ORIGINAL ARTICLE

North Carolina Medical Student Views on Abortion

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BACKGROUND Abortion is a controversial yet common procedure within the United States and North Carolina. Although much effort has been directed at understanding the views of physicians and the general public, the views of medical students on abortion are understudied. This study examines the views of medical students at different stages in training on abortion at a public institution, the University of North Carolina at Chapel Hill School of Medicine.

METHODS We surveyed incoming, second year, fourth year, and leave-of-absence medical students at the University of North Carolina at Chapel Hill about their views on abortion. We utilized an IRB-approved, anonymous online Qualtrics-based, cross-sectional survey during the spring of 2014.

RESULTS We received 315 responses (58% response rate) from 98 incoming (54.5%), 126 second year (70.0%), and 91 fourth year and leave-of-absence (49.2%) students. The majority of students, regardless of stage of training, felt abortion was morally acceptable (incoming 64.3%, second year 74.0%, and fourth year and leave-of-absence 70.0%). Of the students who found abortion to be acceptable, second year (80.9%) and fourth year and leave-of-absence (85.5%) students found second-trimester abortion more acceptable than incoming students (57.15%, $P = .002$); second year students (42.2%) had greater acceptability of third-trimester abortions compared to incoming (26.2%) and fourth year and leave-of-absence students (22.2%; $P = .03$). Religiosity and Republican political affiliation were associated with more conservative views on abortion ($P = .002$); however, gender or intention to enter into an obstetrics/gynecology residency were not.

LIMITATIONS Our study reflects views from a single institution, the University of North Carolina at Chapel Hill School of Medicine. This limits the generalizability of our findings to the greater population of medical students across the country.

CONCLUSION Despite the controversy surrounding abortion, our work suggests that medical students at the University of North Carolina at Chapel Hill School of Medicine have accepting views of abortion.

Abortion is a controversial topic in American culture [1, 2]. Despite this controversy and a decline in trained abortion providers, abortion remains a common procedure in the United States and North Carolina. In 2011, 16% of all pregnancies in North Carolina resulted in an induced abortion [3-5]. The American College of Obstetricians and Gynecologists supports the expansion of abortion education, an increase in trained abortion providers, and inclusion of abortion education into formal medical school curricula, given that "access to safe abortion hinges upon the availability of trained abortion providers" [6].

Although much effort has been directed toward better understanding the views of key stakeholders on the topic of abortion, namely physicians and the general public, the views of medical students are understudied [7-11]. Because students, as future clinicians, will be involved in caring for families dealing with unintended or complicated pregnancies and tasked with counseling regarding pregnancy options, their views on these topics as they proceed through training are areas that merit further study.

Medical students report interest in gaining knowledge about the full spectrum of family planning care and appear to have more accepting views of abortion with increased exposure [12, 13]. The purpose of this study is to expand on the literature by describing the moral acceptability of abortion among medical students at the University of North Carolina at Chapel Hill (UNC) School of Medicine and to identify if their views on abortion differ at different points in training, given that UNC is an institution with required preclinical and clinical curricular material addressing family planning and abortion. Our hypothesis was that more senior students with formalized exposure to the topic of abortion would have views that are more accepting compared to students without such formalized exposure.

Methods

To examine medical students' views on abortion and identify whether they are different among levels of training, we conducted an anonymous, cross-sectional study of medical students at the UNC School of Medicine. The survey was part of a larger study examining medical students' views on ethically challenging areas of medicine, such as informed consent, physician-assisted death, and end-of-life care. The larger study was completed by the same lead authors of this

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current work and was approved by the UNC Institutional Review Board. Demographic data collected included age, whether respondents had children (and if so, number), gender, race, marital status, political and religious affiliation (see Table 1), and anticipated residency specialty (data not shown).

