HHS Public Access

Author manuscript

J Surg Educ. Author manuscript; available in PMC 2023 May 01.

Published in final edited form as:

J Surg Educ. 2022 ; 79(3): 676–685. doi:10.1016/j.jsurg.2021.12.013.

Medical Student Attitudes on Explicit Informed Consent for Pelvic Exams Under Anesthesia

Benjamin E Zuchelkowski, MD, MS[a], **Soukaina Eljamri**[a], **Jill E McDonnell**[a], **Bhavya Varma, MD**[b], **Natalie G Stern**[a], **Scott D Rothenberger, PhD**[a], **Kavita Shah Arora, MD, MBE, MS**[c], **Judy C Chang, MD, MPH**[a,d]

[a]Department of Medicine, University of Pittsburgh School of Medicine, Pittsburgh, PA

[b]Department of Medicine, Johns Hopkins University, Baltimore, MD

[c]Department of Ob/Gyn, University of North Carolina, Chapel Hill, NC

[d]Department of Obstetrics, Gynecology, and Reproductive Sciences, University of Pittsburgh School of Medicine, Pittsburgh, PA

Abstract

Objective—To obtain an overview of medical student attitudes on the need for explicit consent for pelvic exams under anesthesia performed for educational purposes

Design—From February to October 2020, 201 medical students at a single medical school in the United States participated in a cross-sectional survey after completion of the obstetrics and gynecology clerkship. Outcome measures included endorsement of need for explicit informed consent for educational pelvic exams under anesthesia, and knowledge of informed consent processes for such exams.

Setting—University of Pittsburgh School of Medicine

Participants—Third- and fourth-year medical students

Results—Overall, 75% of medical students endorsed a need for explicit informed consent for educational pelvic exams under anesthesia, which extended to prostate, rectal, and breast exams under anesthesia. Additionally, 45% and 77% of these participants indicated that consent for educational pelvic exams under anesthesia should take the form of a separate signature line on the surgical consent form and/or a verbal form, respectively. Only 40% of students correctly identified institutional policy for obtaining informed consent for educational pelvic exams under anesthesia. Rotation with the oncologic surgical service (p=0.02) and correct identification of institutional informed consent policies (p=0.002) were associated with decreased perceptions of the importance of explicit informed consent for educational pelvic exams under anesthesia.

Corresponding Author: Benjamin E Zuchelkowski, M.D., M.S., Department of Medicine, University of Pittsburgh School of Medicine, 1218 Scaife Hall, 3550 Terrace St, Pittsburgh, PA, 15261, telephone: 724-317-1971, zuchelkowskibe@upmc.edu.

Declarations of interest: none

Conclusions—Medical students at the institution studied largely support explicit informed consent for educational pelvic and other sensitive exams under anesthesia, but a knowledge gap on institutional informed consent policy exists. Medical students support increased transparency and bodily autonomy. Due to the agreement of patients and medical students and the ethical rationale for this position, it may be appropriate for physicians and institutions to consider new processes of obtaining explicit informed consent for pelvic exams under anesthesia by medical students.

Competencies—Interpersonal and Communication Skills (ICS), Professionalism

Keywords

anesthesia; ethics; health policy; informed consent; medical education; pelvic exams

Introduction

Informed consent is an essential ethical doctrine in medicine and research and promotes respect for patient bodily integrity and autonomy[1]. Though the implementation of informed consent for licensed physicians relies on clear ethical and legal precedence, its application to exams and procedures performed by medical students is less defined, especially when patients are under general anesthesia.

In teaching hospitals across the world, medical students are integrally involved in patient care, including in the operating suite. Patients are generally unaware of the role of medical students on a care team[2–4] but wish to be informed of their involvement[5,6], especially in gynecologic surgical care where students frequently perform pre-operative pelvic exams under anesthesia (EUA). In a 2010 Canadian study, only 19% of patients were aware that medical students might perform a pelvic EUA[3]. Furthermore, 72% wanted to be asked in advance if a medical student were to perform the exam while they were under anesthesia, while 54% replied that they would give consent if asked first.

Multiple medical groups, including the Joint Committee on the Accreditation of Hospitals[7] and the American College of Obstetricians and Gynecologists[8], have released recommendations for professional responsibilities in medical education pertaining to pelvic exams under anesthesia. They state that educational pelvic exams performed under anesthesia by medical students should only occur if they are indicated in that patient's care and after the patient's informed consent[8]. However, reports in the lay media[9,10] and medical literature[11,12] suggest that issues surrounding this practice persist. As such, five states in the United States passed legislation that classifies pelvic examinations performed without the explicit consent of the patient as misdemeanors and grounds for loss of a medical license, and similar legislation is pending elsewhere[7,13].

