

1998

## Women's attitudes towards pelvic exams

Sabrina L. Cuddy  
*San Jose State University*

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WOMEN'S ATTITUDES TOWARDS  
PELVIC EXAMS

A Thesis

Presented to

The Faculty of the Department of Health Science  
San Jose State University

In Partial Fulfillment

of the Requirements for the Degree Master of  
Public Health

by

Sabrina L. Cuddy

May 1998

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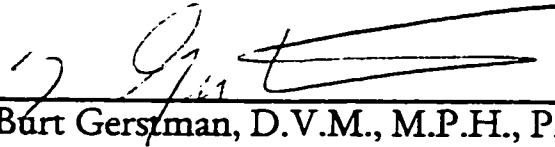
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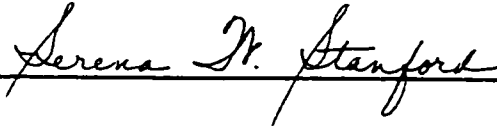
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## **ABSTRACT**

### **WOMEN'S ATTITUDES TOWARDS PELVIC EXAMS**

by Sabrina L. Cuddy

This thesis asked if a sample of female students were having annual pelvic exams and Pap tests. The answer was that 51% were not. Attitudes, beliefs, behaviors, and knowledge related to pelvic exams were explored. A questionnaire was developed and administered to 251 female undergraduate students. A total of 232 subjects were included in the final sample.

Frequencies, chi-square tests, and logistic regression were used to analyze the data. Results revealed statistically significant correlations between pelvic exams and several variables. Having sexual intercourse, using the pill, having physical exams, and having the pelvic exam done by the regular practitioner led to more pelvic exams. Being of Asian race led to fewer pelvic exams.

Participants indicated why women might not seek regular pelvic exams: Pain or discomfort, embarrassment, feeling the exam to be unnecessary, fear of the exam or results, and ignorance about pelvic exams were mentioned.



## ACKNOWLEDGEMENTS

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Special thanks to my advisors Kathleen Roe, B. Burt Gerstman, and Cheri Van Hoover - they have been invaluable in helping me organize my thoughts on this project.

## DEDICATION

This work is dedicated to Megan and Phelan Cuddy who I hope will benefit from enriched lives due to the career possibilities opened up to me as a result of my degree.

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# Chapter 1

## INTRODUCTION

As an undergraduate at the University of California, Berkeley, I conducted a pilot study of health behaviors among both male and female college students. One result in particular caught my attention: the young women from this group, generally careful about their health and reporting regular visits to their primary physicians and dentists, rarely or never sought pelvic exams. The exceptions were women taking the birth control pill, as they were required to have a yearly pelvic exam in order to renew their prescriptions.

This intriguing result was worth pursuing in greater depth, so I undertook this study with a larger sample and with a focus on pelvic exam knowledge and behavior. The purpose of this study was to discover if the same trend appeared among female undergraduates at another university, and to explore why women might not seek out pelvic exams.

### Statement of the Problem

Cervical cancer has one of the highest cure rates of all cancers, if it is caught early. The most common screening test for cervical cancer, called a Pap test, can only be done in the context of a clinical pelvic exam. The American Cancer Society (ACS) recommends that every woman over the

age of 18, or under 18 but having sexual intercourse, should have a yearly pelvic exam and Pap test. After three or more consecutive annual screenings with normal findings, the frequency can be dropped to every three to five years if the physician agrees (ACS, 1990). Along with the pelvic exam, many practitioners also perform a clinical breast examination to detect breast cancer, and use this as an opportunity to teach women about monthly Breast Self Exam.

According to the American Cancer Society (1996), the five-year survival rate for invasive cervical cancer is 68%. The Society reports, however, that with localized (less invasive) cervical cancer the five-year survival rate is 91%, "... but only 51% of cervical cancers are discovered that early" (p.14). There has been progress in this battle, as documented by the 67% drop in the death rate from cervical cancer between 1962 and 1992.

The reasons for which women with invasive cervical cancer present to their practitioners is highly significant in their disease-free survival (DFS) rates. Pretorius et al. (1991) found that the least invasive cancers and the best DFS rates (96%) were among asymptomatic women who were found to have an abnormal Pap result, while the DFS rates dropped significantly as the presentation went to abnormal vaginal bleeding (51%) and pain (29%). Presentation with an abnormal Pap test was not found to independently predict DFS, but was significantly associated with both the stage of invasiveness and the size of the cancer, both of which do predict DFS rates. In the same paper, Pretorius et al. list the results of a series of surveys conducted for the ACS, which show an increase in public awareness and use

of cancer detection tests. In 1961, 30% of women surveyed had had a previous Pap test, rising to 87% in 1987.

More and more cases of cervical cancer are being found in women under 35 years of age. A study by Clark et al. (1991), found that 30% of their sample of 137 women newly diagnosed with invasive cervical cancer was under 35 years old. This hospital based study evaluated the outcomes of women aged 35 and under and compared them to women over age 35. The result of the comparison was that younger women were more likely to have lymph node involvement in their cervical cancer, while older women were less likely to recover from the cancer. They list other studies which reported from 18%-25% of their invasive cervical cancer patients as women under 35 years old. Some factors identified by this study as related to cervical cancer incidence are: intercourse starting at an early age, presence of the human papilloma virus (HPV), intercourse with multiple partners, and smoking. These risk factors are corroborated by other research (e.g. ACS, 1996; Parazzini et al., 1990).

During a pelvic exam, the practitioner may find evidence that diseases other than cancer are present. Alternately, an abnormal Pap result may lead the practitioner to screen the patient for sexually transmitted diseases, most notably human papilloma virus (HPV), which contribute to cervical abnormalities.

Fisher et al. (1991) found that the presence of HPV was common among sexually active teenagers in their study, and this was not effected by ethnicity or socioeconomic status. There are a variety of types of HPV, and



only certain types are associated with higher levels of cervical intraepithelial neoplasia (CIN - used to classify increasing levels of invasiveness from CIN-I to CIN-IV) - these are types 16, 18, 31 and 33. The authors recommend that young women found to have these types of HPV be followed carefully with routine Pap tests in order to catch pre-cancerous cervical changes at an early stage. Loucks (1991) reports that of the 10.8% of her sample testing positive for HPV, not one of them had any symptoms of HPV at the time of testing, although a few had a past history of genital warts. Further, all of these subjects had normal Pap tests at the time. Obviously it is important for young sexually active women to have pelvic exams so that they may also be offered STD screening which would determine if HPV were present.

In a summary of the *Guide to Clinical Preventive Services* (U.S. Preventive Services Task Force, 1989), Reith (1991) identifies the preventive activities that doctors associated with college students should undertake on a regular basis. These recommendations include a Pap test for women aged 19-39 years every 1-3 years. He goes on to point out that the Pap test and pelvic examination can be “packaged” with screening for *Chlamydia trachomatis* and counseling about the prevention of sexually transmitted diseases.

The college campus I have chosen to survey, San Jose State University, provides the students with an option of very low cost health services, including a yearly pelvic exam at no extra cost. The health services are available on campus, making it both inexpensive and logistically simple for this population to have a yearly pelvic exam and Pap test. The same was true of my previous sample.

In my pilot study (Wilson, 1988), 53% of the women reported never or very rarely having a pelvic exam. If this trend were true of all college-aged women, there could be sizable health consequences for them later in life. This information, as well as the added dimension of those factors which women report dissuade them from seeking regular pelvic exams, opens the door for educators to teach women a lifetime habit which could save their lives in the future.

Even if a particular woman would not eventually develop cervical cancer, the pelvic exam is a gateway for women to request, and clinicians to offer, screening for sexually transmitted diseases, such as Chlamydia and HPV. This exam is also a perfect opportunity for practitioners to discuss sexually transmitted disease prevention, and there is some evidence that this one-on-one interaction is more effective in changing behavior than the more typical brochure or video presentation of this information. Ward and Boyle (1991) found that even a minimal intervention by a general practitioner encouraged 55% of women to have a Pap test who otherwise would not have. A more intense and personalized effort by the practitioner yielded 67% consent to collect a Pap test from women who would not otherwise have had one.