Although based upon prior models, the survey was self-designed, as we were not aware of any validated instruments that covered all the ethical areas we were planning to investigate [11, 13]. The questions regarding abortion (see Figure 1) asked students about their views on the moral acceptability of abortion at different gestational ages and under different clinical circumstances. We intentionally left the definition of morally acceptable to the students' interpretation. We also incorporated a skip logic that would provide supplemental questions based on the way respondents answered (see Figure 1).

The anonymous survey was administered online using Qualtrics. Using official, class-specific, university-maintained email listservs, incoming first year (MS1), second year (MS2), fourth year (MS4), and fourth year leave-of-absence students (LOA) received an invitation to participate in this study in the spring of 2014. It was made clear that the study was research and not from the university. A follow-up email was sent 2 weeks later requesting participation, and a third and final email was sent after another 2 weeks. Eight weeks after the first email, the survey link was deactivated and data collection stopped. Upon completion of the sur-

TABLE 1.
Respondent Demographics

	Total	MS1	MS2	MS4-LOA	*P* value
Class size	**545**	**180**	**180**	**185**	
Respondents	315 (57.8%)	98 (54.4%)	126 (70.0%)	91 (49.2%)	
Age	25.4 ± 3.0	24.1 ± 2.8	25.2 ± 2.4	27.4 ± 2.6	< .001
Number of children	0.1 ± 0.3	0 ± 0	0.1 ± 0.3	0.1 ± 0.4	
Gender					.18
Female	165 (52.4%)	56 (57.1%)	58 (46.0%)	51 (56.0%)	
Male	150 (47.6%)	42 (42.9%)	68 (54.0%)	40 (44.0%)	
Race					.29
African American	26 (8.3%)	9 (9.0%)	9 (7.1%)	8 (8.8%)	
Asian	38 (12.1%)	12 (12.0%)	14 (11.0%)	12 (13.2%)	
Caucasian	224 (71.3%)	70 (70.0%)	92 (72.4%)	62 (68.1%)	
Hispanic	12 (3.8%)	6 (6.0%)	5 (3.9%)	1 (1.1%)	
Native American	2 (0.64%)	0 (0%)	1 (0.8%)	1 (1.1%)	
Other	12 (3.8%)	3 (3.0%)	6 (4.7%)	3 (3.3%)	
Marital status					.06
Single	241 (76.5%)	77 (78.6%)	103 (81.7%)	61 (67.0%)	
Never married	8 (2.5%)	4 (4.1%)	3 (2.4%)	1 (1.1%)	
Married	64 (20.3%)	17 (17.3%)	18 (14.3%)	29 (31.9%)	
Separated	1 (0.3%)	0 (0%)	1 (0.8%)	0 (0%)	
Divorced	1 (0.3%)	0 (0%)	1 (0.8%)	0 (0%)	
Political affiliation					.46
Democrat	166 (52.3%)	45 (45.9%)	68 (54.0%)	53 (58.2%)	
Republican	50 (16%)	22 (22.4%)	16 (12.7%)	12 (13.2%)	
Libertarian	17 (5.4%)	5 (5.1%)	8 (6.3%)	4 (4.4%)	
Other	7 (2.2%)	1 (1.0%)	4 (3.2%)	2 (2.2%)	
Unaffiliated	74 (2.4%)	25 (25.5%)	30 (23.8%)	19 (20.9%)	
Religious affiliation					58
Agnostic	22 (7%)	8 (8.2%)	8 (6.3%)	6 (6.6%)	
Atheism	21 (6.7%)	4 (4.1%)	13 (10.3%)	4 (4.4%)	
Buddhism	4 (1.3%)	0 (0%)	4 (3.2%)	0 (0%)	
Evangelical Christian	29 (9.2%)	9 (9.2%)	12 (9.5%)	8 (8.8%)	
Hinduism	9 (2.9%)	2 (2.0%)	5 (4.0%)	2 (2.2%)	
Judaism	14 (4.5%)	3 (3.1%)	4 (3.2%)	7 (7.7%)	
Islam	4 (1.3%)	1 (1%)	1 (0.8%)	2 (2.2%)	
Nonreligious	71 (22.6%)	21 (21.4%)	29 (23.0%)	21 (23.1%)	
Other	15 (4.8%)	6 (6.1%)	5 (4.0%)	4 (4.4%)	
Protestant Christian	90 (28.7%)	32 (32.7%)	33 (26.2%)	25 (27.5%)	
Roman Catholic	32 (10.2%)	10 (10.2%)	11 (8.7%)	11 (12.1%)	
Unitarian Universalist	3 (1%)	2 (2.0%)	1 (0.8%)	0 (0%)	