To date, only one study[2] has rigorously surveyed the medical student experience with pelvic exams under anesthesia and their perceptions on explicit consent for these exams. This study was conducted prior to the increased visibility of the issue in the lay media or the recent relevant state legislation. In the current study, we aimed to evaluate medical student perceptions on explicit consent for pelvic EUAs, knowledge of the current informed consent

process for such exams, and preferences for a logistical framework through which to obtain consent.

Methods

Subjects

From February through October 2020, we distributed an anonymous online questionnaire to third- and fourth-year medical students at the University of Pittsburgh School of Medicine. The questionnaires were distributed via an email containing a brief description of the study and a personalized link to the survey. Medical students were eligible for study participation upon completion of the Obstetrics & Gynecology clerkship to ensure they had experiential knowledge of the topic to inform questionnaire responses. Reminder emails were sent and advertisements in each class's Facebook groups were posted with the aim to achieve at least a 50% response rate to reduce response bias. Students were not offered any monetary incentive to complete the questionnaire. Informed consent was implied by survey completion.

Questionnaire

The questionnaire was developed by the research team which included medical students, research staff, a statistician, bioethicists, and practicing obstetrician-gynecologists (ob/gyns). It was subject to review by a panel of ethicists, lawyers, and administrative members prior to approval by the site's Institutional Review Board (IRB). A copy of the questionnaire is included in Appendix A.

The questionnaire was divided into three major thematic areas: 1) student demographics and description of patient interactions during the obstetrics/gynecology clerkship; 2) knowledge of and attitudes regarding explicit informed consent for pelvic EUAs by medical students; and 3) perceived impact of learning and performing pelvic EUAs on broader aspects of medical education. Due to legal and privacy concerns, the frequency of performing a pelvic exam on an anesthetized patient was not assessed.

Prior to the start of the study, the institution's informed consent form for surgical procedures included a section that described learner's participation in the patient's care in the following manner: "I understand that the facility is a teaching facility. The health care team may include residents, fellows, students, and skilled healthcare professionals. Credentialed team members may perform some or all parts of my procedure under the supervision and guidance of my physician(s)." No explicit description of specific procedures or exams were provided.

Quantitative Analysis

Descriptive statistics of demographic data were tabulated. The binary variable *knowledge* was created based on participants choosing the correct option under the question "What is your understanding of the current consent process for educational pelvic exams under anesthesia?". The binary variable *importance* was created if participants selected "pelvic exam" from the list of options under the question, "In my opinion, the following exams/

procedures performed under anesthesia by medical students for educational purposes should require explicit informed consent." A broad range of other organ systems and procedures were specifically offered in this question to minimize social response bias and avoid leading answers. The variables student training year (i.e., third year medical student (MS3) vs fourth year medical student (MS4)), number of completed clerkships, and acting-internship status were collapsed and categorized as *training stage* "early" (three or fewer clerkships completed), "middle" (four to seven clerkships completed), and "late" (all seven clerkships plus acting- or sub-internship completed).

We tested the bivariate associations between selected predictors and outcome with a χ^2 test (or Fisher's exact where appropriate) to determine which factors are associated with students' attitudes on importance of informed consent for educational pelvic EUAs. Selected predictors included gender, race/ethnicity, training stage, indication of interest in pursuing a residency where pelvic exams might be performed, and characteristics of their experiences with pelvic exams on the ob/gyn clerkship (i.e., total number of pelvic exams performed during clerkship, number of bimanual exams performed under anesthesia, etc.). We constructed a parsimonious multivariable logistic regression model to identify clinically relevant and statistically significant predictors of students' attitudes toward explicit informed consent for educational pelvic EUAs with minimal confounding. This was done in a stepwise fashion by initially including all significant predictors from bivariate analysis and then removing predictors from the model if individual p-values were >0.1 through iterative regression analysis. An α=0.05 was considered statistically significant, and p-values were not adjusted for multiplicity due to the exploratory nature of the current study[14]. *Training stage* was retained in the final reduced model due to its perceived clinical relevance. STATA SE 15.1 software was used for all analysis.

Ethical Approval

This study was approved by the University of Pittsburgh's Institutional Review Board (STUDY19110194) and the University of Pittsburgh School of Medicine Review of Medical Student Research (ROMS) committee.

Results

During the study period, 388 students were eligible for participation. 215 total responses were received (55%), and 14 were excluded due to incompleteness. 201 complete responses (51.8%) were analyzed.