In order to discover why women might avoid pelvic exams, it seemed that the next step would be to ask the women themselves what factors influence their decision to seek or not to seek these exams.

## Research Questions and Objectives

This study was designed to address the following questions:

1. What are the knowledge, attitudes, and behaviors of college-aged women with respect to pelvic exams?
2. What factors are involved in a woman's decision to seek or not to seek a pelvic exam?

The objectives of this study were as follows:

1. To assess the knowledge, attitudes, and behavior of college-aged women with respect to pelvic exams.
2. To uncover the factors involved in a woman's decision to seek or not to seek a pelvic exam.
3. To explore the differences in knowledge, attitudes, and behaviors between women who seek regular pelvic exams and those who do not.
4. To generate data which can be used to make recommendations for student health service organizations.
5. To add to the existing literature on college health and women's health.

## Methodology

A cross-section of female undergraduate students at San Jose State University was asked to complete an anonymous survey. Permission to

survey this population with informed consent was received from the San Jose State University Institutional Review Board prior to data collection (see Appendix A). Following data collection, students were given information on pelvic exam procedures and cervical cancer. Participants were members of Human Sexuality, Psychology, and English classes. These classes attract students from a wide range of majors and should represent a good approximation of the overall campus population.

The questionnaire had a total of 33 questions: 9 general health questions, 14 questions about sexuality, 5 demographic questions, and 5 questions about pelvic exams (See Appendix B).

The pelvic exam questions were arranged as follows: first a yes/no/maybe question asking if the participant knows what a pelvic exam is, then two open-ended questions asking what happens in a pelvic exam and why women should have them, then a question about why women would avoid pelvic exams with some examples and space to write in their own answers. Finally, women were asked if their regular practitioner did pelvic exams, and if not, they were asked if they had been referred to a gynecologist.

Pilot testing was conducted using 16 female and 6 male students (who were able to make comments about grammar and clarity of the survey), and some of the wording of the questionnaire was clarified.

Students in Human Sexuality and English classes were surveyed during their regular class period and then given a brief presentation on pelvic exams. Male students were invited to stay for the presentation so that they could

pass on this information to the women in their lives. Students in Psychology classes were surveyed as they came to a special “research day” in the Psychology Department. As this format did not allow the educational presentation, printed educational materials were given to respondents after they completed the survey.

Participants indicated permission to use their completed questionnaire by removing the informed participation statement from the front of the survey. This consent form included a phone number, which they could call if they were interested in the results of this study (See Appendix A).

As there was an unanticipated delay between the time of data collection and the time of analysis, a ten percent second sample was collected months later to ensure validity of the results. The second sample results were compared to the original findings to control for any changes in the way the general student body might be using the Student Health Service, or the possibility that there had been a shift in the particular knowledge or behaviors of interest. Data collected during from the second sample were used only to compare the populations of the campus during the delay and were not used in the in-depth analysis of health behaviors.

### Definitions

The following conceptual definitions were used in this research:

Attitude: A state of mind or a feeling; disposition (American Heritage Dictionary, 1993 p.89).

Belief: Mental acceptance of and conviction in the truth, actuality, or validity of something (American Heritage Dictionary, 1993 p.125).

Knowledge: Familiarity, awareness, or understanding gained through experience or study (American Heritage Dictionary, 1993 p.752).

Pelvic Exam: A clinical examination by a medical practitioner, such as a doctor, nurse practitioner, or midwife, of the organs in the female pelvic region. Specifically, the vagina, uterus, uterine cervix, ovaries, and fallopian tubes are examined visually and manually for signs of disease.

Pap Test: A sample of cells from the uterine cervix obtained during a pelvic exam and examined by a laboratory for signs of abnormal change that could indicate cervical cancer or a pre-cancerous condition. The name is derived from Doctor Papanicolaou, who invented the test. A more technical definition follows: "an exfoliative cytological staining procedure for the detection and diagnosis of various conditions of the female genital tract (cancer of the vagina, cervix, and endometrium), in which cells which have been desquamated from the genital epithelium are obtained by tests, fixed and stained, and examined under the microscope for evidence of pathologic changes." (Dorland's Illustrated Medical Dictionary, 28th edition, 1994. pg. 1681).

College-Aged: The range of ages typically found on a college campus, 17 to 23 years. (This is derived from the typical college student who enters college the year after high school graduation, and graduates from college in four years, adjusted for those who are younger at graduation and those who take more than four years to complete a degree or who don't enter college right away.)

The following operational definitions were used in this research:

Attitude: The state of mind (thoughts) or feelings of the study participant towards pelvic exams as shown by question 27 on the survey (See Appendix B)

Belief: The convictions or opinions of the study participant about pelvic exams as shown by question 26 on the survey (See Appendix B).

Knowledge: Understanding of the procedure of and reasons for pelvic examinations as shown by the study participant in questions 25 and 26 on the survey (See Appendix B).

Pelvic Exam: A women's health exam requiring the woman to go to a practitioner and lie on a table, allowing the practitioner to look at and touch her genitals.

Pap Test: During the pelvic exam, the practitioner scrapes some cells from the woman's cervix for analysis.

College-Aged: The typical age of undergraduates on the San Jose State University campus, which is slightly higher than most colleges because so many students commute to school part time rather than living on campus and attending school full time. The age range of interest in this study is 17 to 27 years respondents outside this range were eliminated from the study.

## Limitations

Certain limitations to this study design were acknowledged before data collection began. These limitations were due to research design, potential sampling bias, and questions in the instrument which had not been tested by previous research. Each limitation will be briefly described here and then addressed in detail in Chapter Five.

The survey design of this research has several limitations, including the lack of any method for contacting participants to clarify responses which could not be coded, missing data, and the possibility that self-reported behaviors may not be accurate. However, the survey approach is consistent with most health behavior research. This study attempted to clarify results through the use of two open-ended questions included on the survey.

Some degree of sampling bias was likely in this study because, rather than taking a cross-section of the entire campus, the researcher was limited to a cross-section of a few classes. The sampling strategy was dependent on professors' willingness to allow a researcher to take valuable class time and it was unclear whether this would be possible at the point in the semester when data collection was to begin. It was hoped that a selection of courses taken by students as general education would yield a reasonable approximation of the campus population.

The third limitation acknowledged prior to data collection was that the questions designed by the researcher and not taken from a proven instrument are untested. The study design attempted to control for that



potential problem by using both open-ended and simple multiple-choice questions to provide more than one perspective on the respondents' answers.

### Significance

Cervical cancer and many sexually transmitted infections are easily curable when found in the early stages, and the best tools currently available for detection are specific tests, including the Pap test, which can be routinely performed during a pelvic exam. Cervical cancer rates among young women are increasing, a problem which is associated with the young age at which so many women are beginning sexual activity. From a previous pilot study, it has been found that some college-aged women do not seek routine pelvic exams, and this could lead to finding cervical cancer and sexually transmitted diseases in the more advanced and much more serious stages.

The incidence of cervical cancer and STDs and their associated risk factors have been well established in the adolescent and college aged populations. Research is needed to determine whether college aged women know what a pelvic exam is and why they should have them regularly. Research is also needed to explore the reasons college aged women might avoid pelvic exams, as well as any misconceptions they have about these exams.

The findings of this research will enable student health services to effectively target interventions based on the knowledge, beliefs, and attitudes of college women so that the percentage of young women who seek regular pelvic exams will increase. It is also hoped that health organizations that provide

services to women in this age group not affiliated with a college will also be able to tailor their educational programs so that as many young women as possible are screened regularly. After all, good health habits built today are likely to continue into the future.

## Chapter 2

### LITERATURE REVIEW

A previous pilot study (Wilson, 1988) revealed that women in the college sample were not seeking regular pelvic exams. The following literature review, which covers guidelines for pelvic exams, statistics about seeking and avoiding pelvic exams, and factors related to seeking or avoiding pelvic exams, helps to explain this phenomenon.

