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RESEARCH

Analyzing Medical Students' Definitions of Sex

Heather Talley, MD^{a,*}, Janice Cho, MD^{a,*}, Donald S. Strassberg, PhD^b,
and Jordan E. Rullo, PhD, LP^c

^aMayo Medical School, Mayo Clinic College of Medicine, Mayo Clinic, Rochester, MN, USA; ^bDivision of Clinical Psychology, Department of Psychology, University of Utah, Salt Lake City, UT, USA; ^cWomen's Health Clinic, Division of General Internal Medicine and Department of Psychiatry and Psychology, Mayo Clinic, Rochester, MN, USA

ABSTRACT

An inaccurate definition of what constitutes sex can negatively impact the sexual health and wellbeing of patients. This study aimed to determine which behaviors medical students consider to be sex. Survey questions about various sexual behaviors were administered to medical students. All participants agreed that penile-vaginal penetration is sex. More than 25% of participants did not consider genital-genital contact without penetration, oral-genital contact, foreign object in rectum, and forced vaginal/rectal penetration as sex. Nonheterosexuals were more likely to consider genital-genital contact without penetration sex. We determined there was less than complete consensus among future physicians on what activities are considered sex.

KEYWORDS

Medical students; sexual definition; sexual health; sexual risk

Introduction

In order to appropriately ascertain sexual risk when talking with patients, we need to understand and communicate clearly when asking about sexual activity or sex. The Centers for Disease Control and Prevention (CDC) have determined that rates of sexually transmitted infections (STIs) have been increasing since 2000 (CDC, 2013b). In 2008 the incidence of new STIs in the United States reached 20 million, with an estimated prevalence of 110 million total infections resulting in \$16 billion of STI-related medical costs (CDC, 2013a). Thus, the development of sound assessment practices among those trained to evaluate for sexual risk (e.g., medical students, nurses, physician assistants, clinical psychologists) is crucial.

The CDC is one institution that develops and disseminates sexual history taking and sexual risk assessment guidelines. The current CDC guidelines for obtaining a sexual health history operate on the assumption that sex is clearly defined, with the first suggested question, "Are you having sex/Are you currently sexually active?" (CDC, 2005). Among medical students, a lack of consensus in this definition has the potential to result in inadequately assessed sexual risk and missed opportunities

CONTACT Jordan E. Rullo  rullo.jordan@mayo.edu  Mayo Clinic, 200 First Street SW, Rochester, MN 55905, USA.

*Co-first authors

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for sexual health education, and may even contribute to higher rates of STIs and unwanted pregnancies. Health care providers make up the frontline defense in educating patients on how to prevent STIs; a consolidated approach to assessing sexual risk starts with a more transparent definition of what constitutes sexual behavior.

Medical students' definitions of sex have not been reported and/or published. However, among undergraduate students, there is a strong lack of consensus on how to define sex. In 1999, in the wake of the Clinton/Lewinsky scandal, Sanders and Reinisch (1999) surveyed 599 undergraduates from one state university in the Midwest and revealed that while 99.7% of respondents considered penile-vaginal penetration to be sex, 59% did not consider oral-genital contact as sex, and 19% did not consider penile-anal intercourse to be sex. The fact that a majority of undergraduates did to not count oral-genital intercourse as sex, and nearly one out of five did not consider penile-anal intercourse as sex, poses many risks in terms of STI transmission of diseases such as herpes, gonorrhea, human papillomavirus, syphilis, and human immunodeficiency virus (HIV). These findings (Sanders & Reinisch) were replicated in other undergraduate samples across the United States, where gender (Bogart, Cecil, Wagstaff, Pinkerton, & Abramson, 2000; Byers, Henderson, & Hobson, 2009; Peterson & Muehlenhard, 2007; Randall & Byers, 2003; Sanders & Reinisch) and importance of religion (Sinha, Cnaan, & Gelles, 2007) were found to be significant predictors as to whether students endorsed a particular behavior as sex.

