational debt. In a recent public opinion poll by the Kaiser Family Foundation, only 36% of respondents from the general public had a favorable view of the ACA.²⁵ We hypothesize students' high level of support stems from the ACA's primary goal of improving access to health care through Medicaid expansion, health insurance exchanges, and the individual mandate.²⁶ Advocacy by physicians for improved access to care has long been encouraged by several medical codes of ethics²⁷⁻²⁹ and may be a position that students in our sample are also endorsing through their support of the ACA. Some of the open-ended responses mentioned their "preceptorship" and their mentors' views on the positive and negative ACA provisions.

Stronger support among medical students compared to the general public may also reflect increased levels of knowledge about the bill among medical students. Public understanding of the law remains low,^{30,31} and in our study, we found that students with above average knowledge scores were more likely to support the ACA compared to students with below average knowledge scores. One student did admit to lack of knowledge by stating, "I do not have a thorough understanding of the provisions provided by Obamacare" but then on the other hand stated, "I do not agree with the fundamental principles on which the law is based. I think this bill is mostly about furthering a political agenda and not about providing excellent (let alone affordable) care to our population." Students' views may simply reflect the views of their mentors or faculty members. For example, practicing surgeons are much more resistant to changes in reimbursement than

primary care physicians.⁴ On the other hand, our finding of support for the ACA by future physicians considering medical specialties is particularly reassuring in light of predicted physician shortages due to expanded insurance coverage.

Medical student and future career choice

Our results showed that support for the ACA among medical students varied significantly by anticipated specialty, with those anticipating a surgical or procedural specialty less supportive of the law and more likely to believe the ACA will have a negative impact on their careers. One primary concern among students less supportive of the ACA may be concern over the probability that future income will be sufficient to pay off educational debt. 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 (which typically benefit those in surgical or procedural specialties).^{31,32,33} The open ended responses noted several students endorsing the “pay for performance” model. This is also reflected by one student’s comment, stating one negative aspect of the ACA was “Not making more moolah :(But I guess that is what Botox is for.”

Student ACA understanding and gaps of knowledge

Students’ self-reported level of understanding in our sample was high (75%); much higher than the 2011 regional study showing only 48% of students indicating understanding.¹³ The increase in understanding could be due to various reasons, including the substantial media coverage the ACA has received since its inception,³⁴ a natural interest in the topic by students, or even new health policy education initiatives across the country.^{35,36} 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 believe a public option is 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.⁵ A majority of students (51%) were uninformed regarding the federal government's inability to expand Medicaid in individual states. All of the institutions included in this study reside in Medicaid expansion states, except for Vanderbilt University, which is in Tennessee. Students in states that expanded Medicaid may be ill informed because they are unaware of the Supreme Court decision in 2009,³⁷ or because expansion passed in their states with little public debate. While we found that a majority of students answered at least 7 out of 9 ACA questions correctly, students' ignorance of these two fundamental provisions of the ACA may be reflective of other important gaps in their knowledge.

Health care reform knowledge, as indicated by individually calculated knowledge scores, was a key predictor of students' support for the ACA and their attitudes toward its implementation. Students with above average knowledge scores were more likely to support the ACA and endorse a professional obligation to assist with implementation. Whether those supportive of the bill seek to better understand the ACA or whether more comprehensive knowledge of the law leads to support cannot be determined with this cross-sectional study design.

Political view and ACA support

Finally, self-reported political ideology was a significant predictor for agreement with positive statements regarding the ACA. Self-reported political 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 the ACA would have a negative impact on their careers in medicine.¹ In contrast to national studies of practicing US physicians, the medical students in our sample were more likely to self-identify as liberal.^{1,3} This may represent either a generational change or a response bias not observed in national physician surveys with similar response rates^{3,4} 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.