#### Pelvic Examination and Cervical Cancer Screening Behaviors

The American Cancer Society (ACS) recommends routine Pap testing starting at age 18 or at the onset of sexual activity, whichever happens first. The interval between screenings is the topic of some debate, with a range from one year (to control for laboratory error) to five years after three or more consecutive normal screenings (ACS, 1992). The percentage of women in the United States who have ever had a Pap test has risen dramatically from 30% in 1961 to 94% in 1987 (Hayward et al., 1988) and along with the rise in screening has come a drop in cervical cancer rates as well as death rates from cervical cancer as more cases are caught early (ACS, 1992). Once the initial Pap test has been done, many factors play into continuing to have the test done regularly. Research indicates that among these factors are ethnicity (Hispanic women are the least likely to have ever had a Pap test, but the most likely to continue once the first visit is established), age (as women age, they are less likely to have a Pap test),

education, insurance, and income (Hayward et al., 1988). When controlling for all other factors, Norman et al. (1991) found that both frequency of testing and ever having been tested were strongly related to income. Also listed, as a very important variable was health insurance, especially in women under 65 years of age. Age 65 is significant, as it is the age in the United States when people are eligible for Medicare, and thus no longer have to pay for routine medical care.

In a study of inner-city women, Mamon et al. (1990) analyzed the relationship of knowledge, attitudes, sociodemographics, and health care utilization to adequacy of cervical cancer screening. Subjects were chosen from neighborhoods with particularly high rates of cervical cancer mortality. After women who had hysterectomies were removed from the sample, it was found that 44.1% were not receiving adequate Pap testing. The women who were being adequately tested were more likely to be under 45 years of age, have medical insurance, and have better knowledge about the Pap test. This study found a need to develop separate models for younger and older women, as there was a strong variation in the factors involved in Pap test seeking behavior by age.

Where the Pap test is performed may be significant for women in that they are more likely to be tested regularly by a practitioner they visit for other examinations, such as to obtain birth control or for prenatal care. Women who are past their childbearing years are more likely to have a Pap test if they are being seen regularly for chronic health problems. Further, there have been “consistent findings that fear of the test results and feelings of

embarrassment are strong barriers to Pap testing, whereas social support facilitates compliance.” (Norman et al., 1991, p. 224)

The type of health insurance a woman has can also influence whether she receives screening tests. Bernstein, et al. (1991) studied the differences in screening rates for a variety of cancers based on whether the patients were cared for within a health maintenance organization (HMO) or fee-for-service health plan. With respect to Pap tests, the HMO population was close to 20% more likely to be screened than the fee-for-service providers’ patients. Reasons postulated for this difference include the HMO physicians being paid on salary, and the HMOs having tighter policies about following screening guidelines. Due to the limited population in this study, the results can only be generalized to white patients. This is a severe limitation as whites are the group most likely to be screened in the first place.

There is evidence that one-on-one interaction is more effective in changing behavior than the more typical brochure or video presentation of pelvic exam information. Ward and Boyle et al. (1991) found that minimal intervention by a general practitioner encouraged 55% of women to have a Pap test who otherwise would not have. A more intense and personalized effort by the practitioner yielded 67% consent to collect a Pap test from women who would not otherwise have had one.

In a study of female nurses’ adherence to the American Cancer Society (ACS) guidelines for prevention and early detection of cancer (ACS, 1988), McMillan (1990) explores the relationship among cancer-related behaviors in

the nurses, a knowledgeable population. From this population, 79% were complying with the ACS Pap test guidelines, with that percentage including 22% who had hysterectomies and were not eligible for a Pap test. Because so many nurses are failing to follow ACS guidelines (Pap test compliance was the best of any of the cancer prevention behaviors) the authors theorize that perhaps the nurses have forgotten the guidelines, or worse, never learned them in the first place. This leads to a recommendation that these professionals be given continuing education about cancer prevention so that they may in turn hand that information along to the patients they care for.

This conclusion does not seem logical as this population was originally said to be knowledgeable. Rather than giving information about cancer prevention alone, focus should be given to the reasons women may avoid screening exams and how to increase compliance. Perhaps by giving the nurses skills to convince patients to seek cancer screenings the workshops would also convince the nurses to seek cancer screenings as a by-product.

Ronco et al. (1991), found that the most likely women to have ever had a Pap test were those in the 40-49 year old range, those who had ever been married, and those with higher education. The measurements used most in this study were ever having a Pap test and having a Pap test in the last three years. Interestingly, women who judged their health to be average were more likely to have Pap tests than were women who judged their health to be either better or worse than average. While this was not a statistically significant finding, it strikes me as a potentially important one.

A finding that was statistically significant was the correlation between excessive Pap tests (unfortunately they did not define “excessive”) and having a history of breast symptoms, practicing breast self-exam, or having a mammogram. There was also a correlation between general prevention behaviors, such as physical exercise and the use of seat belts, and adequate pelvic exams. One possible limitation to this study is that it was carried out in one city in Italy, and this could mean that the results do not generalize to other populations around the world, and particularly in the United States.

### Preventive Health Behaviors

An interesting discussion by Norman et al. (1991) looks at the multidimensional thinking behind preventive health behaviors.

... reflecting the findings that preventive health behavior encompasses primary and secondary prevention, active and passive approaches, sustained behavior (tooth brushing), sporadic behavior (check-ups), and one-time behavior (immunizations). Individuals who think of preventive health behavior primarily as taking charge of one’s health in an active or direct way - for example, with good nutrition, exercise, and getting enough sleep - may not be as inclined to view visiting the doctor for a check-up as a component of preventive health behavior. Other individuals may view the direct and indirect components of preventive health behavior as equally important. (p. 223)

In other words, the people who see themselves as particularly healthy because they take good care of themselves may discount the need to be screened for cancer even if they have predisposing factors.

Blalock et al. (1990) compared siblings of colorectal cancer patients to siblings of patients hospitalized for non-malignant surgeries and found a bias in perceived susceptibility to colorectal cancer. Even though the siblings of cancer patients were informed that they were at increased risk for this cancer, only 27.4% indicated that they were at higher risk than average, and 29.0% indicated that they believed they were at lower risk for this cancer than average. One conclusion, which is particularly applicable to the topic of Pap tests, is that no matter what the individual's actual risk is, the perceived susceptibility directly effects willingness to undergo screening for cancer.

Some of the factors included in the Blalock study were influenced by Neil Weinstein's work on optimistic bias. As part of a summary of his work, Weinstein describes this construct by saying that people consistently show a bias downplaying their own chances of being affected by personal afflictions as compared to their peers (Weinstein, 1989). This behavior has been related to minor health problems such as colds, major health problems such as cancer, and to external problems such as auto accidents. Even when people are demonstrably in a high risk group, they may downplay the risk to themselves or attempt to counter that risk with practices that have little value to reduce risk, although they are cited as being used for that purpose. If personal action is seen as controlling risk, then people show a greater tendency to have a false sense of protection against that hazard. Relating this to Pap tests, it might be true that a woman who believes that cervical cancer risk is related to sexual activity might feel that she is less likely to get this cancer if she has never had sex, and so avoid screening. While it may be



true that sexual activity can increase risk for cervical cancer, it is certainly not the only risk factor that should be considered.

While it is clear that participation in pelvic exams by U.S. women has been steadily increasing, there is still more work to be done to meet the ACS guidelines for screening regularity. By addressing the barriers to seeking pelvic exams, providing education about the accuracy of the Pap test, pointing out the ease of curing cervical cancer when it is caught early, and encouraging general practitioners to do Pap tests while the patient is being seen for other complaints, the numbers of women who are not screened regularly could drop considerably. Linking efforts to improve general prevention behaviors, such as wearing seatbelts, eating better, and exercising more to efforts to improve attendance in cancer screening programs is one way to bring cancer screening to mind when people think of general health. However, some individuals will take their efforts to improve general health to mean that they no longer need to see a practitioner regularly, and this behavior diminishes the number of chances to obtain cancer screenings.

### Women's Thinking About Cancer Screening

The way women think and feel about cancer screening, including the Pap test, influences their decisions to seek such screening. The following articles outline some of the many factors which can influence the way women think and feel about breast and cervical cancer screening.