Note. MS1, incoming first year; MS2, second year; MS4-LOA, fourth year and fourth year leave-of-absence.

FIGURE 1.
Survey Vehicle

Do you believe that abortion under any circumstance is morally acceptable?

If yes:
Do you feel that second trimester (13-28 week) abortions are morally acceptable?
-AND-
Do you believe that third trimester abortions (29-40 weeks) are morally acceptable?

If no:
Would abortion in the case of pregnancy that was the result of rape or incest be morally acceptable?
-AND-
Would abortion of a pregnancy that will result in serious physical, genetic, or mental defects be morally acceptable?

vey, respondents could elect to enter into a lottery for 1 of 6 Amazon gift cards; this lottery was distinct from the survey, and respondents could in no way be linked to their survey answers.

The MS1 group comprised of students who had received acceptance to medical school but had not yet started (ie, incoming students), and therefore had no curricular exposure to abortion. MS2 students were near the end of their second year in medical school and had finished the preclinical portion of their training, which includes a course titled "Reproductive Medicine" with dedicated lectures on abortion and all contraceptive methods. Students are held responsible for understanding all course content through end-of-course exams. MS4 students were fourth-year medical students in their final year of medical school; in addition to pre-clinical abortion material, these students had completed a required obstetrics and gynecology (OB/GYN) clerkship with varying levels of clinical exposure to abortion. Interested students had the opportunity to spend several clinic sessions in the abortion clinic and follow those patients to the operating room. The clerkship also includes 2 teaching sessions specifically on contraception and abortion with sub-specialty trained faculty and fellows. LOA students were also fourth-year medical students, but were students who had taken a leave of absence after their third year to pursue additional academic or research interests (eg, Masters of Public Health). Following this leave, LOA students would then return to complete the final clinical year of medical school and thus, had the same formal exposure as their MS4 classmates.

For analysis of demographic characteristics regarding religion, respondents who self-identified as nonreligious, agnostic, or atheistic were categorized as "non-religious," while respondents who indicated a specific affiliation (eg, Buddhism or Protestant Christian) were categorized as "religious." Combining the MS4 and LOA groups did not alter the results, so they were collapsed into a single group given the small LOA size (N = 24). Data were analyzed in R (Version 3.3.1), and responses were compared using χ^2 tests and 2-sample proportion tests.