Limitations

Our study has several important limitations. First, our study is cross-sectional studies and cannot be used to find causal relationships. Second, our sample represents participants from geographically diverse public and private institutions from allopathic medical schools only and is not a randomized sample taken at large and thus results do not necessarily reflect the entire medical student population (does not include osteopathic schools). Fortunately, demographic characteristics of student respondents in the study are similar to national medical school demographics provided by the American Association of Medical College,^{19,20} though we cannot verify that the demographics of those who did not respond are 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. Many of those commenting that this was a negative provision on the open-ended comments may come from states that decided to opt out. One positive component

of our study is the large sample size. In addition, our response rate is significantly higher than previous studies that have attempted to characterize students' views toward the ACA.¹²

CONCLUSIONS AND RECOMMENDATIONS

In this study, the majority of medical students indicated support for the ACA, as well as a professional obligation to assist with its implementation. However the real question remains if students are adequately prepared to engage in implementation or modification of health care reform legislation. Strong 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 work force. Studies have shown better health outcomes in decreasing “preventable” hospitalizations and health care costs in areas with a greater density of primary care physicians.³⁸⁻⁴⁰ However, a shortage of primary care physicians is of primary concern.³⁸⁻⁴¹ The percentage of medical students choosing primary care paths decreased to 44.2% in 2002 compared to 49% in 1997 with medical students preferring to sub-specialize within their chosen primary care field.^{42,43} Recently, a report released by the AAMC (Association of American Medical Colleges) on March 2015, shows that the nation will face a shortage of doctors in the numbers between 46,000-90,000 by 2025 with a “projected shortfall” in primary care in the range of 12,500 and 31,100 physicians by 2025.⁴⁴ AAMC President and CEO Darrell G. Kirch, MD quoted, “The solution requires a multi-pronged approach: Continuing to innovate and be more efficient in the way care is delivered as well as increased federal support for graduate medical education to train at least 3,000 more doctors a year to meet the health care needs of our nation’s growing

and aging population.”⁴⁴ In our study, open-ended responses revealed that medical students **do** support better access to care, expanded coverage for children, eliminating penalization for pre-existing conditions, and strengthening the primary care field¹.

One solution to engaging medical students into health policy may be to embrace calls for policy education in medical curricula and to learn how to strengthen relationships with other stakeholders regarding the ACA.^{12,15} Medical schools can ensure that students are prepared to engage with health care reform measures that expand access to care, decrease costs, and improve health equity and equality for their patients. “The provisions of the ACA are numerous and overhaul two broad areas of policy change: 1) insurance or payer reform, and 2) system or delivery reform.”⁴⁵ An area for improvement in medical school curriculum will be to include on-line modules or lectures to familiarize medical students on payer reform and payment models such as “fee for service” or “bundled payments.” Medical students must also recognize system reform models regarding the ACA such as Accountable Care Organizations and the Patient Centered Medical Home Model. Courses should also have individual small group sessions so that medical students can have active discussions on topics related to patient care and health policy.

One way future physicians can integrate further into the new healthcare model could include working alongside “health educator specialists”. The Bureau of Labor Statistics, U.S. Department of Labor (2010) has defined the role of health educators to: “provide and manage health education programs that help individuals, families, and their communities maximize and maintain healthy lifestyles. Collect and analyze data to identify community needs prior to planning, implementing, monitoring, and evaluating programs designed to encourage healthy lifestyles, policies, and environments.”⁴⁶ Two main targets of healthcare reform are promoting

preventative care and the establishment of the “medical home.” Strengthening collaborations with physicians and health educators can help individuals and communities maintain healthy lifestyles, decrease health disparities, improve quality of care instead of patient volume, and focus on patient-centered health care in order to decrease the fragmentation of healthcare.

Medical students and health professions can also work with other stakeholders in supporting the ACA to decrease social disparity. The ACA provides opportunities to improve collaborations between doctors and lawyers. Professor of Law, Elizabeth Tobin Tyler writes, “the aspiration and obligation of lawyers and doctors to provide services to the poor... may offer the greatest potential for meaningful collaboration between the professions.”⁴⁷ Successful medical legal partnerships have been shown to improve patient outcomes and quality of care when tackling issues regarding social determinants of health and access to care.⁴⁸⁻⁵¹

PUBLIC HEALTH LEADERSHIP IN MEDICINE

In our health policy class HPM 600, we learned that a key tenet of the public health philosophy is, “A healthy population is in the public interest.”⁵² Yet, we have also learned that Americans are far from the healthiest population, despite the enormous amount of money that is spent on health care.⁵² One way that our system does not reflect this philosophy is the large number of uninsured people living in this country. It has been estimated that 47 million people were without health insurance prior to the ACA, and that the ACA will reduce that to around 16-20 million uninsured; however there will still be some who do not have insurance.⁵³⁻⁵⁵ One question still remains unanswered so early in this health care evolution, “will insuring each of these groups represent a significant step toward a healthier population in the short and long term?”