## Women's Beliefs, Attitudes, and Knowledge Related To Cancer Screening

Cockburn et al. (1991) found many factors that influenced women's intention to attend a screening mammography program in Australia. Among those factors were: intensity of thought about getting breast cancer, belief that early detection is desirable and that screening is accurate, having a Pap test in the last two years, belief that health is controlled by chance, perceived ease of getting to the hospital, age, having heard about screening mammography, and feeling personally susceptible to breast cancer. The target population for this study was in the 50-69 year age range, although a few women ages 48-49 were included because that is the age at which women are eligible for mammography at that center. It is interesting to note that having Pap tests predicts intention to have screening mammography. Clearly, if a woman feels that cancer screenings in general are effective and that she is susceptible to cancer, she will seek all the applicable screenings rather than just one specific one.

Harlan et al. (1991) studied the types of women who are not screened for cervical cancer and some possible reasons. Her sample included women of all ages from all parts of the United States, but the results from the 18-29 year old category are the most applicable here. Seven reasons for not having had a Pap test in the last three years were reported, and for the college aged portion of the sample, the percentages were as follows: 50.8% thought that the test was unnecessary (perhaps because they had no symptoms) or they were just procrastinating; 0.3% had hysterectomies; 5.2% were concerned

about the cost; 5.0% had no regular physician; 11.3% had a regular physician who did not recommend the test; 7.0% were embarrassed or afraid of the test; and 20.4% had other or unknown reasons. It would have been interesting to see how many of the women actually felt that the Pap test was unnecessary versus those who were simply procrastinating, but the researchers chose to combine them. I feel that this is a serious limitation in this study because very different education efforts would be aimed at women who thought they did not need a Pap test than those who simply needed to be reminded to get a Pap test.

In a study using focus groups of African-American women in North Carolina, Dignan et al. (1990) found several barriers to cancer screening. Most of the women in this study had heard of the Pap test, but were not aware that it was for early detection of cervical cancer. The most common first reaction to the word 'cancer' was feelings of fear and fatalism, which often lead to avoidance of medical personnel and discussions of cancer as well as refusal to incorporate the information that when caught early some forms of cancer can be cured. Other barriers included taking time off work to have the exam, transportation, childcare, and waiting time at the health provider's office. Because waiting time was shorter for acute care, many women were asking about preventive care during acute care visits. Possibly the most damaging attitude was that the doctor was seen as a bearer of bad news when it came to cancer-related exams.

Women's attitudes included perceiving cancer treatments as disfiguring, ineffective, and prolonging suffering in a terminal illness. Oddly enough,

even with all these conflicting attitudes, early detection of cancer was still seen as the best way to handle cancer. The authors suggest that in educating women about cancer a positive approach focused on screening would be more effective than an approach focused on the facts about cancer. This is also an example of how screenings could be improved if acute care doctors would offer the Pap test to women when they present for general illness.

A study by Horn et al. (1990), surveyed a group of African-American women ranging in age from 16 to 43 years, who attended an inner-city sexually transmitted disease (STD) clinic. Of these women, 33% did not know what a Pap test is for, and of those who said they knew only 30% were actually correct. This deficit in knowledge was found despite the fact that 93% of the respondents had undergone a Pap test before. When asked specifically what a Pap test is for, of those who said that they did know, 9% thought it was a test for pregnancy, 49% thought it was a test for “infection”, and 30% said that it was for cancer screening, while 12% gave non-specific answers like “to examine inner organs” (p.135). It seems that physicians have a responsibility to educate patients about procedures that are being done on them, and what better time than when the patient is having the procedure?

It seems clear that women have a lot of misinformation about the Pap test and what it is for. They need to have the information presented to them in as positive a way as possible so that they can hear it rather than tuning out to protect themselves from the fear of a dreaded disease. Placing the

emphasis of educational presentations on the curability of cervical cancer when caught early is one way to make presentations more positive.

Information presented by a physician is often better received than when it is presented by a pamphlet or mailing, especially if the woman has an ongoing relationship with that physician (Ward and Boyle et al., 1991). Women who see a physician on a regular basis would benefit from being offered a Pap test or being referred to a gynecologist for the test. The trusting relationship between a general practitioner and a long-term patient can be the basis for regular screenings for any kind of cancer, provided the practitioner recommends them to the patient. How much impact the lack of knowledge about pelvic exams and Pap tests has on whether women seek the exam seems to vary by the population under study. It is clear that many of the barriers related to pelvic exams are caused by not understanding the test and what the results mean.

#### Items Needing Further Study

A review by Gillam (1991) of the cervical cancer literature revealed common patterns useful in looking for items to be included in further study. One of the studies reviewed (King, 1987) found that younger women were likely to link cervical cancer risk to issues such as promiscuity and using the birth control pill. This could be a major deterrent to seeking pelvic exams for a woman who values abstinence and an image of purity. Several studies found that a major inhibitor for seeking cervical cancer screening was fear that cancer will be found. One suggested way to reduce fears of women found to have abnormal Pap tests was to present the findings in a personal

letter with an educational pamphlet - rather than sending only an impersonal computer printout. Other fears included that the test might be painful or embarrassing - having a female doctor perform the exam was important to many women. Those who regularly sought pelvic exams were generally those who believed that the test could show cancerous cells before the onset of symptoms and that this could lead to successful treatment.

In developing an educational workshop for women at high risk of cervical cancer, Dignan et al. (1990) identified the knowledge, attitudes, and behaviors of an African-American community and conducted pilot tests to find the most effective ways of presenting information to the community. This included a discussion of the common barriers to obtaining regular Pap tests. Women attending the pretest sessions of the workshop were generally familiar with the term "Pap test," and understood that it was important to have to test regularly, but showed confusion about how often to have a Pap test, what the test is for, how accurate it is, and what the results meant. Many women believed that they would "know" if they had cervical cancer by symptoms such as bleeding or pain, when this is not necessarily true. The researchers found that providing information on a healthy lifestyle in general was helpful if this information was placed early in the presentation. This helped to set a positive tone to the workshop and allowed the participants to take in more of the cancer information.

Most of those women attending the workshop who had reported that they had not had a Pap test ever or recently indicated at the end of the workshop that they would seek a pelvic exam in the near future. This indicates that

direct education may be an effective means of encouraging women to seek screening tests, although it is hard to measure the actual effect due to the unreliable nature of self-reporting health behaviors.

## Methods

There is a wealth of research about the ease of curing cervical cancers which are detected early on and therefore have not progressed to an invasive stage (e.g. ACS, 1990; Pretorius, 1991). There is also information about risk-taking behaviors in college-aged people and avoidance of screening tests in general due to a fear of finding cancer. These various studies have been based on many different models, although most have relied on survey data at least in part.

### Limitations of Survey Design

Bowman et al. (1990) found that women's self-reporting of Pap test utilization is not terribly accurate. Their results indicate that close to half of women who have not had a Pap test in the last three years will report that they have. There are several reasons listed for this phenomenon, including: errors in memory, not really knowing what a Pap test is, and not wanting to admit that they did not conform to the accepted health practice (a socially desirable response bias). This could introduce a serious limitation into any research about Pap tests which relied only on survey data. One important limitation has been shown to affect data of a personal nature collected by survey, and that is a tendency for women to over report how often they have screening exams.

### Population Under Study

Most studies related to pelvic exams have been aimed at very specific populations seen to be at risk, such as rural African-American women (Sawyer, Earp et al., 1990) and women over age 50 (Cockburn et al., 1991). One study (Harlan et al., 1991) looked at the overall U.S. population, which is less specific, but does not allow other researchers to pinpoint the behavior of U.S. college students.

Despite the fact that so many studies use college students as subjects due to the ease of obtaining subjects this way, this researcher has been unable to find studies specifically looking at college-aged women's pelvic exam behaviors. This population is the ideal place to start aiming educational efforts to increase compliance with the American Cancer Society guidelines for Pap tests. Women who develop the habit of having yearly screenings at a young age are more likely to continue to seek them when they are at a higher risk of cervical cancer, and they will be more likely to discover pre-cancerous cells while they are still highly treatable. In addition, 29.9% of a sample of women with invasive cervical cancer were under 35 years of age (Clark et al., 1991).