Demographic characteristics of the study sample are outlined in Table 1. Notably, most respondents self-identified as female and white. There were equal proportions of MS3s and MS4s, and less than half of respondents had completed an acting internship. Many students indicated that their desired residency of choice might require them to perform a pelvic exam. More students rotated with the benign surgical service than the oncologic surgical service during the ob/gyn clerkship. Almost all respondents completed more than five total pelvic exams during the clerkship, most students indicated they introduced themselves to the patient prior to gynecologic surgery "always" or "most of the time", and only a minority indicated they "never" or "rarely" performed a pelvic exam under anesthesia.

Fewer respondents endorsed having performed pelvic exams in the ambulatory clinic than under anesthesia.

Only 40% (80/201) of students correctly identified the study institution's process for obtaining informed consent for educational pelvic EUAs. Table 2 shows the proportion of students who believe that the listed types of exams or procedures should be associated with explicit consent prior to medical students performing them. 75% (151/201) of participants believed that explicit consent for educational pelvic EUAs should be obtained. Additionally, most medical students believed that rectal, prostate, and breast exams similarly require explicit informed consent when performed under anesthesia. Fewer students believed that minimally invasive or non-sensitive exams under anesthesia require explicit informed consent.

Among those who endorsed explicit informed consent for pelvic EUAs, 21% indicated it should take a written form, 46% a verbal form, 31% both verbal and written, and 1.3% indicated either written or verbal form. Among those who indicated the explicit consent process should take a written form (i.e., those who previously selected written and both), 84% indicated it should be a separate signature line on the surgical consent form while only 11% said explicit consent for learner involvement should be obtained through a separate consent form. Finally, among those who endorsed explicit informed consent for pelvic EUAs, 20% indicated it should be obtained at the pre-operative appointment weeks prior to surgery, 31% indicated it should be obtained in the pre-operative area hours prior to surgery, and 45% believed it should be obtained at both times. Percentages may not add to 100% due to missing data.

Table 3 demonstrates results of the bivariate analyses examining associations between student characteristics and attitudes regarding explicit consent for pelvic EUAs. The surgical service with which students rotated on the Ob/Gyn clerkship was significantly associated with their attitudes toward explicit consent. Specifically, those who rotated with the oncology surgical service were less likely to endorse beliefs for explicit consent compared to the benign surgical service (34% vs. 65%, $p = 0.03$). There were no significant differences by gender, race/ethnicity, training stage, or whether future choice of residency requires pelvic exams to be performed. We did not observe any significant difference when using a dichotomous race variable to compare White vs Non-White groups ($\chi^2 = 1.78$, $p = 0.18$). Knowledge of the informed consent process for educational pelvic EUAs was significantly associated with students' attitudes toward informed consent for these exams; students who lacked knowledge of the consent process were more likely to believe that explicit informed consent should be obtained (100/151 [66%] "No" *Knowledge* and "Yes" *Importance* vs 51/151 [34%] "Yes" *Knowledge* and "Yes" *Importance*; $p = 0.002$). Training stage was significantly associated with knowledge of the informed consent process.

Table 4 displays the final reduced multivariable model containing all significant predictors associated with attitudes of explicit informed consent for educational pelvic EUAs. Overall, higher knowledge of informed consent (0.33, 0.17 – 0.69 [OR, 95% CI]) and rotating with the oncology surgical service during the Ob/Gyn clerkship (0.45, 0.23 – 0.94 [OR, 95% CI]) had lower odds of endorsing explicit consent for pelvic EUAs, while middle or late stage of

medical student training (0.61, 0.22 – 1.65 [OR, 95% CI] vs 0.87, 0.32 – 2.37 [OR, 95% CI] were not significantly associated with students' attitudes toward explicit informed consent for educational pelvic EUAs.

Table 5 presents medical students' attitudes on the broader impact of learning pelvic EUAs on their medical education. The majority of medical students agreed that learning a pelvic EUA was important to their broader medical education, while a larger majority agreed that any EUA was important. Although less than 50% believed that learning a pelvic EUA would benefit them in their chosen career field, a majority believed that the skills attained from learning to perform a pelvic EUA would help them to perform pelvic exams in the future. The utility of pelvic EUAs for learning pelvic anatomy was compared to other modalities.