Prior to the ACA, working low-income families contributed to 75% of the 47 million uninsured people living in this country. The national health care reform anticipates expanding

coverage to 33 million uninsured Americans with prospects of cutting the rate of the uninsured by 50% by 2019.⁵⁵ The three main targets in achieving this mission are...

- 1.) Expanding employer based coverage: allowing small companies to afford health insurance for employees
- 2.) Providing health insurance exchanges since “over one-third (37%) of the nonelderly uninsured have incomes between 139% and 399% of the federal poverty level, the income level targeted by subsidies for coverage purchased through a Health Insurance Exchange” will focus upon.⁵⁵
- 3.) Expanding Medicaid coverage and preventing health insurance agencies from denying coverage to people for any illness/reason, including their health status, and from claiming higher reimbursement from people who are sick more. This will also include coverage now for low-income citizens who do not have dependent children and were not previously eligible for Medicaid.⁵⁵

Unfortunately, some groups may still not have insurance coverage. This includes small businesses with less than 10 employees who cannot pay for insurance coverage for its workers (Ex: small physician’s offices of 4-5), pay penalty instead of getting coverage, eligible for Medicaid but un-enrolled, and immigrants who are not legal citizens are also not covered which is also a public health problem.

I believe insuring this population is a step in the right direction for both short and long term care since the status of health is not static affair but a continuum. Trying to close the health care gap is vital to improving population health and for decreasing health disparities. Everyone in America should have some basic health coverage to at least ensure preventative care. Thus, “A

healthy population is in the public interest.”⁵²

This is the message we also need to convey to our medical students during their medical school education. Not only is learning the disease process of a patient important; but learning the health care system in its entirety which that patient and provider must navigate is also of critical significance to learn. This study was important to me as a clinician and as a public health practitioner because it blended the categories of epidemiology and health policy, which I have only gained by studying public health to examine the topic of physician perspective in a new way. As an ID doctor, I am use to dissecting organisms and diseases in individuals -but through public health I was able to understand the other influences that can affect communities like health perceptions and health behaviors (fundamental theories of health) which also contribute greatly to patient health outcome and health as a society.

I am in a natural leadership position over patients, colleagues, and learners and am a role model in how I shape how medical students feel about the ACA, health equality, health equity, and understanding the social determinants of health. This study helps us understand the epidemiology of our medical students – including demographics, political views, personalities, and opinions regarding the ACA which helps us understand the paradigms our students are living within. We learned from leadership classes that everyone has a different personality style and personal relationships with others (FIRO score). We need to target our teaching and leadership styles regarding health care reform and the ACA to these different groups of medical students since not all medical students are the same just like all public health students are not the same.

We also need to identify and engage our stakeholders in healthcare reform and allow our medical students to understand how each group plays its intricate role in the healthcare system

and what the mission, vision, and goals are for each group in regards to healthcare reform. I recommend that we need to engage these stakeholders in helping us educate our future physicians and perhaps even give lectures in the health policy medical student curriculum. This will allow a more robust and well-rounded representation of this topic to medical students. Dr. Bodenheimer identified four “major actors” on the healthcare stage: purchasers, insurers, providers, and suppliers.⁵⁶ I believe the “providers” are the physicians and other health professionals, hospitals, nursing homes, home care agencies and pharmacies. In regards to healthcare reform, this group perceives healthcare costs as both a benefit and a detriment. Providers want healthcare dollars to be invested into the field (research, technology, drug advances, delivery of services, revenue) but also want to be able to provide healthcare equity and equality to its purchasers (patients). I would say most providers want to achieve a culture of quality amongst their organization and would consider switching to a value-based care vs. a fee-for-service system if the provider was compensated fairly and the Five Rights of Patient Care⁵⁷ (Right care, right patient, right way, right time, and right amount) were equally upheld.

Purchasers would include employers, governments, and patients perceive high healthcare costs as a detriment. These individuals want the best care and quality for the best price. However, healthcare in our country is not based on a free-market economy. It is difficult to “shop around” for the best deal as with other big purchases such as homes, cars, or electronics. Purchasers are incentivized to decrease healthcare costs in order to be on parallel with other countries worldwide on healthcare expenditure but still be able to achieve the best patient outcome with quality and safety. In my opinion, medical students should be taught, as I was in my MPH global health course, about the different types of global healthcare systems and what the positive and negative aspects are and comparing health indicators across the board.

