ARTICLE

Adolescent and Young Adult Women's Misunderstanding of the Term *Pap Smear*

Diane R. Blake, MD; Brittany M. Weber, BS; Kenneth E. Fletcher, PhD

Objective: To learn more about young women's understanding of the term *Pap smear*.

Design: Self-administered survey.

Setting: UMass Memorial Adolescent Clinic.

Participants: Female patients 14 years or older (and their mothers when available) who visited the clinic between June 10 and August 9, 2002.

Main Outcome Measures: Accuracy of participants' written definition for the term *Pap smear* and knowledge that a "Pap smear" is a test for cervical cancer and not synonymous with a pelvic examination, sexually transmitted disease test, pregnancy test, or checkup.

Results: Three (2.7%) of the 111 adolescent participants provided an accurate definition of the term *Pap smear*. Sixty-eight percent mistakenly believed that a Pap smear was the same as a pelvic examination. Age, history of sexual intercourse, and having had a Pap smear correlated with a better Pap smear definition rating.

Conclusions: Remarkably few patients who participated in this study understood the meaning of the term *Pap smear*. Confusion about gynecologic terms may hinder efforts to enhance compliance with sexually transmitted disease and cervical cancer screening. Educational initiatives are needed to improve young people's comprehension and to prevent misunderstandings about gynecologic care and miscommunication between patients and their health care providers.

Arch Pediatr Adolesc Med. 2004;158:966-970

Gynecologic examinations are performed for many reasons, including cervical cancer screening and chlamydia or gonorrhea detection. Anecdotal experience suggests that many, if not most, adolescents are not clear about the procedures being performed during a gynecologic examination or the purpose of the examination.

Several studies have evaluated women's knowledge about human papillomavirus (HPV), cervical cancer, and cervical cancer screening.[1-10] Some investigators have also been interested in the association between knowledge of Papanicolaou testing (hereafter referred to as Pap smear) and one's compliance with obtaining Pap smears, follow-up after abnormal Pap smear results, and/or colposcopy.[4,6,9,10] However, to our knowledge, only 2 studies[6,9] have explored whether women make a distinction between the pelvic examination and a Pap smear. Although one of these studies had a relatively small sample size[9] and the other included primarily adults,[6] results of both studies suggest that many women believe that the term *Pap smear* is synonymous with the term *pelvic examination*.

The recent changes to the American Cancer Society (ACS) cervical cancer screening guidelines amplify the importance of this issue.[11] If young women mistakenly believe that a Pap smear is the same as a pelvic examination, then they may misinterpret the new ACS guidelines, which recommend delaying initiation of Pap smear screening but not gynecologic care in general.

The goal of the present study was to explicitly investigate adolescent and young adult women's understanding of the term *Pap smear* and to determine whether young women make a distinction between the terms *Pap smear* and *pelvic examination*. A secondary goal was to determine which participant characteristics are predictive of a better understanding of these terms. This

Author Affiliations:
Departments of Pediatrics (Dr Blake and Ms Weber) and Psychiatry (Dr Fletcher) and Graduate School of Nursing (Dr Fletcher), University of Massachusetts Medical School, Worcester.

©2004 American Medical Association. All rights reserved.
Downloaded From: http://archpedi.jamanetwork.com/ on 12/07/2016

information could benefit both providers and patients by guiding the development of educational efforts that may be needed to decrease potential miscommunication between patients and their health care providers regarding gynecologic care.

METHODS

PARTICIPANTS

The target population consisted of a consecutive sample of 141 female patients, 14 years or older, visiting the UMass Memorial Adolescent Clinic in Worcester for any reason between June 10 and August 7, 2002. When available, mothers of participating patients were invited to participate. Patients younger than 18 years who were not accompanied by a parent and patients who were unable to understand the consent form well enough to give informed consent were not eligible. All participants provided written informed consent. Parents of patients younger than 18 years also gave written permission for participation. The study protocol and consent procedures were approved by the University of Massachusetts Medical School Committee for the Protection of Human Subjects in Research.

SURVEY ADMINISTRATION

Participants completed a brief, self-administered, paper-and-pencil survey before meeting with their health care provider. When mothers were present, patients and mothers were asked not to discuss their answers with each other. Patients and mothers each received their own survey and clipboard. After completing the survey, participants were given the opportunity to ask the research assistant questions about the terms used in the survey and also encouraged to ask questions of their provider.