Discussion

This single-site study was conducted to understand medical student perceptions on informed consent for educational pelvic exams under anesthesia, and to evaluate student knowledge of institutional informed consent processes. Our findings demonstrate a meaningful shift at the institution studied in medical student attitudes regarding explicit consent for pelvic EUAS; three-fourths of our participants endorsed beliefs that consent was needed for this educational activity compared to 29% who indicated it was highly important in a similar survey conducted almost two decades ago[2]. Additionally, whereas a previous study found an association with gender[2], we failed to find a similar association. Further, an albeit smaller majority of students at this institution believe that explicit informed consent should be obtained for other similarly sensitive exams under anesthesia, indicating that the concept of bodily autonomy under anesthesia is closely related to the invasiveness or sensitivity of the procedure in question. We also demonstrate that only 40% of participants could correctly identify the study institution's informed consent process for educational pelvic EUAs, indicating a significant knowledge gap. Finally, in contrast to prior literature stating that medical student attitudes on informed consent decrease as they progress in their training,[15] in our study there was no statistical association between training stage and attitudes when adjusting for student knowledge and surgical service (Table 4). It is unclear if similar attitudes and knowledge gaps exist at other academic medical institutions around the world.

Learning proper physical exam techniques is fundamental to medical training. However, the sensitivity surrounding genital exams requires a degree of communication and caution that differs from performing an exam that does not require disrobing or involve anatomy considered more private and sensitive (e.g. thyroid exam). Our findings show that medical students generally support explicit informed consent for sensitive educational EUAs, suggesting changing ideas around patient autonomy. We also show that students believe any exam learned under anesthesia is beneficial to their medical education. Together, these findings suggest that it is important to preserve trainee learning opportunities for exams under anesthesia in a way that preserves and promotes patient autonomy. However, it is not known to what extent medical students internationally support the adoption of explicit informed consent processes. Overall, however, the arc of medicine bends toward greater transparency and trauma-informed care, and to achieve those goals, revisiting the informed consent process may be necessary. Indeed, 45% and 77% of medical students surveyed at

this institution indicated that consent for educational pelvic EUAs should take the form of a separate signature line on the surgical consent form and a verbal form, respectively.

Furthermore, the impact of health literacy cannot go unrecognized when determining a consent process. Terms like “attending,” “resident,” and “medical student” are often misunderstood by patients, particularly with regard to their level of training and the role they play clinically[16]. In addition, teaching hospitals in urban areas tend to treat patient populations of color and/or lower income. This presents an ethical dilemma of whose bodies are more likely to be used in the context of educating health professionals and how training institutions need to grapple with complicity in a long history of medical mistreatment of, and unethical experimentation on, marginalized communities[17]. Implementation of explicit informed consent for sensitive EUAs may represent just one step in the processes needed to review and reform medical education practices to ensure patient respect, autonomy, and equity.

The current single-center study demonstrates and substantiates reports[4,18,19] of a prominent gap in medical students’ knowledge of the informed consent process for pelvic EUAs. Additionally, many informed consent discussions occur between an attending physician and patient out of view of medical students. We provide empiric evidence that medical students with higher knowledge of the informed consent process were less likely to endorse a need for explicit informed consent for these exams. Though largely speculative, it is possible that medical students with higher knowledge of informed consent processes may feel that current processes are adequate and that additional explicit processes are not needed. Nonetheless, this knowledge gap on informed consent may be unrecognized by the learner, and as such, may be distressing to medical students who believe these exams are unconsented. Despite ACOG and APGO guidelines on informed consent for pelvic EUAs, it is unclear to what extent medical students are aware of these recommendations. Therefore, Ob/Gyn clerkship directors and clinical educators may consider dedicating more didactic time on the clerkship to discussing informed consent for sensitive exams under anesthesia. It remains to be seen whether clerkship-level interventions, such as distributing and discussing the surgical consent form, ACOG guidelines, and/or increased didactic time, improves medical student knowledge of informed consent processes. Additionally, the study findings carry implications for clerkship directors and trainees in other surgical subspecialities as sensitive EUAs are broadly performed, and students believe these represent valuable learning opportunities.

Additional studies may be necessary to better understand perceptions of informed consent for pelvic EUAs and the possible impact of explicit informed consent processes. For example, a multi-center, randomized-controlled trial comparing the effects of “traditional” consent models versus “innovative” explicit processes on how frequently medical students “miss out” on learning opportunities may illuminate future institutional and educational policies. Additionally, an in-depth analysis of attending physicians’ attitudes toward explicit informed consent policies, such as that obtained through qualitative interviews, may inform implementation of institutional policies. Furthermore, the effect of the study’s temporal proximity to large sociocultural shifts and landmark political events on attitudes of informed consent could not be assessed but may be worth exploring in understanding

how contemporary socio-political events affect current thinking on informed consent. Additionally, the current study briefly compared the utility of a pelvic EUAs against other modalities for learning pelvic anatomy. While some respondents believed that pelvic EUAs are no more beneficial than other modalities, further study is needed to assess the long-term impact of utilizing other learning tools for learning pelvic anatomy. Finally, while the authors speculate that the non-elective nature of oncologic gynecologic surgeries and the high incidence of educational pathology available to the medical student may underlie the negative association between rotation with the oncologic surgical service and endorsement of requiring explicit informed consent, further study is needed to clarify how students' experiences on different ob/gyn services may impact their perception of explicit informed consent for educational pelvic EUAs.