A better understanding of medical students' perspectives on sex could improve the way effective methods of obtaining sexual histories are taught and thereby increase the opportunity to educate patients about risky sexual behaviors. The present study aimed to assess which behaviors medical students consider as "counting as sex" and identify factors that may contribute to their definitions.

Aims

This study aimed to measure the degree of consensus in the definition of sex among students at a Midwestern medical school. This study also explored what demographic factors may contribute to variability in how sex is defined by these clinicians in training. These findings will provide the first documented insight into how sex is defined within the medical student community and will inform training and guidelines for sexual history taking and sexual risk assessment.

Methods

Students from two first-year medical school classes (incoming students and those toward the end of their first year) as well as one class each of second-, third-, and fourth-year medical students during the 2013–2014 school year were invited via email to participate in an anonymous online survey to assess how future physicians define sex. The questionnaire consisted of 12 demographic questions and 31 sexual behavior questions in the form of "does it count as sex if ..." Response options

included “yes,” “no,” and “no response.” A survey reminder was sent to increase response rate. This study was approved by the school’s institutional review board.

Main outcome measures

Response rates and responder selection proportions were determined for each two-option yes/no question. Differences in selection proportions for each question were further analyzed in the context of demographics found to be influential in undergraduate samples (Bogart et al., 2000; Byers et al., 2009; Peterson & Muehlenhard, 2007; Randall & Byers, 2003; Sanders & Reinisch, 1999; Sinha et al., 2007), including gender, age, and importance of religion, using Fischer exact analysis, with significance level set at 0.05. Because previous research (Shindel et al., 2010) found that sexual identity played a role in medical student comfort with discussing sexual concerns with patients, we included sexual identity in the demographic analyses as a possible influential factor.

For age analyses, samples were divided into young adult (ages ≤ 24 years old) and older adult (> 24 years old) based on CDC data analysis practices (U.S. Preventive Services Task Force [USPSTF], 2014). Year in medical school was grouped into preclinical (first- and second-year students) and clinical years (third- and fourth-year students), resulting in two main subgroups of the respective demographic. Responses regarding importance of religion were categorized into three groups: very important, not important at all, and mild/moderately important. All statistical analyses were performed using JMP Pro 10 (SAS Institute Inc., Cary, NC).

Results

All medical students whose email address was on file ($N = 251$) with the school were contacted via email to participate in this study. A total of 103 participated in the survey, yielding an overall response rate of 41.0%. Ninety respondents provided their age (mean age = 26 years, $SD \pm 4$ years), biological sex (45.6% male, 53.4% female, 1% intersex), and gender identity (45.6% men; 54.6% women). The year in medical school distribution was as follows: 47.1% first-year students, 21.6% second-year students, 20.6% third-year students, and 10.8% fourth-year students. White, not Hispanic was the predominant race/ethnicity (65.7%), while 20.6% were Asian/Pacific Islander, 3.9% were Black, not Hispanic, and 7.8% indicated other race/ethnicity. Ninety-three percent self-identified as heterosexual. Further demographic information is included in Table 1. The distribution of respondents is relatively similar to those of the overall medical school ($N = 270$), for which the breakdown is as follows: 51.2% male, 48.8% female, 58% White, 25.9% Asian/Pacific Islander, 8.1% Black, and 7.8% other race/ethnicity. The medical school does not collect sexual orientation or gender identity data from students; therefore, these data are not available for comparison.

Participants’ endorsement of whether a physically intimate activity constituted as sex varied greatly (Table 2). Among activities involving vaginal penetration, all

Table 1. Respondent demographics.