Demographic data included age, race, and ethnicity. Participants' knowledge about Pap smears was assessed using 2 separate questions. The first question (Pap smear definition) was open ended and requested that the participant provide a written definition of the term *Pap smear*. Participants were asked, "In your own words, please describe what is meant by a Pap smear (also called a Pap test)." Participants were given the opportunity to check a box if they had no idea.

The second question (Pap smear synonyms) asked participants, "Please check all of the choices that mean the same thing as *Pap smear*." Choices included "pelvic exam," "test for STD [sexually transmitted disease] such as chlamydia or gonorrhea," "test for HPV," "checkup," "test for cervical cancer," "test for pregnancy," "none of the above," and "I really have no idea." Finally, participants were asked if they thought they had ever had a Pap smear, if they had ever been tested for an STD, and if they had ever had sexual intercourse. Mothers and patients received identical surveys except that mothers were not asked if they had ever had sexual intercourse.

STATISTICAL ANALYSIS

Pap smear definitions were independently rated by 2 of the investigators (D.R.B. and B.M.W.) for accuracy using the following codes: 0, no idea (either checked "I really have no idea" or gave no answer); 1, vague idea (had some understanding that it has to do with a gynecologic examination, often using words such as *uterus* or *vagina*); 2, good understanding (used the word *cervix* or *cancer,* may have identified it as a test for cervical cancer along with some incorrect information); and 3, excellent understanding (correctly identified it as a test for cervical cancer and included no incorrect information). The Cohen κ was used to assess interrater agreement. Following the initial independent ratings, discordant scores were discussed between the 2 investigators, and a final score was agreed on.

Correct responses to the Pap smear synonyms question were summed, and patients were given a score from 0 to 5. They received 1 point if they checked either "test for HPV" and/or "test for cervical cancer." They also received 1 point each for not checking "pelvic exam," "test for STD," "checkup," and "pregnancy test." (No points were given for checking or not checking "none of the above" or "I really have no idea.")

Data analyses were performed using SPSS statistical software version 11.5 (SPSS Inc, Chicago, Ill). Frequency distributions were used to describe the cohort, and Pearson *R* and Cramer V were used to test for associations among variables. Multivariate linear regression was used to determine which variables were independently associated with Pap smear knowledge.

Table 1. Participant Characteristics

Characteristic	Patients (n = 111)	Mothers* (n = 45)
Mean (SD) [range] age, y	18.1 (2.4) [14-24]	42.9 (6.2) [32-55]
Race/ethnicity, No. (%)†		
Hispanic	20 (19)	5 (11)
White	69 (64)	36 (80)
African American	7 (6)	3 (7)
Asian	3 (3)	1 (2)
Multiracial	9 (8)	0
Medical history, No. (%)		
Ever had a Pap smear	66 (59)	44 (98)
Ever been tested for an STD	58 (52)	24 (53)
Ever had sex	77 (69)	NA

Abbreviations: NA, not applicable; STD, sexually transmitted disease.
*When available.
†Data missing for 3 participants.

RESULTS

PARTICIPANT CHARACTERISTICS

Of the 141 young women who attended the adolescent clinic during the study period, 20 were younger than 18 years and not accompanied by a parent and 3 were unable to understand the consent form well enough to give informed consent. Of the 118 eligible patients, 7 declined due to lack of interest, leaving 111 participants. The participants ranged in age from 14 to 24 years (mean [SD] age, 18.1 [2.4] years). Forty-six participants were accompanied by their mother. Ages of participants accompanied by their mother ranged from 14 to 20 years (mean [SD] age, 16.3 [1.8] years). Additional demographics are given in **Table 1**.