Societal trends toward a more culturally competent medical system are reflected by recent US efforts to legislate mandated consent for educational pelvic EUAs. However, the patient-physician relationship is considered unique, and ob/gyns and prominent medical bodies have historically cautioned against legislative involvement in the patient-physician relationship[20,21]. However, institutional policy to standardize the consent process may be valuable and necessary. A framework for a model of explicit informed consent has been proposed [12], and our data support the notion that future ob/gyns may be supportive. These suggestions include preoperative verbal and written information on team members and their specific roles in the procedure, adding "exam under anesthesia" as a specific line item on the consent form, and reconfirming verbal consent for examination on the day of the procedure with the learner present. Indeed, after completion of the current study, a new line item was added to the surgical consent form at the study institution which asks patients for their explicit informed consent for medical students and other trainees to perform pelvic EUAs under the supervision of an attending physician

Our study has several strengths including being the most comprehensive study on the topic to be administered to medical students with practical implications for medical student education and institutional policy. Furthermore, the response rate was similar to those observed in studies of physicians with incentivized participation[22]. However, limitations of this study include the use of a non-validated questionnaire at a single site in one geographic region, therefore, the generalizability of results to other medical schools may be limited. Additionally, while we have a large sample size and reasonable response rate, the potential for sampling bias remains. Also, response bias may influence the results as the respondent population was enriched for females (63%, Table 1) compared to 56% of the institution student body, however, racial and ethnic demographic of the respondent population closely approximated that of the larger student body during the study period (56% White, 16% Asian, 13% Black/African American, 5% Hispanic/Latinx, 3% Mixed, 5% Other). Further, while survey items were designed to minimize bias, it is impossible to eliminate the possibility that social desirability bias affected our findings. Finally, we did not assess how frequently students felt they were performing "unconsented" pelvic exams under anesthesia due to ethical and legal considerations

The current study suggests that a majority of medical students at the studied institution support introduction of explicit informed consent processes for educational sensitive EUAs

and that a knowledge gap exists among medical students regarding institutional processes for informed consent for such exams. Given that patients and medical students agree in desire for informed consent, as well as the ethical rationale for this position, physicians and institutions may consider adopting practices and policies to operationalize the process of obtaining explicit informed consent prior to a pelvic EUA by medical students. Medical educators may consider implementing educational interventions to increase student knowledge of informed consent processes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

The authors would like to thank the University of Pittsburgh Clinical Scientist Training Program (CSTP) for funding and administrative support for Dr. Benjamin E Zuchelkowski's time and effort. The authors would also like to thank the ethicists and statisticians at the University of Pittsburgh Clinical and Translational Science Institute (CTSI).

Funding Sources:

This work was supported by University of Pittsburgh Clinical Scientist Training Program and the Clinical and Translational Science Institute (NIH UL1TR001857). This manuscript is solely the responsibility of the authors and does not necessarily represent the official views of the NIH.