In conclusion, this is an exciting time in America's healthcare system and future medical students play an integral part. As ACA mandates "roll out" in the upcoming years, the legislation's influence on the health care profession will evolve and change. In order to have a voice and presence in the system, physicians must stay engaged, be informed, and work with stakeholders to promote the ACA's success story.⁵²

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TABLES

Table 1. Characteristics of Study Population*	
Socio-demographic characteristic	No. (%)
Gender	
Female	1248 (48.7)
Male	1317 (51.4)
Age	
20 - 24	762 (29.6)
25 - 29	1486 (57.6)
30 and older	330 (12.8)
Race	
Black/African American	99 (4.0)
White, non-Hispanic	1694 (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 year	667 (25.9)
Second year	441 (17.1)
Third year	635 (24.7)
Fourth year	735 (28.6)
Masters/PhD/Other [†]	95 (3.7)
Intended specialty	
Medical	1161 (45.1)
Surgical	590 (23.0)
Procedural	235 (9.1)
Nonprocedural	153 (6.0)
Nonclinical	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 2761 due to partially completed surveys

[†]Represents students currently completing additional degree or research

SOURCE: Winkelman, et al. 2015

Table 2. Self Reported Opinions Regarding the Affordable Care Act by Medical Students from 8 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)	2077 (75.3)
I support the Affordable Care Act.	461 (16.7)	564 (20.5)	1731 (62.8)
Physicians are professionally obligated to assist with implementation of the Affordable Care Act	480 (17.5)	728 (26.5)	1543 (56.1)
The Affordable Care Act will have a <u>negative</u> influence on my future career in medicine	1173 (42.5)	1006 (36.5)	579 (21.0)

*Categories may not total 2761 due to partially completed surveys

SOURCE: Winkelman, et al. 2015

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.	2539 (95.9) [†]	108 (4.1)
Increases payments to primary care physicians for two years.	1609 (61.2) [†]	1021 (38.8)
Creates a new government-run insurance plan to be offered along with private plans.	1406 (53.3)	1232 (46.7) [†]
Allows the federal government to expand Medicaid in every state.	1330 (50.5)	1302 (49.5) [†]
Requires large businesses (More than 100 employees) to provide health insurance for their employees or else pay a fine.	2420 (91.7) [†]	219 (8.3)
Includes an overhaul of tort reform law.	768 (29.3)	1858 (70.8) [†]
Defines benefits that private insurance companies must include in their insurance plans.	2233 (85.0) [†]	395 (15.0)
Creates health insurance exchanges or marketplaces where small businesses and individuals can purchase insurance and compare prices and benefits.	2530 (95.8) [†]	111 (4.2)
Prevents people from being denied coverage due to a pre-existing condition.	2576 (97.7) [†]	61 (2.3)

* Answers do not sum to 2761 due to partially completed surveys

[†]Represents correct answer

SOURCE: Winkelman, et al. 2015

Table 4. Odds of Agreement Among Medical Students From 8 U.S. Medical Schools With Four Statements Regarding the Affordable Care Act (ACA)

	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 <u>negative</u> influence on my future career in medicine
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Year in medical school				
First year	1.0	1.0	1.0	1.0
Second year	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 year	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 year	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 ≤ p <0.08)