SURVEY RESULTS

Investigator ratings for 12 (7.7%) of the 156 Pap smear definitions were discordant. The Cohen κ for interrater reliability was 0.89, which is considered very good agreement.[12]

Overall understanding of the term *Pap smear* was remarkably low. Pap smear definitions given by 75% of the

©2004 American Medical Association. All rights reserved.
Downloaded From: http://archpedi.jamanetwork.com/ on 12/07/2016

Table 2. Summary of Pap Smear Definition Ratings

Rating, No. (%) of Participants	Patients Who Have Had Sexual Intercourse* (n = 77)	Patients Who Have Not Had Sexual Intercourse* (n = 33)	Patients With Mothers Present (n = 46)	Mothers† (n = 45)
No understanding	17 (22)	15 (46)	19 (41)	3 (7)
Vague understanding	34 (44)	16 (48)	21 (46)	6 (13)
Good understanding	24 (31)	1 (3)	5 (11)	16 (36)
Excellent understanding	2 (3)	1 (3)	1 (2)	20 (44)
Mean (SD) rating (of possible 3.0)	1.1 (0.8)	0.6 (0.7)	0.7 (0.7)	2.2 (0.9)

*Sexual intercourse data missing for 1 participant.
†One mother accompanied 2 sisters.

Table 3. Summary of Pap Smear Synonym Responses

Response, No. (%) of Participants	Patients Who Have Had Sexual Intercourse* (n = 77)	Patients Who Have Not Had Sexual Intercourse* (n = 33)	Patients With Mothers Present (n = 46)	Mothers† (n = 45)
Checked "pelvic exam"	61 (79)	14 (42)	26 (56)	16 (36)
Checked "test for STD"	60 (78)	13 (39)	22 (48)	16 (36)
Checked "I really have no idea"	5 (6)	17 (52)	16 (35)	0
Checked *only* "test for cervical cancer" and/or "test for HPV"	1 (1)	1 (3)	0	23 (51)
Mean (SD) score (of possible 5.0)	2.8 (0.9)	3.2 (1.1)	3.2 (0.9)	4.0 (1.2)

Abbreviations: HPV, human papillomavirus; STD, sexually transmitted disease.
*Sexual intercourse data missing for 1 participant.
†One mother accompanied 2 sisters.

Table 4. Associations of Independent Variables With Pap Smear Definition Rating

Variable	Correlation (*P* Value) Patients (n = 111)	Mothers (n = 44)
Age*	0.377 (<.001)	0.463 (<.001)
Ever had sex†	0.337 (.006)	NA
Ever had a Pap smear†	0.327 (.008)	0.384 (.08)
Checked *only* "test for HPV" and/or "test for cervical cancer" as synonymous with Pap smear†	0.813 (<.001)	0.710 (<.001)

Abbreviations: HPV, human papillomavirus; NA, not applicable.
*Pearson *R*.
†Cramer V.

adolescent participants were rated as "no understanding" or "vague understanding." Only 3 adolescent participants (2.7%) accurately defined *Pap smear*, and only 2 of these 3 appropriately checked only "test for cervical cancer" and/or "test for HPV" as Pap smear synonyms. The other participant incorrectly checked "pelvic exam" and "test for STD" as Pap smear synonyms.

Eighteen (40%) of the mothers accurately defined *Pap smear* and checked appropriate Pap smear synonyms. However, the subset of adolescent participants accompanied by mothers had an even higher proportion (87%) of their Pap smear definitions rated as either "no understanding" or "vague understanding" than the group of adolescent participants as a whole.

Almost 80% of adolescent participants who had had sexual intercourse incorrectly checked "pelvic exam" and/or "test for STD" as synonyms for *Pap smear* compared with approximately 40% of adolescents who had not had intercourse. On the other hand, more than half of those who had not had intercourse checked "I really have no idea" in response to synonyms for Pap smear compared with only 6% of those who had had intercourse. Additional Pap smear knowledge results are summarized in **Table 2** and **Table 3**.

The Pap smear definition ratings of the adolescent clinic participants were positively correlated with patient age, ever having had sexual intercourse, and report of having had a Pap smear. For the subset of patients whose mothers also completed a survey, mother and daughter Pap smear synonym scores and Pap smear definition ratings were not significantly correlated. For both adolescent participants and mothers, Pap smear definition ratings were highly correlated with correctly checking only "test for HPV" and/or "test for cervical cancer" as synonyms for *Pap smear*; however, only 2 adolescent participants correctly identified Pap smear synonyms. **Table 4** gives additional bivariate analyses results.

Multivariate linear regression findings demonstrated that not having had intercourse was the only variable that predicted a higher number of correctly checked Pap smear synonyms and explained 4.4% of the variability in number of correct synonyms checked. A higher Pap smear definition rating was predicted by having had intercourse, older age, and non-Hispanic ethnicity. These 3 variables explained 17.4% of the variability in Pap smear definition rating.