Demographic, n	n (%)
Sex, 103	
Male	47 (45.6%)
Female	55 (53.4%)
Intersex	1 (0.01%)
Gender, 103	
Male	47 (45.6%)
Female	56 (54.4%)
Year in school, 102	
1st year	48 (47.1%)
2nd year	22 (21.6%)
3rd year	21 (20.6%)
4th year	11 (10.8%)
Race/Ethnicity, 100	
White, not Hispanic	67 (67%)
Black, not Hispanic	4 (4%)
Asian/Pacific Islander	21 (21%)
Other	8 (8%)
Sexual Identity, 100	
Heterosexual	93 (93%)
Lesbian, gay, bisexual, or queer	7 (7%)
Importance of Religion, 102	
Very important	30 (29.4%)
Mild/moderately important	39 (38.2%)
Not important at all	33 (32.4%)

Table 2. Proportion of respondents answering Yes/No to “Does it count as sex if ...”

Does it count as sex if ..., N	Yes (%)	No (%)
a penis penetrates a vagina, 103	100%	0%
persons engage in vaginal-penile activities with a condom, 101	97%	3%
a person forcibly inserts a penis into a vagina without consent, 103	85.4%	14.6%
persons engage in vaginal-penile penetration without a condom, 102	99%	1%
persons engage in vaginal-penile penetration without penile-thrusting (e.g., floating), 102	99%	1%
vaginal-penile penetration with penile thrusting, 102	100%	0%
a penis penetrates a rectum, 103	99%	1%
persons engage in penile-rectal activities with a condom, 103	95.1%	4.9%
a person forcibly inserts a penis into a rectum without consent, 103	84.5%	15.5%
persons engage in penile-rectal penetration activity without a condom, 102	99%	1%
person inserts a foreign object into a rectum, 103	25.2%	74.8%
a person had oral contact with your genitals, 103	68.9%	31.1%
you had oral contact with a person's genitals, 102	68.6%	31.4%
person had oral contact with your breast or nipples, 102	8.8%	91.8%
you had oral contact with a person's breast or nipples, 102	7.8%	92.2%
you touch or manually stimulated a person's genitals, 102	21.6%	74.8%
person touched or manually stimulated your breast or nipples, 103	7.8%	92.2%
you touched or manually stimulated a person's breast or nipples, 102	7.8%	92.2%
person manually stimulates his or her own genitals (masturbating) with achieving orgasm, 103	4.9%	95.2%
person manually stimulates his or her own genitals (masturbating) without achieving orgasm, 102	3.9%	96.1%
persons masturbate while in telephone contact with one another, 103	12.6%	87.4%
person watches pornography while masturbating, 101	3%	97%
persons masturbate while in computer contact with one another, 103	12.6%	87.4%
persons masturbate in each other's presence, 103	12.7%	87.3%
fully-clothed persons engage in genital to genital rubbing/grinding, 103	4.9%	95.1%
persons engage in genital to genital contact without penetration, 103	35%	65%
persons engage in provocative dance fully clothed, 103	0%	100%
person fantasizes physical sexual acts, 102	1%	99%
persons French kissed or tongue kissed, 103	1%	99%
persons hold hands, 103	0%	100%
person watches pornography, 103	1%	99%

respondents agreed that the acts of “a penis penetrating a vagina” and “vaginal-penile penetration with penile thrusting” constituted sex. However, some respondents did not perceive penile-vaginal penetration as sex when other conditions were added, such as using a condom (3%), lack of thrusting (1%), and lack of consent (14.6%).

Among activities involving rectal penetration, 99% of respondents agreed that penile penetration of the rectum without a condom constituted as sex. However, if a condom was used, only 95% of respondents considered this sex; if penile penetration of a rectum occurred without consent, only 85% viewed the act as sex. Consensus of whether an activity constituted sex decreased when the activity did not involve both penetration and a penis. If a foreign object was inserted into a rectum, only 25% of respondents considered the act as sex. Genital-to-genital contact without penetration was perceived as sex by only 35% of respondents. There was also less consensus as to what constitutes sex when considering oral (69% counted as sex) and manual (22% counted as sex) manipulation of another’s genitals. Most participants did not consider nongenital or nonpartnered sensual/sexual activity as sex. Specifically, 90% or greater of respondents did not perceive any activity of self-stimulation (i.e., masturbation) or oral (92%) or manual (92%) stimulation of breasts as sex. All other activities that did not involve genital contact were not perceived as sex by >98% of respondents.