Examining the methods used by the above-cited studies has helped to define the questions that need to be asked when surveying women about pelvic exams. While the college population is often used in other kinds of studies, researchers studying pelvic exam frequency tend to survey other populations seen to be at higher risk for cervical cancer. These populations include women older than college age, rural women, and African-American



women. Factors which play into the avoidance of pelvic exams, including knowledge, fear, and feeling the test is not applicable, are all factors which develop much earlier in life than the age of 65, when risk for cancer in general increases. If it is seen that these factors already exist in the college population, then educational efforts aimed at this group would significantly impact the future quality of life of women as they age.

### Conceptual Framework

Although the design of this research was not based on any one model, the Health Belief Model influenced it. Because of limitations in the predictive power of this model, it is more useful as a framework for data analysis than as a guideline for survey design. The following discussion shows the use of this model in research related to pelvic exams, as well as the justification for using it only as a framework for analysis.

### The Health Belief Model

The Health Belief Model (Becker and Maiman, 1975; Rosenstock, 1966) has been applied to many areas of health behavior to predict the likelihood of seeking preventative health screenings. This model uses five components to explain health behaviors, specifically, (a) perceived susceptibility, (b) perceived severity, (c) perceived benefits, (d) perceived barriers, and (e) cues to action. The five components of the Health Belief Model can be applied to pelvic exams through the following questions: (a) Do women feel that they are susceptible to sexually transmitted disease or cervical cancer, (b) do women think that sexually transmitted diseases or cervical cancer are

dangerous either to their health or social standing, (c) do women believe that pelvic exams are an effective way to reduce health problems, (d) are pelvic exams seen as so unpleasant that the benefits are not worth the discomfort, and (e) do health practitioners give women the message that pelvic exams are an important part of their health care?

### Limitations of the Health Belief Model

Bernstein and Keith (1991) stated that one criticism of models describing health beliefs in general “is that they are not models in the strict sense because they do not specify how their constructs should be measured” (p. 207). They go on to analyze one particular set of scales that could be used to measure general health beliefs that fit the constructs of the model, and propose that scales of this type are sorely needed to make the Health Belief Model a useful tool.

Gillam (1991) has reviewed the literature on cervical cancer screening using the Health Belief Model as a framework. The conclusion of this review was that the Health Belief Model lacks predictive power, but does serve as a useful way of organizing the data. According to Gillam, some researchers have refined the Health Belief Model by adding new factors such as age, sex, ethnicity, social class, personality, and knowledge about the specific disease, but this has not improved the predictive power of the model much.

Gillam goes on to list some limitations of the Health Belief Model and states that it is useful as an aide to memory but not as a predictive model. The limitations of this model include: the difficulty in defining certain concepts,

such as motivation; the overemphasis on the rationality of health seeking behaviors; and the tendency of the model to separate the decision of a person to seek health care from the relationship that person has with a care provider insofar as people with a trusted regular care provider are more likely to make lifestyle changes over time.

In a study of breast self-examination, Wyper (1990) made an extremely thorough analysis of the other studies in that area that were based on the Health Belief Model. Her review of the model is mixed in that the usefulness of certain variables has been established while most of the model fails to predict variance in breast self-examination behavior. Perceived barriers to health promoting action was the most useful variable, and that still only explained about 25% of the variance in breast self-examination behavior. In this study, Wyper attempted to compensate for past problems with the model through the combination of factors in her study to best fit the Health Belief Model's constructs (Perceived Threat and Perceived Efficacy). Despite these adjustments, she still found that the majority of the explained variance was due to perceived barriers and there was a large amount of unexplained variance.

### Conclusion

The literature confirms the conclusion made by my previous study (Wilson, 1988) that women do not follow the American Cancer Society guidelines for pelvic exam and Pap test frequency. Although women are presenting for pelvic exams more regularly than in the past, more work needs to be done to encourage this behavior.

Some factors are shown by the above review of the literature to play into the decision an individual makes about whether to seek or avoid pelvic exams. These factors include: having health insurance, being tested by a practitioner seen regularly for other services, fear of test results, embarrassment, lack of knowledge, having other screening tests or performing breast self-exam, general preventive health practices, feeling that the test is effective, and feeling that they are susceptible to cervical cancer. The optimistic bias in the way people think about screening tests is likely to have an effect on the frequency women seek pelvic exams when they do not have specific symptoms.

It may be noted that many studies have looked at the attitudes, beliefs, and behaviors of women in respect to pelvic exams and Pap tests, although most have looked at women older than the college student population. Some of the studies cited above were limited to only one ethnic group or socioeconomic level. Up to the point of data collection in 1992, this researcher was unable to find studies on this topic that targeted only college aged women. It seems clear that promoting regular Pap tests in the college population is an important way to improve the likelihood that when these women reach the age of higher risk for cervical cancer they will already be in the habit of obtaining regular screening.

As the next step, a survey was used to evaluate whether the undergraduate women at San Jose State University were seeking regular pelvic exams. Some of the reasons they might not be seeking regular exams were included in the survey to allow the development of appropriate educational

interventions if they are needed. It is anticipated that some portion of the sample will not be seeking pelvic exams, and the analysis of those women compared to the women who do seek pelvic exams should point to some of the reasons for their differences in behavior.

## Chapter 3

### METHODOLOGY

A cross-sectional survey of sexual attitudes, sexual practices, health care seeking behaviors, and health promoting behaviors was conducted with a sample of female undergraduate students at San Jose State University, San Jose, California. The survey included an initial sample of 232 subjects and a second sample of 23 subjects. The second sampling, collected due to an unexpected delay between data collection and analysis, was used to test the continued validity of the results.

#### Research Questions and Objectives

This study was designed to address the following questions:

1. What are the knowledge, attitudes, and behaviors of college-aged women with respect to pelvic exams?
2. What factors are involved in a woman's decision to seek or not to seek a pelvic exam?

The objectives of this study were as follows:

1. To assess the knowledge, attitudes, and behavior of college-aged women with respect to pelvic exams.

2. To uncover the factors involved in a woman's decision to seek or not to seek a pelvic exam.
3. To explore the differences in knowledge, attitudes, and behaviors between women who seek regular pelvic exams and those who do not.
4. To generate data which can be used to make recommendations for student health service organizations.
5. To add to the existing literature on college health and women's health.

### Research Design

This study used a cross-sectional design to collect data concerning college women's knowledge, attitudes, and behaviors regarding pelvic examinations. Data collection was done through an anonymous survey of San Jose State University female undergraduate students.

### Assumptions

The assumptions underlying this research included:

1. Subjects would answer the anonymous questionnaire honestly.
2. Subjects would understand the questions as intended by the researcher.
3. Subjects would be comfortable enough to fill out a survey exploring personal behaviors while seated in a classroom among their peers.
4. Adequate pilot testing of the questionnaire should reveal any limitations of the instrument.

5. The wording of the instrument would not lead women to a particular answer.
6. The questionnaire would take a group of women less than 15 minutes to complete.
7. Male students would be willing to do a quiet activity, such as studying, while their female classmates completed the survey.
8. Faculty members would allow the researcher 30-45 minutes of class time to conduct the survey and a follow-up educational session.
9. Some women who otherwise seek preventative health examinations do not seek pelvic exams.
10. Pelvic exams, while accessible to the sample population, are uncomfortable enough to deter women from seeking them.
11. Women who have never been sexually active might not think they need pelvic exams or might see a stigma attached to seeking them.
12. The research would proceed in a timely manner.

### Sample Selection

In order to survey a representative sample of the San Jose State University student body, General Education classes were chosen as a base for recruiting respondents. Because these classes are required for graduation, every undergraduate student, regardless of major, must choose from among a wide array of General Education classes. A diverse sample was almost guaranteed



by the ethnic and cultural diversity of the San Jose State University student body.