©2004 American Medical Association. All rights reserved.
Downloaded From: http://archpedi.jamanetwork.com/ on 12/07/2016

COMMENT

Remarkably few patients who participated in this study understood the meaning of the term *Pap smear*. Furthermore, more than two thirds of clinic participants believed that a Pap smear is synonymous with a pelvic examination. This finding is concerning for several reasons. Misunderstandings about the meaning of *Pap smear* have the potential to interfere with communication between patient and health care provider. A patient may ask her provider to perform a Pap smear when she really would like a pelvic examination and/or STD testing performed. Conversely, a provider may ask a patient when she last had a Pap smear, and the patient may reply with the last time she received a pelvic examination for reasons other than obtaining a Pap smear. Likewise, patients who have received STD testing in an emergency department setting may mistakenly believe that they have successfully fulfilled their annual Pap smear screening responsibility. Not all providers routinely test patients for STDs when obtaining a Pap smear. Yet, a patient who receives a Pap smear may incorrectly assume that she has been tested for STDs.

The recent changes to the cervical cancer screening guidelines published by the ACS[11] and the American College of Obstetricians and Gynecologists (ACOG) cervical cytology screening guidelines[13] also could be misunderstood by patients who incorrectly believe that a Pap smear is the same as a pelvic examination and/or an STD check. Although the new guidelines recommend delay of the first Pap smear until 3 years following initiation of sexual intercourse or the age of 21 years, whichever comes first, annual STD screening is recommended for all sexually active women younger than 25 years.[11,14] It will be important for providers to make sure that patients truly understand the difference between a Pap smear and other gynecologic care when communicating the ACS and ACOG guideline changes to their patients.

Even though a history of having had sex correlated with a better Pap smear definition rating, only 1 of 77 sexually experienced participants in this study understood that a Pap smear was a test for cervical cancer and/or HPV and not synonymous with a pelvic examination, test for STD, or checkup. This finding suggests that as a society we may be waiting too long to make sure that our youth understand the correct terms used to describe gynecologic health care.

Despite the fact that a substantial proportion of participating mothers understood the term *Pap smear*, none of their daughters, half of whom were sexually experienced, shared this understanding. Increased communication between mothers and daughters might improve female adolescents' understanding of gynecologic care. Previous work by Hutchinson et al[15] suggests that if discussed in the context of promoting sexual health, this type of communication might also have a positive influence on reducing sexual risk behaviors.

Our results are consistent with those from similar studies that demonstrate that substantial numbers of participants misunderstand the purpose of the Pap smear.[1,3,5-7,9,10,16] However, only 2 other investigators have commented on the confusion many women have between a Pap smear and a pelvic examination.[6,9] Our study is the first, to our knowledge, to explicitly investigate whether adolescent and young adult women make a distinction between the terms *Pap smear* and *pelvic examination*.

Our study differs from similar studies in additional ways. Massad et al[6] administered a survey to patients who were attending a colposcopy clinic. Because these patients had already had an abnormality identified, one might expect that they would be more knowledgable than patients attending an adolescent clinic. Nevertheless, more than a third of these women believed that a Pap test was the same as a speculum in the vagina. The participants in the study by Massad et al[6] were also substantially older on average than our study participants, although some adolescents were enrolled. Kahn et al[9] conducted individual semistructured interviews with a sample of 15 adolescent girls to explore their beliefs and attitudes toward Pap smears and barriers to Pap smear follow-up. Although their study differed from ours in its use of qualitative methods, Kahn et al[9] also found that most of their participants could not distinguish between the meaning of Pap smear and pelvic examination.

A limitation of the present study is the exclusion of 14- to 17-year-old patients whose parents did not accompany them and so were unable to provide written permission for participation. This exclusion criterion was necessary to obtain institutional review board approval of the study. However, it is possible that this group (n=20) may have a different level of Pap smear knowledge than the participant population. This study also has limited generalizability secondary to sampling from a single clinic population. Despite these limitations, the results of this study are striking and indicate a need for educational initiatives to ensure that female youth are able to accurately communicate with their health care providers, understand what testing they receive during a gynecologic examination, and obtain appropriate gynecologic care.