Demographics were analyzed to determine their relation to participants’ endorsement of whether a behavior constituted sex. Age and religiosity were unrelated with endorsement of whether a behavior constituted sex. Stage in medical school was significant only in relation to oral contact with another person’s genitals, with significantly more clinical students than preclinical students identifying the activity as sex (84.4% vs. 60.9%, $P < .03$). When asked if oral contact by another with the respondent’s genitals counted as sex, 81.2% of clinical students indicated the activity as sex while 62.9% of preclinical students indicated the activity as sex ($P = .07$). Gender was significant only in relation to foreign object insertion into a rectum, with significantly more women than men identifying the activity as sex (35.7% vs. 12.8%, $P < .02$). Those who did not identify as heterosexual more often indicated the following behaviors as sex: genital to genital rubbing or grinding (71.4% vs. 32.3%, $P < .05$), manual self-stimulation of genitals without achieving orgasm (28.6% vs. 2.2%, $P < .03$) and with achieving orgasm (28.6% vs. 3.2%, $P = < .05$), manual stimulation of a person’s genitals (57.1% vs. 18.5%, $P < .05$), and watching pornography while manually stimulating one’s own genitals (28.6% vs 1.1%, $P < .02$).

Discussion

This study assessed which behaviors medical students identified as constituting sex. Medical students will compose a large part of the nation’s future health care workforce and will play an important role in the education and prevention of STIs and unwanted pregnancies among the patient population. The ability to obtain an accurate and clear sexual history will be necessary for these future providers to carry

out this work effectively. However, results from the present study suggest that much training is needed to prepare these future physicians to take on such a role.

Consistent with undergraduate populations (Bogart et al., 2000; Randall & Byers, 2003; Sanders & Reinisch, 1999), among medical students the most variability around what counted as sex was found among those behaviors *not* involving penetration of the vagina or rectum by a penis. Most notably, 31% of medical students reported that oral-genital contact did not count as sex, and 65% did not consider genital-genital contact without penetration as sex. These findings are concerning given the potential for STI transmission, including HIV, through oral-genital and genital-genital encounters. These findings underscore the importance of teaching medical students about the sexual risk potential of these behaviors and developing sexual health assessments that ask behaviorally based questions that include oral-genital and genital-genital contact.

Gender and age did not influence our findings; however, sexual identity did. People of sexual orientations other than heterosexual were significantly more likely to endorse nonpenetrative behaviors as sex (e.g., genital-genital contact and manual stimulation of another's genitals). It is likely that the greater commonality of genital contact without penetration among non-heterosexuals underlies their broader definition of sex. Thus, it is imperative to educate medical students regarding the variety of sexual behaviors that may be more common in a same-sex relationship than in an other-sex relationship. Further, this finding emphasizes that a thorough sexual health history must include a question about the patient's sexual identity, both for risk assessment and to provide appropriate education.

Medical students were consistent in their endorsement of penetration of the vagina (100%) or anus (99%) by a penis as sex. Regarding penile-anal penetration, this finding is inconsistent with data from undergraduates, which found that, on average, only 78% consider penile-anal penetration as sex (Pitts & Rahman, 2001; Randall & Byers, 2003; Sanders & Reinisch, 1999; Sewell & Strassberg, 2015). It is reassuring to see that nearly all medical students considered penile-anal penetration as sex, as rectal intercourse is a significant risk factor for many STIs, including HIV.

Fifteen percent of medical students no longer endorsed penile-vaginal and penile-anal penetration as sex when these acts were described as non-consensual. This finding implies that medical students use multiple rationales to determine whether an act is considered sex, perhaps even utilizing enjoyment, pleasure, or consent in this decision process. This would be consistent with previous research (Peterson & Muehlenhard, 2004), where it was hypothesized that the avoidance of defining a nonconsensual sexual act as sex was for the purpose of psychological self-preservation.