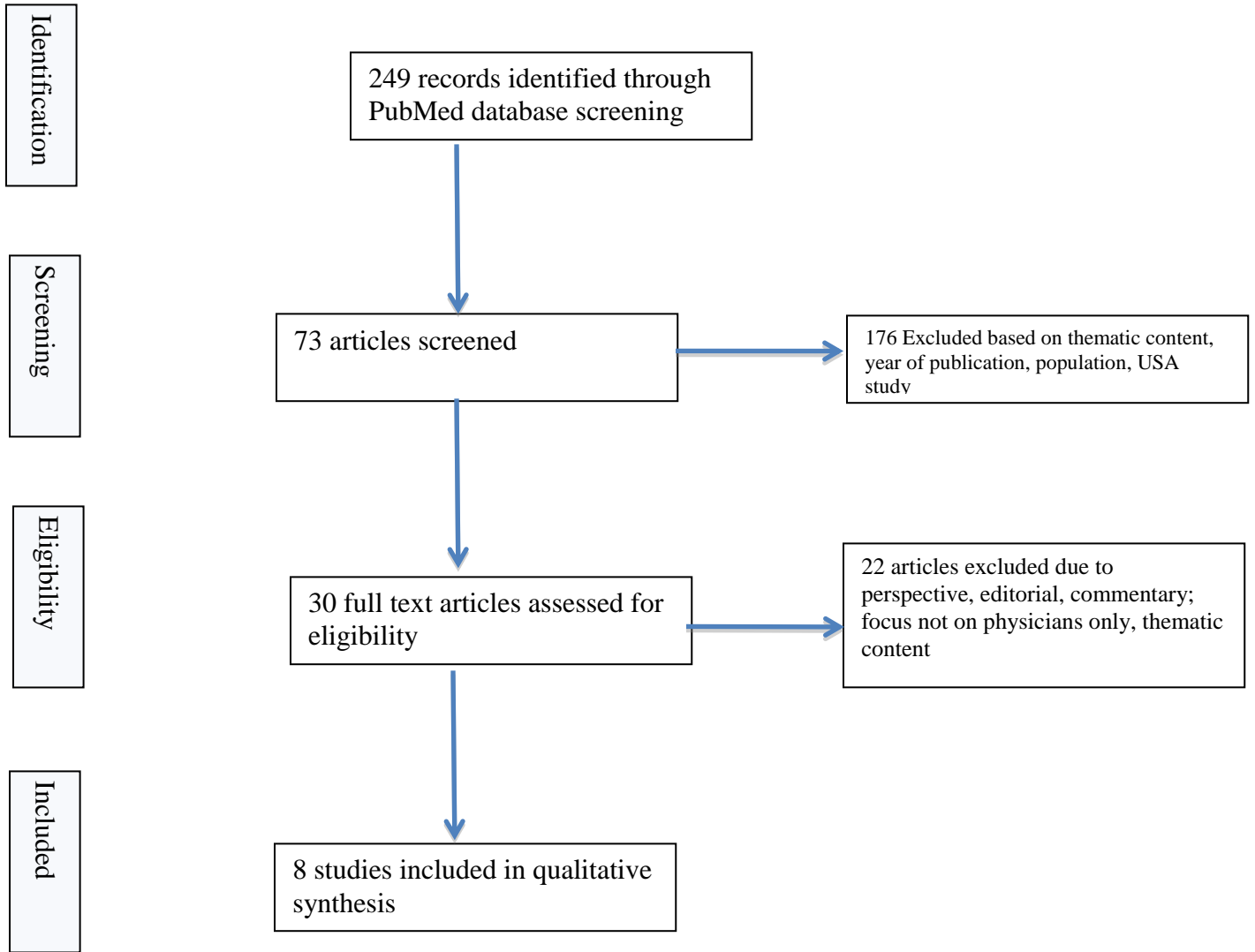
§Mean score: 6.9±1.3 (9 questions total)

SOURCE: Winkelman, et al. 2015

Categories may not total 2761 due to partially completed surveys

†Represents students currently completing additional degree or research

APPENDIX A: Literature review diagram



APPENDIX B: Reference Review

Physician Views/Attitudes toward the Affordable Care Act					
Study	Description	Study Population	Study Design	Study Results	Strengths/ Limitations
<u>Antiel RM, et al. (2014). Specialty, political affiliation, and perceived social responsibility are associated with U.S. physician reactions to health care reform legislation.</u>	Survey to measure views supported ACA reform including the fairness of reimbursement and if these reactions were related to their primary specialty choice, political views, or feelings of social responsibility as physicians	US physicians from AMA database	Cross-sectional survey (mail)	<p>41% physicians optimistic that ACA would point the U.S healthcare system in a positive direction.</p> <p>Physicians feel it was his/her professional duty to care for the uninsured or underinsured patients.</p> <p>From a political standpoint, liberals and independents were more likely to support the ACA.</p> <p>Physicians felt that health policy should be a physician importance- and should care for uninsured / under-also showed that they supported the ACA.</p> <p>Surgeons and procedural specialists were less likely to support it.</p>	<p>Strengths: Large sample size of physicians that are primary and specialty trained.</p> <p>65% response rate.</p> <p>First systematic report including physician political affiliation with relationship to ACA support.</p> <p>Limitations: survey did not include knowledge components of the ACA.</p> <p>They study design was cross-sectional data and could not establish causal relationships between the variables assessed .</p>
<u>Keyhani S, et al (2009). Doctors on coverage — physicians' views on a new public insurance option and medicare expansion</u>	Survey with the primary objective in determining physician views on medicare expansion which is included as a component of the ACA reform	U.S Physicians on AMA database	Cross-sectional survey (mail)	<p>Majority of physicians (62.9%) supported public and private medicare options.</p> <p>27.3% physicians supported private medicare options.</p> <p>57.4% physicians supported inclusion of a public option despite demographic findings of specialties, practice locations, and practice types. (65.2%);</p> <p>A majority of primary care physicians supported public medicare options.</p>	<p>Strengths of the study include a large sample size of a diverse physician study population including primary care and specialist physicians. The authors state that the findings of physicians were similar to a recent public opinion poll as well.</p> <p>Limitations of the study were a response rate of 43.2%. Also physicians' opinions can change from initial survey to current given the media or new information. The survey did reward responders and could have included responses that had interest in the topic</p>