Invitation letters were sent to 58 professors teaching General Education classes during the fall 1991 semester, and each was followed up with a phone call. A total of 8 professors were able to allow time for this project: 4 teaching Human Sexuality, 1 teaching Math 8, 2 teaching English 1A/1B, and 1 teaching English 100W. The Psychology Department invited me to use their pool of Psychology 1 students during a “research day” for which students receive class credit for each study they participate in. Data were collected during the fall 1991 and spring 1992 semesters.

Female students in Human Sexuality and English classes were surveyed during their regular class period. When the surveys had been completed, the researcher led an educational presentation on pelvic exams. Male students in these classes were asked to wait quietly while the women filled out the survey. Both male and female students were included in the educational presentation.

Students were surveyed outside of the Psychology 1 class as they came to an experiment room in the Psychology Department. This format did not allow the educational lecture, so printed educational materials were substituted here. Male students were not invited to participate in this format.

### Informed Consent

Approval to conduct the study was granted by the Institutional Review Board (IRB) Human Subjects Committee of San Jose State University (See Appendix A). Due to an unanticipated delay between data collection and analysis, the original approval by the Human Subjects Committee was lost. The copy found in this work (See Appendix A) was granted to the researcher after data collection. Consent for this study was obtained by the subjects tearing off the front page of the questionnaire, which contained information about the study and the human subjects approval process. Also included was a phone number for participants to call if they were interested in the results (See Appendix A). The researcher verbally assured subjects that their relationship with the professor or the University would not be effected by non-participation.

### Data Collection Methods and Instrument

The questionnaire, adapted from a University of California, San Francisco (UCSF) instrument used to determine adolescent risk-taking behaviors (Irwin and Millstein, 1986), had a total of 33 questions: nine general health questions, fourteen questions about sexuality, five demographic questions, and five original questions about pelvic exams (See Appendix B). Permission to use the UCSF instrument was granted verbally for the 1988 pilot study by Susan Irwin, MD, and by Nancy Adler, PhD, chair of the department of Health Psychology at UCSF.

The original pelvic exam questions were arranged as follows: first a question asking if the participant knows what a pelvic exam is in a yes or no format, then two open-ended questions asking what happens in a pelvic exam and why women should have them, and one question about why women would avoid pelvic exams with some examples and space for respondents to write in their own answers. Finally, women were asked if they were offered a regular pelvic exam by their general practitioner, and if not, asked if they had been referred to a gynecologist.

This instrument was pilot tested on a Human Sexuality class consisting of 16 female and 6 male students, and then revised slightly to clarify some of the wording. While the male students were not the intended audience of this survey, they were able to give feedback on typographical errors and wording that was hard to understand.

The survey was limited to four pages to allow the subjects to complete it quickly and easily. In addition, most survey items were multiple choice, making them easier to answer. Although the intended audience was college women, the language used in the survey was as simple as possible to reduce the chance that questions would be misunderstood.

### Analysis Framework

The quantitative questionnaire items were assigned codes prior to data collection. The codes were built into the survey with numbers corresponding to particular responses. For the qualitative questionnaire

items, a codebook was developed to ensure consistent coding during data entry (See Appendix C).

Data were first examined to determine if the subject qualified for the study. Subjects were removed from the sample prior to analysis if they were not college-aged (17-27 years of age), were not San Jose State University students, or had borne children (and were therefore not typical college students). Qualifying responses were entered into a microcomputer database and analyzed using the Minitab statistics program for personal computers (Minitab v 10.1, 1994), supplemented with EpiInfo v 6.04 (1996) and LOGISTIC v 3.03E (1992).

Descriptive statistics were calculated to profile the sample and determine the knowledge, attitudes, and behaviors. Factors analyzed included health behaviors such as seeking regular physical examinations, visiting the dentist, exercise habits, diet habits, and seeking pelvic exams.

The dependent variable in this study was whether or not women were seeking regular pelvic examinations. The independent variables used to predict this behavior were: (a) previous sexual activity, (b) amount of other health services sought, (c) knowledge about pelvic exams, (d) perceived barriers to getting pelvic exams, (e) care in eating/exercising, (f) race, and (g) college major. Analysis was focused on the impact of the independent variables on pelvic exam behavior. Logistic regression was used to clarify the contribution of the independent variables and other variables found to be significant by chi-square testing.

## Validity and Reliability

Validity of the questionnaire was enhanced by the use of a previously validated instrument (Irwin & Millstein, 1986) as a base for this survey. In order to improve the validity of the original questions added to the instrument, responses were cross-checked by asking three different questions, assessing the subject's knowledge of pelvic examinations. The use of multiple formats, a simple yes or no question and two open-ended questions, enabled comparison of responses and a basic measure of content validity.

Reliability was monitored by the researcher personally administering all questionnaires. In addition, all directions to the subjects were given by the researcher in the same way, and there were ample opportunities for subjects to ask for clarification of questions.

Due to an unanticipated delay between data collection and analysis, a second sample (numbering 10% of the main sample) was collected at the time of analysis in order to maintain the validity of the results. The second sample was collected in a Health Science class with the brief presentation made to the class, including men, after the surveys were completed by the women. Second sample data were used to evaluate whether attitudes or behaviors had changed in the time between data collection and analysis, and were not used in the in-depth analyses.

## Summary

In this study, a cross-sectional research design was used to collect survey data from a group of female undergraduate college students about their knowledge, attitudes and behavior with respect to pelvic exams. General education classes were chosen as a base for subject recruitment to allow a sample similar to the overall campus population. If time allowed, a lecture on pelvic exams and cancer prevention was given; otherwise printed materials were substituted for the lecture. Questions regarding the students' knowledge about pelvic exams were set in both yes/no and free answer formats to increase the depth and validity of the information generated by the survey. Respondents were divided into two groups: those who seek pelvic exams regularly and those who do not. The two groups were then compared to determine the differences between them and to identify factors which impact the decision to seek or avoid pelvic exams. Finally, a logistic regression model was used to test the impact of the independent variables on pelvic exam behavior.

## Chapter 4

### RESULTS

#### Sample

Subjects were recruited through three types of General Education courses: Human Sexuality, English 1A/1B, and Psychology (most were from Psychology 1, but some other classes participated in the Psychology Department Research Day). A total of 251 questionnaires were distributed and all were completed. Comparison of the respondents to the eligibility criteria resulted in the elimination of 19 subjects. Respondents who were removed from the sample were those over 27 years of age (outside the definition of college-aged), those who had ever had a baby, and those who were not regular San Jose State University students. The final sample consisted of 232 female college students.

#### Second Sample

Due to an unanticipated delay between the time of original data collection and analysis, a second sample of 23 female undergraduate students was collected in a Health Science class. This was done to test the contemporary validity of the results. A total of 23 surveys were collected from female undergraduates in a Health Science class. All subjects in the second sample were between the ages of 20 and 25 and had never had a baby. No surveys had to be removed from the second sample before analysis.

The type of class available for the second sample was a more homogeneous group than the main sample: all but two participants were Health Science majors, the group was older, more knowledgeable about pelvic exams, and most were in their third or fourth year of college. Despite these differences, comparison of the two groups suggested that student experiences and attitudes regarding pelvic exams had not changed dramatically between the time of original data collection and the analysis, although the differences between the groups could be a limiting factor in the generalizability of the findings. The second sample was only used to test similarities in demographic characteristics and pelvic exam behavior, therefore it was not used in the more in-depth analysis. It may be noted, however, that the pelvic exam behaviors of the two groups were not found to be significantly different  $\chi^2(1, N = 23) = 1.43, p = .23$ .

### Demographics

Table 1 displays the range of races/ethnic groups, ages, and years in school, and Table 2 shows the college majors. Both the study sample and the 10% second sample are included in these tables.