Further, when anal penetration was by an object other than a penis, only 25% of respondents considered it to be sex, with significantly more women considering this behavior to be sex than men (35.7% vs. 12.8%). Although there is a lower likelihood of transmitting an STI with an object other than a penis, some risk still exists (Anderson, Schick, Herbenick, Dodge, & Fortenberry, 2014), as does risk of another type: most sexual stimulation device-related emergency room visits are due

to vibrators lodged in the anorectal region of men (Griffin & McGwin, 2009). Thus, it is important for medical students to be aware of the potential risks of sexual stimulation devices and to ask behaviorally based questions about the use of such devices, as well as to educate patients on the proper usage (e.g., do not share the device with others, do not use anally and then vaginally, only use an anal device that has a base).

Finally, there was no statistically significant difference associated with year in medical school and definitions of sex, with the exception of oral-genital contact. That is, students in their clinical years (third and fourth) were more likely to consider oral-genital contact to be sex as compared with students in their preclinical years (first and second). This may be due to clinical students receiving more exposure and education within the clinical setting regarding disease transmission through oral-mucosal interaction as compared to pre-clinical students. The first- and second-year students at the time of study received one two-hour didactic on sexual history taking and sexual dysfunction. The second-year students also participated in a sexual health Observed Structured Clinical Examination (OSCE). There is no additional formal training beyond the second year apart from experiences encountered during the clinical portion of medical school.

There were a few limitations to this study. Participants were surveyed from one small Midwestern medical school, so the generalizability of these findings to other medical students beyond the Midwest are unclear. Our sample size was modest and was reflected in a lack of statistical power in several demographic variables (e.g., race and religiosity); therefore, some demographics were not statistically analyzed. Furthermore, although we had a 41% response rate, this was an optional survey-based study, and sampling bias must be considered. Compared with nonvolunteers, volunteers for sexuality research have been found to be more sexually experienced and have a more positive attitude toward sexuality (Strassberg & Lowe, 1995; Wolchik, Braver, & Jensen, 1985). Future research is needed with a larger sample of medical students from schools across the country.

Qualitative research may identify why medical students define certain behaviors as sex. One study (Peterson & Muehlenhard, 2004) determined that for undergraduates there is a continuum of “just barely sex” to “sex,” and qualitative methods are needed to fully understand this continuum. More recently, a qualitative study (Sewell & Strassberg, 2015) was conducted assessing undergraduates’ definition of sex in which they identified physical contact (penetration, genital contact), a certain outcome (pregnancy, STI, orgasm), and social standards (i.e., penile-vaginal penetration as the “gold-standard”) as common themes used by students in defining an activity as sex. Future studies using qualitative data from medical students may assist in developing more effective sexual history taking and sexual risk assessment education.

Future research should also investigate whether medical students’ definitions of their own sexual activity as sex differs from their definition of their patient’s sexual activity as sex. Research about self-versus-other assessment suggests that differences would likely exist between self and patient assessment of sex (Gute, Eshbaugh, & Wiersma, 2008; Peterson & Muehlenhard, 2007). Finally, further research assessing

how current physicians with varying types and years of medical training define sex may shed light on continuing education training needs for sexual history taking and sexual risk assessment.

Conclusions

The survey data suggest that beyond penile-vaginal and penile-anal penetration, there is a lack of consensus regarding the definition of sex among future physicians. Most notably, some medical students do not consider oral-genital contact, genital-genital contact, and anal-penetration by an object other than a penis as sex. This is concerning given the health risk potential of these behaviors. The goals of health care providers are to prevent disease spread and deliver optimal treatment to those who are afflicted. To accomplish these goals, medical school education needs to provide students with adequate sexual health and sexual risk information and teach a behaviorally based sexual history and risk assessment. This may be accomplished by implementing a sexual health curriculum in the preclinical years that would include not only didactics on sexual history taking and sexual health information (including information on diverse sexual practices, safer sex, and STI prevention), but also a formative OSCE to provide students' feedback on both the verbal and nonverbal content of their history taking.

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