Results

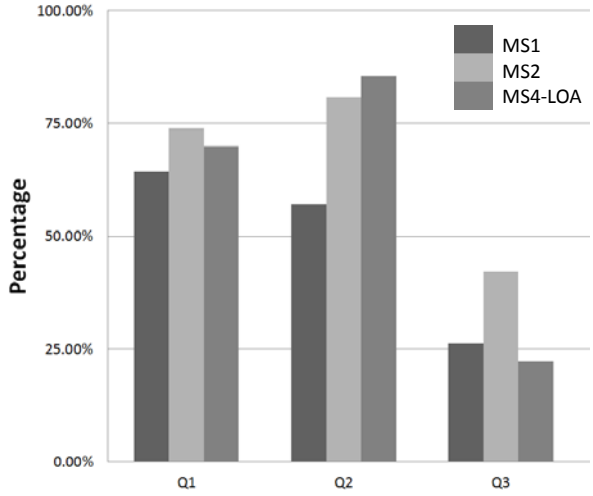
Respondents

We received 315 out of 545 possible responses (58% response rate) with 98 MS1 (54.5%), 126 MS2 (70.0%), and 91 MS4-LOA (49.2%) student responses. The LOA group had a relatively small sample size (N = 24). Since LOA students were closest to MS4 students, the data were analyzed in a combined MS4-LOA group; the significant results for the combined MS4-LOA group were the same as those observed for the MS4 group alone, so the combined group was used for all analyses. Demographic characteristics were similar among the respondent groups; there were no significant differences in gender, race, marital status, political affiliation, number of children, or religious affiliation, although MS4-LOA students were older ($P < .001$; see Table 1).

Abortion

The majority of students, regardless of stage of training, felt abortion was morally acceptable (MS1 64.3%, MS2 74.0%, MS4-LOA 70.0%). Of the students who found abortion to be acceptable, MS2 (80.9%) and MS4-LOA (85.5%) students found second-trimester abortion more acceptable than MS1 students (57.15%; $P = .002$); MS2 stu-

FIGURE 2.
Medical Student Views on Abortion



Q1: Do you believe that abortion under any circumstance is morally acceptable?
Yes: MS1 64.3% (N = 98), MS2 74.0% (N = 123), MS4-LOA 70.0% (N = 90)

Q2: Do you feel that second trimester abortions (13-28 weeks) are morally acceptable?
Yes: MS1 57.1% (N = 63), MS2 80.9% (N = 89), MS4-LOA 85.5% (N = 62)
MS2 and MS4-LOA students found second trimester abortion more acceptable than MS1 students ($P = .002$).

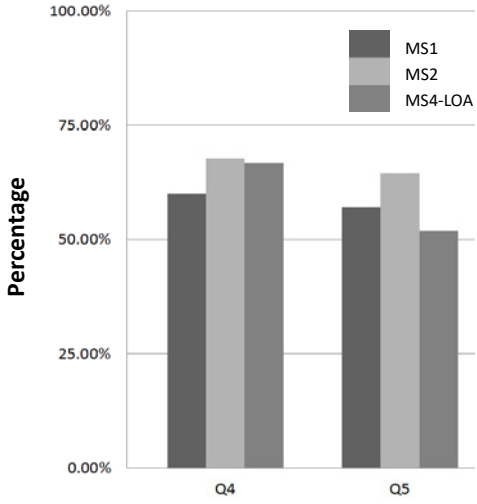
Q3: Do you believe that third trimester abortions (29-40 weeks) are morally acceptable?
Yes: MS1 26.2% (N = 61), MS2 42.2% (N = 90), MS4-LOA 22.2% (N = 63)
MS2 students had greater acceptability of third trimester abortions compared to MS1 and MS4-LOA students ($P = .03$).

Note. MS1, incoming first year; MS2, second year; MS4-LOA, fourth year and fourth year leave-of-absence.

dents (42.2%) had greater acceptability of third-trimester abortions compared to MS1 (26.2%) and MS4-LOA students (22.2%; *P* = .03; see Figure 2).

Among students who did not feel abortion was acceptable, there were no group differences regarding acceptability of abortion for pregnancies that were the result of rape or incest (MS1 60.0%, MS2 67.7%, MS4-LOA 66.7%) or pregnancies that would result in serious physical, genetic, or mental fetal defects (MS1 57.1%, MS2 64.5%, MS4-LOA 51.9%; see Figure 3). In subgroup analyses, there were no significant female versus male differences in acceptability of abortion (72.0% versus 67.3%; see Table 2A), although there were significant religiosity-specific differences: students who self-identified as non-religious, agnostic, or atheistic were more likely to view abortion as morally acceptable compared to peers who indicated specific religious affiliations (80.5% versus 63.4%, *P* = .002; see Table 2B). Respondents who reported an interest in pursuing an OB/GYN residency showed no significant difference in acceptability of abortion compared to respondents who expressed interest in other specialties (70.7% versus 69.6%; see Table 2C). Respondents who self-identified as Republican were less likely to view abortion as morally acceptable compared to those who self-identified as Democrat or Independent (53.1%, 77.1%, 62.5%, respectively; *P* = .002; see Table 2D).