Table 1

Sample Demographics For San Jose State University Female Undergraduates

| Demographic               | Main<br>Sample <u>n</u> | %   | Second<br>Sample <u>n</u> | %  |
|---------------------------|-------------------------|-----|---------------------------|----|
| Race/Ethnicity            |                         |     |                           |    |
| Asian/Pacific<br>Islander | 108                     | 47  | 16                        | 70 |
| Caucasian                 | 74                      | 32  | 5                         | 22 |
| Hispanic                  | 26                      | 11  | 1                         | 4  |
| African-American          | 12                      | 5   | 0                         | 0  |
| Native American           | 1                       | 0.4 | 0                         | 0  |
| Other                     | 11                      | 5   | 1                         | 4  |
| Year In College           |                         |     |                           |    |
| First                     | 72                      | 32  | 0                         | 0  |
| Second                    | 48                      | 22  | 0                         | 0  |
| Third                     | 69                      | 31  | 9                         | 41 |
| Fourth or more            | 33                      | 15  | 13                        | 59 |
| Age                       |                         |     |                           |    |
| 17-18                     | 54                      | 23  | 0                         | 0  |
| 19                        | 43                      | 19  | 0                         | 0  |
| 20                        | 40                      | 17  | 1                         | 4  |
| 21                        | 31                      | 13  | 5                         | 22 |
| 22                        | 23                      | 10  | 6                         | 26 |
| 23                        | 17                      | 7   | 3                         | 13 |
| 24-27                     | 23                      | 10  | 8                         | 35 |

Note. Percentages may not be equal to 100% due to rounding error. There was some confusion about "year in college", with some subjects putting the year they filled out the survey (i.e. 1992), therefore n total for this question in the main sample was 222, and in the second sample was 22. One subject in the main sample declined to state her age.

Of the main sample, more than three-quarters of subjects reported that they were Asian/Pacific Islander (70%) or Caucasian (22%). Year in school was spread across the four undergraduate years fairly evenly, with the fewest subjects (15%) in their fourth year or more. Only 9% of the main sample was made up of foreign students (meaning that they came from another country to go to school). The ages of the main sample ranged from 17 to 27 years, with 82% being between the ages of 18 and 22.

Aside from the absence of African-American subjects in the second sample, the general ethnic distribution was similar to the main sample. The year in school variable showed the second sample to be in their third and fourth years while the main sample was spread across all four years.

Correspondingly, the main sample had the largest number of subjects in the 17-19 year age range, the second sample having no subjects in that age range. This is not an unusual finding because the second sample was drawn from a college major entry course rather than the General Education courses used to recruit the main sample.

Table 2

College Majors Represented in Sample

| Major                        | Main<br>Sample <u>n</u> | %   | Second<br>Sample <u>n</u> | %   |
|------------------------------|-------------------------|-----|---------------------------|-----|
| Engineering/Comp.<br>Science | 20                      | 9   | 0                         | 0   |
| Biological Sciences          | 21                      | 9   | 0                         | 0   |
| Health Sciences              | 41                      | 18  | 21                        | 91  |
| Physical Sciences            | 2                       | 1   | 0                         | 0   |
| Humanities                   | 18                      | 8   | 1                         | 4   |
| Social Sciences              | 39                      | 17  | 0                         | 0   |
| Business/Accounting          | 39                      | 17  | 0                         | 0   |
| Liberal Arts                 | 22                      | 10  | 0                         | 0   |
| Education                    | 1                       | 0.5 | 0                         | 0   |
| Math/Economics               | 3                       | 1   | 0                         | 0   |
| Aviation                     | 1                       | 0.5 | 0                         | 0   |
| PE/Human Performance         | 5                       | 2   | 1                         | 4   |
| Double Major                 | 1                       | 0.5 | 0                         | 0   |
| Undeclared                   | 14                      | 6   | 0                         | 0   |
| Total Reporting              | 227                     | 98  | 23                        | 100 |

Note. Percentages may not add up to 100% due to rounding error.

A wide range of majors was represented in the main sample. Although three majors had more representatives than the others, their distribution was not overwhelming: 18% of the sample were classified as health-related majors, including Health Science, Pharmacy, Physical Therapy, Optometry, Nursing, and Occupational Therapy; 17% of the sample were classified as Social Science majors, which included Psychology, Sociology, Criminal

Justice, and Political Science students; another 17% were classified as Business or Accounting majors. The second sample was more homogeneous with 91% Health Science majors. This was because they were recruited from a Health Science major track course.

### Health Habits

Subjects rated their overall health, frequency of health maintenance exams, health insurance coverage, dietary habits, exercise habits, and average hours of sleep per night. Table 3 shows subjects' self-ratings of overall health.

Table 3

### Health Self-Ratings for a Sample of Female Undergraduate Students

| Rating    | Main<br>Sample <u>n</u> | %  | Second<br>Sample <u>n</u> | %  |
|-----------|-------------------------|----|---------------------------|----|
| Excellent | 53                      | 23 | 4                         | 17 |
| Good      | 156                     | 67 | 11                        | 48 |
| Fair      | 19                      | 8  | 8                         | 35 |
| Poor      | 4                       | 2  | 0                         | 0  |

Note. Main sample N = 232, Second sample N = 23.

In the main sample, 23% rated their overall health as excellent, 67% rated it as good, and 10% rated it as fair or poor. In the second sample, 17% rated their health as excellent, 48% rated it as good, and 35% rated it as fair or poor.

Table 4 shows how frequently main sample subjects presented for health maintenance exams. Table 5 shows how the main sample compares to the second sample in pelvic exam behavior.

Table 4

Health Maintenance Exams - Main Sample

| Exam     | <u>N</u> (%)       |                      |         |          |
|----------|--------------------|----------------------|---------|----------|
|          | Never or<br>Rarely | Every 2 – 3<br>Years | Annual  | Biannual |
| Physical | 70 (30)            | 56 (24)              | 84 (36) | 21 (9)   |
| Dentist  | 18 (8)             | 34 (24)              | 66 (29) | 113 (49) |
| Pelvic   | 118 (51)           | 13 (6)               | 87 (38) | 14 (6)   |

Note. Percentages may not add up to 100% due to rounding error. N Physical = 231, N Dentist = 231, and N Pelvic = 232.

In this sample, 49% reported seeing a dentist twice a year and 45% reported having a regular physical exam/check-up once or twice a year.

The dependent variable, having a gynecological exam/check-up, showed a bimodal distribution with 51% of the main sample never or very rarely having this exam and 38% having this exam once a year. Responses to this key variable were further classified during analysis as adequate pelvic exams (at least once a year) and inadequate pelvic exams (two or more years between exams).

Table 5

Comparison of Main Sample to Second Sample Pelvic Exam Behavior

| Sample  | <u>Adequate Exams</u> |       |
|---|-----------------------|-------|
|   | <u>n</u> /total       | (%)   |
| Main  | 101/232               | (44%) |
| Second  | 13/23                 | (56%) |
| <u>Note.</u> All participants answered this question. |                       |       |

The dependent variable, having a gynecological exam/check-up, showed a bimodal distribution in the second sample similar to that of the main sample, with 39% never or very rarely having this exam and 48% having this exam once a year. A chi-square test comparing the main sample to the second sample showed no significant difference:

$\chi^2(1, N = 255) = 1.43, p = .23$ . Because the second sample was collected only to check that the behavior of the population had not changed between data collection and analysis, the rest of this chapter will not include second sample data.

The mean amount of sleep per night was 6.86 hours, with a range of 4 to 11 hours and a standard deviation of 1.11. Table 6 shows subjects' self-reported diet and exercise behaviors.

Table 6

Self-Reported General Health Behaviors in a Sample of Female Undergraduates

| Behavior                       |        | <u>n</u> (%)      |          |         |          |             |
|--------------------------------|--------|-------------------|----------|---------|----------|-------------|
| Diet                           |        | Dietary Component |          |         |          |             |
| Relative Amount                |        | Fat               | Sugar    | Salt    | Fiber    |             |
| High                           |        | 17 (8)            | 37 (20)  | 31 (18) | 33 (18)  |             |
| Moderate                       |        | 134 (62)          | 115 (60) | 83 (47) | 116 (62) |             |
| Low                            |        | 67 (31)           | 38 (20)  | 63 (36) | 37 (20)  |             |
| Exercise                       |        |                   |          |         |          |             |
| Times Per Week [ <u>n</u> (%)] |        |                   |          |         |          |             |
| < 1                            | 1      | 2                 | 3        | 4       | 5        | 6 7         |
| 53 (23)                        | 21 (9) | 53 (23)           | 50 (22)  | 23 (10) | 16 (7)   | 6 (3) 9 (4) |

Note. Percentages may not be equal to 100% due to rounding error. N Fat = 218, N Sugar = 190, N Salt = 177, N Fiber = 186, and N Exercise = 231.