Bibliography

1. ACOG Committee Opinion No. 439: Informed consent. Obstet Gynecol. 2009;114(2 Pt 1):401–408. doi:10.1097/AOG.0b013e3181b48f7f [PubMed: 19623005]
2. Ubel PA, Jepson C, Silver-Isenstadt A. Don't ask, don't tell: a change in medical student attitudes after obstetrics/gynecology clerkships toward seeking consent for pelvic examinations on an anesthetized patient. Am J Obstet Gynecol. 2003;188(2):575–579. doi:10.1067/mob.2003.85 [PubMed: 12592274]
3. Wainberg S, Wrigley H, Fair J, Ross S. Teaching pelvic examinations under anaesthesia: what do women think? J Obstet Gynaecol Can. 2010;32(1):49–53. doi:10.1016/S1701-2163(16)34404-8 [PubMed: 20370981]
4. Barnes SS. Practicing pelvic examinations by medical students on women under anesthesia: why not ask first? Obstet Gynecol. 2012;120(4):941–943. doi:10.1097/AOG.0b013e3182677a28 [PubMed: 22996113]
5. Bibby J, Boyd N, Redman CWE, Luesley DM. Consent for vaginal examination by students on anaesthetised patients. Lancet. 1988;332(8620):1150. doi:10.1016/S0140-6736(88)90577-6
6. Ubel PA, Silver-Isenstadt A. Are patients willing to participate in medical education? J Clin Ethics. 2000;11(3):230–235. [PubMed: 11127637]
7. Adashi EY. Teaching pelvic examination under anesthesia without patient consent. JAMA. 2019;321(8):732–733. doi:10.1001/jama.2019.0613 [PubMed: 30806680]
8. American College of Obstetricians and Gynecologists. Committee on Ethics. Committee opinion no. 500: Professional responsibilities in obstetric-gynecologic medical education and training. Obstet Gynecol. 2011;118(2 Pt 1):400–404. doi:10.1097/AOG.0b013e31822c999a [PubMed: 21775874]
9. She Didn't Want a Pelvic Exam. She Received One Anyway. - The New York Times. https://www.nytimes.com/2020/02/17/health/pelvic-medical-exam-unconscious.html. Accessed November 16, 2020.
10. Medical Students Regularly Practice Nonconsensual Pelvic Exams on Unconscious Patients. Should They? https://www.elle.com/life-love/a28125604/nonconsensual-pelvic-exams-teaching-hospitals/. Accessed November 18, 2020.

11. Greene MF. Examining Examinations Conducted under Anesthesia. N Engl J Med. 2020;383(12):1099–1101. doi:10.1056/NEJMp2024122 [PubMed: 32937043]
12. Cundall HL, MacPhedran SE, Arora KS. Consent for pelvic examinations under anesthesia by medical students: historical arguments and steps forward. Obstet Gynecol. November 2019. doi:10.1097/AOG.0000000000003509
13. States move to ban pelvic exams on unconscious women. Am J Nurs. 2020;120(5):17. doi:10.1097/01.NAJ.0000662748.74909.3e
14. Althouse AD. Adjust for multiple comparisons? it's not that simple. Ann Thorac Surg. 2016;101(5):1644–1645. doi:10.1016/j.athoracsur.2015.11.024 [PubMed: 27106412]
15. Tsimtsiou Z, Kerasidou O, Efstathiou N, Papaharitou S, Hatzimouratidis K, Hatzichristou D. Medical students' attitudes toward patient-centred care: a longitudinal survey. Med Educ. 2007;41(2):146–153. doi:10.1111/j.1365-2929.2006.02668.x [PubMed: 17269947]
16. Cantor A, Flood C, Boutin S, Regan S, Ross S. Do patients understand the role of resident physicians in the operating room? A survey of gynaecology patients. J Obstet Gynaecol Can. 2018;40(1):24–28. doi:10.1016/j.jogc.2017.05.036 [PubMed: 28864172]
17. Washington HA. Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present.; 2007.
18. Sauvage LM. Practicing pelvic examinations by medical students on women under anesthesia:' ' why not ask first? Obstet Gynecol. 2012;120(6):1480–1481. doi:10.1097/aog.0b013e3182776f1d [PubMed: 23168781]
19. Carugno JA. Practicing pelvic examinations by medical students on women under anesthesia:' ' why not ask first? Obstet Gynecol. 2012;120(6):1479–1480. doi:10.1097/AOG.0b013e3182773c0b
20. Tocce K, Teal SB. Practicing pelvic examinations by medical students on women under anesthesia:' ' why not ask first? Obstet Gynecol. 2013;121(2 Pt 1):378. doi:10.1097/AOG.0b013e3182805d8b
21. Weinberger SE, Lawrence HC, Henley DE, Alden ER, Hoyt DB. Legislative interference with the patient-physician relationship. N Engl J Med. 2012;367(16):1557–1559. doi:10.1056/NEJMsb1209858 [PubMed: 23075183]
22. Cho YI, Johnson TP, Vangeest JB. Enhancing surveys of health care professionals: a meta-analysis of techniques to improve response. Eval Health Prof. 2013;36(3):382–407. doi:10.1177/0163278713496425 [PubMed: 23975761]

Highlights

- Most students endorsed explicit informed consent for pelvic exams under anesthesia
- Most students also endorsed explicit consent for rectal, prostate, and breast exams
- Race and gender were not associated with attitudes on informed consent
- Only 40% of students correctly identified their institutional consent process

Table 1:

Demographic Characteristics

Variable	Frequency[a]	%[a]
Gender		
Male	73	37
Female	126	63
Other	1	1
Race/Ethnicity		
White	120	60
Asian	32	16
Black/African American	24	12
Hispanic/Latinx	9	5
Mixed	7	4
Other	8	4
Training year		
MS3	95	48
MS4	91	46
Research/leave-of-absence	13	7
Clerkships completed[b]		
1	14	7
2	18	9
3	8	4
4	8	4
5	32	16
6	29	14
7	92	46
Acting internship completed[c]		
Yes	86	43
No	115	57
Surgical Service		
Benign	121	61
Oncologic	77	39
Pelvic exam performed in residency of choice		
No	46	23
Yes	130	65

Variable	Frequency[a]	%[a]
Unsure	24	12
Total pelvic exams performed during clerkship		
0-5	5	3
6-10	52	26
11-15	87	44
>15	55	28
Student introduced themselves to patient before gynecologic surgery		
Never	1	1
Rarely	15	8
Sometimes	27	14
Most of the time	83	42
Always	73	37
Performed bimanual exams under anesthesia[d]		
Never	13	7
Rarely	31	16
Sometimes	85	43
Most of the time	64	32
Always	6	3
Performed bimanual exams in ambulatory clinic[d]		
Never	22	11
Rarely	56	28
Sometimes	84	42
Most of the time	35	18
Always	1	1

"a" denotes frequencies or percentages may not add to 201 or 100%, respectively, due to missing data and/or rounding.

"b" Of all seven core clerkships (internal medicine, obstetrics and gynecology, surgery, family medicine, psychiatry, neurology, pediatrics) at the study institution.

"c" denotes acting internship and/or sub-internship for intended residency.

"d" denotes relative frequency per total number of pelvic exams performed during clerkship

Table 2:

Frequency of Students by Exam Who Believe Explicit Informed Consent Should be Obtained

Exam	Frequency	%
Pelvic	151	75
Rectal	136	67
Prostate	135	67
Breast	130	65
Intubation	76	38
Making an incision	64	32
Foley placement	58	29
Suturing	56	28
IV placement	55	27
Musculoskeletal	23	11
Abdominal	23	11
Head-eyes-ears-nose-throat	22	11

Table 3:

Association of Demographics and Clerkship Characteristics with Attitudes of Explicit Informed Consent for pelvic EUAs and Knowledge of the Informed Consent Process for pelvic EUAs

	Attitudes on Explicit Informed Consent[a]				Knowledge of Informed Consent Process[a]			
Variable	No n (%)	Yes n (%)	χ^2	P-value	No n (%)	Yes n (%)	χ^2	P-value
Gender			3.49	0.18			2.16	0.34
Male	20 (40)	53 (35)			47 (39)	26 (33)		
Female	29 (58)	97 (65)			74 (61)	52 (66)		
Race/Ethnicity			--	0.13[b]			--	0.10[b]
White	34 (68)	86 (57)			71 (59)	49 (62)		
Asian	7 (14)	25 (17)			20 (17)	12 (15)		
Black/African American	2 (4)	22 (15)			15 (12)	9 (11)		
Hispanic/Latinx	1 (2)	8 (5)			6 (5)	3 (4)		
Mixed	2 (4)	5 (3)			7 (6)	0 (0)		
Other	4 (8)	4 (3)			2 (2)	6 (8)		
Training Stage			1.97	0.37			6.78	**0.03**
Early	7 (14)	33 (22)			30 (25)	10 (13)		
Middle	22 (44)	53 (35)			47 (39)	28 (35)		
Late	21 (42)	65 (43)			44 (36)	42 (53)		
Surgical Service			4.84	**0.03**			0.26	0.61
Benign	24 (48)	97 (65)			71 (60)	50 (63)		
Oncologic	26 (52)	51 (34)			48 (40)	29 (37)		
Pelvic exam performed in residency of choice			2.44	0.30			2.93	0.23
No	14 (28)	32 (21)			29 (24)	17 (22)		
Yes	28 (56)	102 (68)			74 (61)	56 (71)		
Unsure	8 (16)	16 (11)			18 (15)	6 (8)		
Knowledge of Consent Process			9.20	**0.002**	--	--	--	--
No	21 (42)	100 (66)			--	--	--	--
Yes	29 (58)	51 (34)			--	--	--	--
Total pelvic exams performed during clerkship			--	0.81[b]			--	0.58[b]
0-5	1 (2)	4 (3)			3 (3)	2 (3)		