FIGURE 3.
Medical Student Views on Abortion (continued)



Q4: Would abortion in the case of pregnancy that was the result of rape or incest be morally acceptable?
Yes: MS1 60.0% (N = 35), MS2 67.7% (N = 31), MS4-LOA 66.7% (N = 27)

Q5: Would abortion of a pregnancy that will result in serious physical, genetic, or mental defects be morally acceptable?
Yes: MS1 57.1% (N = 35), MS2 64.5% (N = 31), MS4-LOA 51.9% (N = 22)

Note. MS1, incoming first year; MS2, second year; MS4-LOA, fourth year and fourth year leave-of-absence.

Discussion

The majority of respondents, regardless of their medical school stage, found abortion to be morally acceptable. In national polls, approximately 43% of American adults consider abortion morally acceptable [1]. Although similar levels of support were seen in a previous study of health care providers, this study was conducted at a university in the Pacific Northwest, an area typically thought of as less conservative with regards to abortion than the Southeast [11, 14, 15].

Overall, there were no group differences regarding acceptability of abortion. The lack of group differences may be reflective of the high acceptance of abortion at baseline, leaving minimal room for change through formal academic exposure. However, among respondents who found abortion acceptable, second trimester abortions were found to be more acceptable by students with clinical and/or pre-clinical exposure. These findings do support literature demonstrating that increased exposure to the topic of abortion results in more accepting views [13].

In trying to better understand factors that might be associated with views on abortion, we found that religiosity and political affiliation, not gender or intention to enter into an OB/GYN residency, were associated with views that are more conservative. This suggests that students' religious and political beliefs could impact their clinical opinion. However, further study is necessary to determine whether a causal association exists and if it affects clinical care.

We suggest that medical school curricula not only cover the basic science and epidemiology of abortion, but also include strategies for helping medical students deliver patient-centered counseling, even in situations that may be at odds with their personal beliefs [16].

Limitations and Strengths

This study has several limitations. First, this evaluation of students' views on abortion was limited to a single institution, the UNC School of Medicine. This approach was intentional and designed such that direct comparisons could be made between the different class groups, who have similar demographic characteristics but different educational exposure to these topics. Second, this study was completed at an institution in a state that is conservative relative to abortion [15]; the majority (80%) of students at the UNC School of Medicine are North Carolina residents. Although the views of these students are likely representative of other North Carolina medical students at large, they cannot be generalized to other parts of the country. Nonetheless, our respondents' views do appear similar to views reported by Shotorbani and colleagues (2004) among clinical students at the University of Washington, 70% of whom found abortion acceptable in all circumstances [11]. These results add to the minimal literature around medical student views about the moral acceptability of abortion. Prior to more routine inclusion of abortion in pre-clinical and

TABLE 2A–D.
Respondent Subgroup Analyses Reflecting Gender-Specific differences (2A), Religious-Specific Differences (2B), Residency Intention Specific Differences (2C), and Political Affiliation-Specific Views (2D) on Abortion

A: Gender-specific views

		Percent of responses as "Yes" (99% CI)		
Question	**N**	**Female**	**Male**	***P* value**
Abortion morally acceptable				
Under any circumstance	311	72.0 (62.9–81.2)	67.3 (57.5–77.2)	.37
From rape/incest	93	71.1 (53.7–88.5)	58.3 (40.0–76.7)	.2
Result in defects	93	57.8 (38.8–76.8)	58.3 (40.0–76.7)	.96
During 2nd trimester	214	72.8 (62.1–83.6)	78.0 (67.3–88.7)	.38
During 3rd trimester	214	31.0 (20.0–42.1)	32.7 (20.4–44.9)	.8

Note. CI, confidence interval.