					or reward incentive.
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Physician Knowledge toward the Affordable Care Act					
Study	Description	Study Population	Study Design	Study Results	Strengths/ Limitations
<u>Rocke DJ,et al (2014) Physician knowledge of and attitudes toward the Patient Protection and Affordable Care Act.</u>	Primary objective of this paper was to determine the Otolaryngologist's knowledge and attitudes regarding the ACA provisions.	U.S. Otolaryngologists who were members of the Academy of Otolaryngologists	National cross-sectional survey	<p>Participants were "opposed" (48.8%) or "strongly opposed" (26.4%) to the ACA. Only 21.3% were "in favor" and 3.4% of the participants were "strongly in favor."</p> <p>74% responses regarding knowledge were correct.</p> <p>60% physicians correctly answered questions on whether small businesses receive tax credits for providing health insurance, the effect of the PPACA on Medicare benefits, and whether a government-run health insurance plan was created</p> <p>Otolaryngologists who worked in an academic setting; had increased bias towards the ACA, and characterized themselves as democratic were significantly found to answer more correct responses.</p>	<p>Strengths of the study included that this was the first reported study to include both knowledge and attitudes. It was also the first study to survey ENT physicians.</p> <p>Limitations of the study include sample representation of ENT physicians if not a member of the Academy.</p> <p>Also the survey only focused on otolaryngologists with most respondents being biased against ACA reform.</p> <p>ENT specialists do have higher salary for procedural tasks and may have more bias towards ACA reform in regards to physician salary which was not included in the survey question.</p> <p>The study response rate was also poor.</p>

<p><u>Anderson BL, et al (2014). Obstetrician-gynecologists' knowledge and opinions about the United States Preventive Services Task Force (USPSTF) committee, the Women's Health Amendment, and the Affordable Care Act: national study after the release of the USPSTF 2009 Breast Cancer Screening Recommendation Statement.</u></p>	<p>Determine the knowledge and opinions from Obstetrician/Gynecologists (OB/GYNs) regarding the USPSTF committee and statement guidelines of the 2009 Breast Cancer screening recommendations and to determine their views on healthcare reform/ACA.</p>	<p>U.S. OB/GYN physicians who are members of a collaborative research network</p>	<p>National cross-sectional study</p>	<p>OB/GYNs supporting mammography coverage provided by the Women's Health Amendment with 88% saying "yes."</p> <p>However, when asked about their support for the ACA the responses showed 16.4% no support but on the opposite extreme with 13% indicating full support.</p> <p>In regards to knowledge of the healthcare bill would impact their practice 3.8% indicated that that they had no awareness and only 3.8% stating they had full awareness with the other respondents having less than average knowledge score.</p> <p>The survey also revealed that some OB/GYNs were even considering early retirement (23.1%) or quitting their practice(13.7%) secondary to implementation of the Affordable Care Act (13.7%).</p>	<p>Strength of the study was that this was also a national sample survey sent to OB/GYNs. The survey being sent in response to release of new guidelines and during the implementation of the ACA captured time sensitive opinions.</p> <p>Limitations of the study however would include that it only included OB/GYN physicians. The survey did not include specific questions of knowledge regarding the ACA. The study respondents also were part of a collaborative research group which may have more interest in policy change and show responder bias.</p>
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Medical student Views and Knowledge towards the Affordable Care Act					
Study	Description	Study Population	Study Design	Study Results	Strengths/ Limitations
<p><u>Huntoon KM (2011) Healthcare reform and the next generation: United States medical student attitudes toward the Patient Protection and Affordable Care Act</u></p>	<p>The primary aim of this study was to assess future physicians, being medical students, on their knowledge and understanding of the ACA.</p>	<p>Medical students from 10 U.S. medical students</p>	<p>Cross-sectional survey using electronic surveys</p>	<p>80% of medical students supported the ACA and this was despite school year, political identification, or intended specialty.</p> <p>Majority of students opposed a repeal of the ACA (58.8% [95% CI 56.1%–61.6%]) .</p>	<p>Strengths- focus on future physicians which previous work did not do.</p> <p>The study sampled medical students nationally from ten medical schools and incorporated demographic information including political view, year of</p>