What This Study Adds

Anecdotal experience suggests that many adolescent girls and young adult women confuse the terms *Pap smear* and *pelvic examination*. However, there is limited literature available to support this statement. We have demonstrated that only a few adolescent girls and young adult women attending a hospital-based adolescent clinic have an accurate understanding of the term *Pap smear*. Furthermore, most participants believed that *Pap smear* is synonymous with *pelvic examination*. These results indicate a need for further education so that young women are better able to communicate with health care providers and more accurately understand gynecologic health care recommendations.

Accepted for Publication: May 13, 2004.
Correspondence: Diane R. Blake, MD, Department of Pediatrics, University of Massachusetts Medical School 55 Lake Ave N, Worcester, MA 01655 (Diane.Blake@umassmed.edu).

©2004 American Medical Association. All rights reserved.
Downloaded From: http://archpedi.jamanetwork.com/ on 12/07/2016

Funding/Support: This study was supported by grant 5 K23 AI01750 (Dr Blake) from the National Institute of Allergy and Infectious Diseases (NIAID), Bethesda, Md.
Disclaimer: The contents of this article are solely the responsibility of the authors and do not necessarily represent the official views of the NIAID.
Acknowledgment: We thank Susan Starr, MEd, for her careful review of the manuscript.

REFERENCES

1. Mays RM, Zimet GD, Winston Y, Kee R, Dickes J, Su L. Human papilloma virus, genital warts, Pap smears, and cervical cancer: knowledge and beliefs of adolescent and adult women. *Health Care Women Int*. 2000;21:361-374.
2. Jubelirer SJ, Blanton MF, Blanton PD, et al. Assessment of knowledge, attitudes, and behaviors relative to cervical cancer and the Pap smear among adolescent girls in West Virginia. *J Cancer Educ*. 1996;11:230-232.
3. Sharp PC, Dignan MB, Dammers PM, Michielutte R, Jackson DS. Knowledge and attitudes about cervical cancer and the Pap smear among 10th-grade girls. *South Med J*. 1990;83:1016-1018.
4. Najem GR, Batuman F, Smith AM. Papanicolaou test status among inner-city adolescent girls. *Am J Prev Med*. 1996;12:482-486.
5. Charlton A. Young people's knowledge of the cervical smear test. *Soc Sci Med*. 1983;17:235-239.
6. Massad LS, Meyer P, Hobbs J. Knowledge of cervical cancer screening among women attending urban colposcopy clinics. *Cancer Detect Prev*. 1997;21:103-109.
7. Hasenyager C. Knowledge of cervical cancer screening among women attending a university health center. *J Am Coll Health*. 1999;47:221-224.
8. Dell DL, Chen H, Ahmad F, Stewart DE. Knowledge about human papillomavirus among adolescents. *Obstet Gynecol*. 2000;96:653-656.
9. Kahn JA, Chiou V, Allen JD, Goodman E, Perlman SE, Emans SJ. Beliefs about Papanicolaou smears and compliance with Papanicolaou smear follow-up in adolescents. *Arch Pediatr Adolesc Med*. 1999;153:1046-1054.
10. Kahn JA, Emans SJ, Goodman E. Measurement of young women's attitudes about communication with providers regarding Papanicolaou smears. *J Adolesc Health*. 2001;29:344-351.
11. Saslow D, Runowicz CD, Solomon D, et al. American Cancer Society guidelines for the early detection of cervical neoplasia and cancer. *CA Cancer J Clin*. 2002;52:342-362.
12. Dawson B, Trapp RG. *Basic & Clinical Biostatistics*. 3rd ed. New York, NY: McGraw-Hill; 2001.
13. ACOG Committee on Practice Bulletins. ACOG Practice Bulletin Number 45, August 2003: cervical cytology screening. *Obstet Gynecol*. 2003;102:417-427.
14. Centers for Disease Control and Prevention. Sexually transmitted diseases treatment guidelines 2002. *MMWR Recomm Rep*. 2002;51(RR-6):32-36.
15. Hutchinson MK, Jemmott JBI, Jemmott LS, Braverman P, Fong GT. The role of mother-daughter sexual risk communication in reducing sexual risk behaviors among urban adolescent females: a prospective study. *J Adolesc Health*. 2003;33:98-107.
16. Spiro D, Heidrich F. Lay understanding of medical terminology. *J Fam Pract*. 1983;17:277-279.

©2004 American Medical Association. All rights reserved.
Downloaded From: http://archpedi.jamanetwork.com/ on 12/07/2016