B: Religious-specific views

		Percent of responses as "Yes" (99% CI)		
Question	**N**	**Not religious**	**Religious**	***P* value**
Abortion morally acceptable				
Under any circumstance	296	80.5 (70.9–90.1)	63.4 (54.2–72.6)	.002
From rape/incest	88	95.5 (84.0–100)	54.5 (38.7–70.4)	< .001
Result in defects	88	95.5 (84.0–100)	45.5 (29.6–61.3)	< .001
During 2nd trimester	204	88.8 (80.1–97.4)	66.1 (54.7–77.5)	< .001
During 3rd trimester	205	46.7 (33.1–60.2)	20.9 (11.1–30.6)	< .001

Note. CI, confidence interval.
Not religious category included nonreligious, agnostic, or atheistic labeled responses.

C: Intent to enter OB/GYN residency-specific views

		Percent of responses as "Yes" (99% CI)		
Question	**N**	**Not OB/GYN**	**OB/GYN**	***P* value**
Abortion morally acceptable				
Under any circumstance	311	69.6 (62.4–76.9)	70.7 (52.4–89.1)	.89
From rape/incest	93	61.7 (47.8–75.7)	83.3 (55.6–100)	.14
Result in defects	93	56.8 (42.6–71.0)	66.7 (31.6–100)	.52
During 2nd trimester	214	76.8 (68.7–84.8)	65.5 (42.7–88.3)	.19
During 3rd trimester	214	31.9 (23.1–40.7)	31.0 (8.9–53.2)	.93

Note. CI, confidence interval.

D: Political affiliation-specific views

		Percent of responses as "Yes" (99% CI)			
Question	**N**	**Republican**	**Democrat**	**Independent**	***P* value**
Abortion morally acceptable					
Under any circumstance	287	53.1 (34.7–71.5)	77.1 (68.7–85.5)	62.5 (47.8–77.2)	.002
From rape/incest	87	30.4 (5.7–55.2)	91.6 (80.3–100)	63.0 (39.0–86.9)	< .001
Result in defects	87	26.1 (2.5–49.7)	86.5 (72.0–100)	51.9 (27.0–76.7)	< .001
During 2nd trimester	196	42.3 (17.3–67.3)	87.3 (79.6–95.0)	56.8 (37.6–76.1)	< .001
During 3rd trimester	197	12.0 (0–28.8)	37.5 (26.5–48.5)	25.0 (8.2–41.8)	.025

Note. CI, confidence interval.

clinical training, most students expressed interest in having this educational exposure but didn't necessarily have the option [8, 12, 17, 18]. Although the accrediting body for OB/GYN resident programs has clear statements regarding the requirement that residents have access to abortion training, guidance is less clear at the medical school level [6]. Independent of any guidance, it is clear that, at least in our setting where students have preclinical and clinical exposure to abortion, levels of acceptability are high.

Our study may suffer from response bias given our 58% response rate. However, our respondent groups lack any notable differences—with the exception of respondent age—and basic demographic characteristics, including age, gender, and ethnicity, are reflective of the general medical student body at the UNC School of Medicine. It is unclear whether the acceptance we report reflects a trend among

young people or medical students nationally or is a result of a level of awareness among the student body, given increased legislative activity around abortion in North Carolina.

Conclusion

Medical students are confronted with numerous clinical circumstances that challenge their preconceived ideas about medicine, health care, and ethics. As educators, our role is to provide them with tools to confront these circumstances in a patient-centered way. For some students, reproductive health care, and specifically abortion, offers many of these challenging clinical circumstances. Our findings suggest that future physicians from UNC generally have accepting views of abortion. Ongoing efforts to reform medical school curriculum should focus on providing students the tools required to deliver patient-centered care while navigating their own personal, political, or religious beliefs. NCMJ

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