				<p>Some medical students stated they favored repeal of the ACA (15.0%) [95% CI 13.1%–17.1%]. One third of these because the reform did not go far enough in its reform</p> <p>In regards to knowledge of the ACA, one-third of medical students responded that they did not understand the major provisions of the PPACA</p>	<p>school, and voting state with similar findings to the demographics of the Association of American Medical Colleges.</p> <p>Limitations of the study were that the survey response rate was very low(18%) and the survey went out to a listserv which may not be the primary email accounts of the student and confirmation of email receipt was unknown. Survey bias could also have contributed with those who are more interested in healthcare and policy to participate in the study.</p> <p>The study also did not have any incentives which also could have played a role in medical school participation.</p>
<p><u>Winkelman TA, et al. (2012). Medical students and the Affordable Care Act: uninformed and undecided.</u></p>	<p>Objective of this study was to focus on medical students' knowledge and attitudes toward the ACA.</p>	<p>Medical students of all years at one U.S .medical school</p>	<p>Cross-sectional survey using electronic surveys</p>	<p>Only 47% of medical students responded that they supported the ACA and 13% who did not support the legislation. The results revealed that 48% of medical students stated they felt they understood the law.</p> <p>Demographic findings showed that most medical students self-characterized as liberal (55%) and majority of the students (52%) were planning to pursue primary care specialties.</p> <p>Furthermore, the future physicians also felt a professional obligation to play a role in implementing the ACA (69%). This study did show significant association of ACA knowledge and</p>	<p>Strengths include that the authors asked medical students about their views and their self-assessment of knowledge of the ACA.</p> <p>Limitations to the study were that it was only a single site study and that the study did not truly evaluate the knowledge base of medical students regarding the ACA and its provisions. Although many students stated they did not understand the law; questions remain about what parts of the law the students do not understand.</p>

				support for the ACA ($P < .001$).	
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Medical Education regarding the Affordable Care Act					
Study	Description	Study Population	Study Design	Study Results	Strengths/ Limitations
<u>Mou D et al (2011). The state of health policy education in U.S. medical schools.</u>	Deans of US medical schools surveyed regarding medical student curriculum focused on health policy and ACA.	Deans from all medical students in the United States	A cross-sectional survey	94% of schools had some policy education but that there was variation] Average time spent was 14 hours on health policy. 58% of medical school deans surveyed felt their institution had “too little” health policy education and that 50% of the schools surveyed spend ≤10 hours of teaching instruction.	Strengths include good response rate and allowed deans to report strengths/weaknesses/limitations of each program. Limitations of the study included that it did not include open ended questions in which these differences in curriculum could be explored more. It also did not compare actual student performance in health policy to the set curriculum.
<u>Patel MS, et al (2014). A framework for evaluating student perceptions of health policy training in medical school.</u>	Responses from the Association of American Medical Colleges’ (AAMC) graduation questionnaire from years 2007-2008 and 2011-2012 were compared by the authors on 4 main themes: systems and principles; value and equity; quality and safety; and politics and law.	Medical student graduates	Retrospective study	The outcomes of the study reported that the 2011-2012 students’ perceptions of training showed an increase by 11.7% for systems and principles curriculum, 2.8% for quality and safety, and 6.8% for value and equity. However, the study also showed that there was a decline of 4.8% in politics and law as compared to the 2007-2008 group. Satisfaction with training over time were noted for the all domains including systems and principles; value and equity; and quality and safety; with the notable exception of medical economics.	Strength of the study was that it used medical student assessment of health policy curriculum with the inclusion of self-satisfaction. Limitations is study design- a retrospective analysis of student perceptions of health policy which may be an inaccurate reflection of feelings towards different aspects of health policy and could not identify causal factors for these trends