Variable	Attitudes on Explicit Informed Consent[a] No n (%)	Attitudes on Explicit Informed Consent[a] Yes n (%)	χ^2	P-value	Knowledge of Informed Consent Process[a] No n (%)	Knowledge of Informed Consent Process[a] Yes n (%)	χ^2	P-value
6-10	14 (28)	38 (26)			33 (28)	19 (24)		
11-15	19 (38)	68 (46)			55 (46)	32 (41)		
>15	16 (32)	39 (26)			29 (24)	26 (33)		
Student introduced themselves to patient before gynecologic surgery			--	0.47[b]			--	**0.048** [b]
Never	0 (0)	1 (1)			0 (0)	1 (1)		
Rarely	4 (8)	11 (7)			9 (8)	6 (8)		
Sometimes	7 (14)	20 (13)			10 (8)	17 (22)		
Most of the time	16 (32)	67 (45)			55 (46)	28 (35)		
Always	23 (46)	50 (34)			46 (38)	27 (34)		
Performed bimanual exams under anesthesia [c]			--	0.99[b]			--	**0.009**
Never	3 (6)	10 (7)			12 (10)	1 (1)		
Rarely	8 (16)	23 (15)			23 (19)	8 (10)		
Sometimes	21 (42)	64 (43)			43 (36)	42 (53)		
Most of the time	16 (32)	48 (32)			37 (31)	27 (34)		
Always	2 (4)	4 (3)			5 (4)	1 (1)		
Performed bimanual exams in ambulatory clinic [c]			--	0.75[b]			--	0.37[b]
Never	8 (16)	14 (9)			15 (13)	7 (9)		
Rarely	14 (28)	42 (28)			31 (26)	25 (32)		
Sometimes	20 (40)	64 (43)			47 (40)	37 (47)		
Most of the time	8 (16)	27 (18)			25 (21)	10 (13)		
Always	0 (0)	1 (1)			1 (1)	0 (0)		

"a" denotes percentages may not add to 100% due to rounding. Bold indicates significance where p<0.05.

"b" denotes Fisher's exact test where appropriate (>20% of expected frequencies < 5).

"c" denotes relative frequency per total number of pelvic exams performed during clerkship

Table 4:

Multivariable model of student attitudes toward explicit informed consent for pelvic exams under anesthesia

Predictor	OR (95% CI)	z	p-value
Higher knowledge of informed consent	0.35 (0.17 – 0.69)	3.03	0.002
Oncology surgical service	0.45 (0.23 – 0.89)	2.30	0.02
Late-stage training	0.87 (0.32 – 2.37)	0.27	0.79

Table 5:

Perceived Broader Implications on Medical Education

Effect	n (%)
Learning to perform a pelvic EUA was important to my overall medical education	
Strongly Disagree	12 (7)
Disagree	21 (12)
Neutral	31 (18)
Agree	62 (35)
Strongly Agree	49 (28)
Learning to perform any EUA was beneficial to my medical education	
Strongly Disagree	7 (4)
Disagree	7 (4)
Neutral	33 (17)
Agree	66 (34)
Strongly Agree	77 (40)
Learning to perform a pelvic EUA will likely benefit me in my future career field	
Strongly Disagree	26 (14)
Disagree	26 (14)
Neutral	46 (24)
Agree	50 (27)
Strongly Agree	41 (21)
The hands-on experience of a pelvic EUA was more helpful than pelvic exams performed in clinic for learning pelvic anatomy	
Strongly Disagree	23 (12)
Disagree	35 (18)
Neutral	53 (28)
Agree	40 (21)
Strongly Agree	38 (20)
The hands-on experience of a pelvic EUA was more helpful than a textbook or diagram for learning pelvic anatomy	
Strongly Disagree	2 (1)
Disagree	9 (5)
Neutral	25 (13)
Agree	48 (25)
Strongly Agree	105 (55)
The hands-on experience of a pelvic EUA was more helpful than the pelvic exam on a standardized patient	
Strongly Disagree	24 (13)
Disagree	41 (21)
Neutral	47 (24)

Effect	n (%)
Agree	44 (23)
Strongly Agree	33 (17)
I worry that if medical students are not able to perform pelvic EUAs I will be less prepared for my intended residency	
Strongly Disagree	40 (21)
Disagree	41 (21)
Neutral	39 (20)
Agree	46 (24)
Strongly Agree	23 (12)
I feel I have better skills for performing pelvic exams because of practicing pelvic exams under anesthesia	
Strongly Disagree	8 (4)
Disagree	17 (9)
Neutral	40 (21)
Agree	71 (37)
Strongly Agree	51 (27)
I feel most patients directly benefit from having medical students involved in their care	
Strongly Disagree	2 (1)
Disagree	18 (9)
Neutral	35 (18)
Agree	82 (43)
Strongly Agree	51 (27)

* Percentages do not total 100% because multiple answers were allowed and not all participants provided an answer; the denominator is total subjects (192).