Overall, the sample reported a tendency to eat foods that are moderate to low in fat, moderate in sugar, moderate to low in salt, and moderate in fiber. Exercise habits are mixed in the sample, with 32% of the sample exercising one time per week or less, and 45% exercising three times per week or more. These data were self-reported and have not been validated.

Health Insurance

Eighty-three percent of the main sample respondents reported having health insurance, and 24% of this group reported having used San Jose State University's Student Health Service in the last year. Table 7 shows the health insurance to which students in this sample had access at the time of data collection.

Table 7

Insurance Coverage Reported by a Sample of Female Undergraduates

| Insurance Type |         |         |         |        |            | <u>n</u> (%)        |
|----------------|---------|---------|---------|--------|------------|---------------------|
| Private        | HMO     | Spartan | MediCal | Other  | Don't Know | Private and Spartan |
| 61 (32)        | 83 (43) | 2 (1)   | 14 (7)  | 17 (9) | 13 (7)     | 2 (1)               |

Note. Percentages may not equal 100% due to rounding error. N = 192.

Of those reporting health insurance coverage, the majority (43%) uses Kaiser or another HMO, with the next largest group (32%) having other private insurance. The low-cost Spartan Health Card (part of the San Jose State University Student Health Service) was being used by only 1% of the subjects.

Sexuality

Tables 8 to 11 outline the sexual behaviors reported by the sample, including length of relationships and contraceptive use.



Table 8

Self-Reported Sexual Behavior of a Sample of Female Undergraduate Students

| Activity / Behavior  | <u>n</u> /total | <u>Yes</u><br>% | <u>Don't</u><br><u>Know</u> |      |
|--|-----------------|-----------------|-----------------------------|------|
|  |                 |                 | <u>n</u>                    | (%)  |
| Intercourse  | 145/228         | 64              |                             |      |
| One-Night-Stand  | 35/149          | 24              |                             |      |
| Birth Control Pill   | 47/232          | 20              |                             |      |
| Have/Ever Had an STD   | 20/152          | 13              |                             |      |
| Intercourse With Primary Partner                                     | 117/150         | 78              |                             |      |
| Intercourse Outside Primary Partner                                  | 33/143          | 23              |                             |      |
| Does Your Partner Have Intercourse Outside the Primary Relationship? | 2/120           | 2               | 14                          | (12) |

Note. Percentages may not total 100% due to rounding error. Totals were varied as only subjects who had intercourse were asked to complete further questions about sexuality. It was assumed that subjects who had never had sex were not using the birth control pill.

In this sample, 64% responded that they had had sexual intercourse, and 36% responded that they had not. Of those who had sexual intercourse, 78% reported having a primary partner to whom they were committed, and 23% of the group having a primary partner reported that they sometimes had sex outside of this relationship. Only 24% of the group who had ever had sexual intercourse reported having more than two partners in the last year, and 24% had ever had a “one-night stand” (defined on the questionnaire as sex with someone you don’t know very well, usually only once).

Of those respondents who had ever had sexual intercourse, 20% were taking birth control pills, and 13% had been diagnosed with a sexually transmitted disease (STD).

Table 9

Intercourse Experience of a Sample of Female Undergraduates by Race/Ethnicity

| Race/Ethnicity         | <u>n</u> /total | % Having Intercourse |
|------------------------|-----------------|----------------------|
| Caucasian              | 56/74           | 76                   |
| African-American       | 12/12           | 100                  |
| Asian/Pacific Islander | 52/105          | 50                   |
| Hispanic               | 18/25           | 72                   |
| Other                  | 7/12            | 58                   |

Note. Percentages may not equal 100 due to rounding error.

Those of Asian race/ethnicity were the least likely to have had sexual intercourse, a result shown to be significant by  $\chi^2(4, N = 228) = 21.42, p = .00026$ .

Table 10

Length of Time Students Reporting a Primary Partner Have Been With That Partner

|          | < 6<br>months | 6 - 12 Months | 1 - 2 Years | 2 - 3 Years | > 3 Years |
|----------|---------------|---------------|-------------|-------------|-----------|
| <u>n</u> | 19            | 19            | 31          | 24          | 26        |
| <u>%</u> | 16            | 16            | 26          | 20          | 22        |

Note. Percentages may not equal 100% due to rounding error.

Of those respondents who reported having a primary sexual partner, 32% had been in that relationship one year or less, 46% had been in the relationship one to three years, and 22% had been in the relationship more than three years. While 23% of respondents said that they sometimes have sex outside their primary relationship, only 2 (2%) said that their partner sometimes had sex outside of the relationship and 14 (12%) were unsure whether their partner had sex outside the primary relationship.

Table 11 shows the contraceptive methods subjects reported using. Both the primary method used and any secondary methods used were specified in the questionnaire.

Table 11

Contraception Use Reported by a Sample of Female Undergraduate Students

| Contraceptive         | Method Used As |       |                  |      |
|-----------------------|----------------|-------|------------------|------|
|                       | <u>Primary</u> |       | <u>Secondary</u> |      |
|                       | <u>n</u>       | (%)   | <u>n</u>         | (%)  |
| Condom                | 55             | (38)  | 7                | (25) |
| Pill                  | 43             | (30)  | 2                | (7)  |
| Withdrawal            | 12             | (8)   | 12               | (43) |
| Diaphragm             | 1              | (0.7) | 0                | (0)  |
| Sponge                | 2              | (1)   | 0                | (0)  |
| Condom and Foam       | 4              | (3)   | 0                | (0)  |
| Norplant              | 1              | (0.7) | 0                | (0)  |
| Rhythm                | 1              | (0.7) | 3                | (11) |
| None                  | 4              | (3)   | 2                | (7)  |
| Pill and Condom       | 14             | (10)  | 1                | (3)  |
| Condom and Withdrawal | 6              | (4)   | 0                | (0)  |

Note. Condom and Withdrawal were not used simultaneously, but were listed as equally used birth control methods. N Primary = 144 and N Secondary = 28.

The majority of the sexually active respondents (38%) were using the condom as their primary form of birth control, with 30% using the pill, 8% using withdrawal, and the rest using other methods. In this sample, 26% reported that they used their primary method of birth control either “most of the time” or “sometimes”. Of those who reported that they did not always use their primary method, 25% used condoms as their usual alternate method, and 43% used withdrawal.

## Pelvic Exam Knowledge and Behavior

Table 12 shows the subjects' knowledge level with regard to pelvic exams. The results were derived from answers to two open-ended questions. Responses were reviewed and then coded by the researcher into three categories: didn't know, some idea, and complete knowledge (See Appendix C). Table 13 gives some examples of answers in each category.

Table 12

### Pelvic Exam Knowledge of a Sample of Female Undergraduate Students

| Question                | Knowledge Level   |      |                    |      |                  |      |                 |      |
|-------------------------|-------------------|------|--------------------|------|------------------|------|-----------------|------|
|                         | <u>Left Blank</u> |      | <u>Didn't Know</u> |      | <u>Some Idea</u> |      | <u>Complete</u> |      |
|                         | <u>n</u>          | (%)  | <u>n</u>           | (%)  | <u>n</u>         | (%)  | <u>n</u>        | (%)  |
| Describe A Pelvic Exam  | 26                | (11) | 51                 | (25) | 94               | (41) | 55              | (24) |
| Why Have A Pelvic Exam? | 21                | (9)  | 52                 | (22) | 101              | (44) | 58              | (25) |

Note. Percentages may not equal 100% due to rounding error. N = 232 because missing data were re-coded as "Left Blank".

When asked if they knew what a pelvic exam was, 62% of the sample said yes, 16% said no, and 22% were not sure. Subjects were asked to describe a pelvic exam, and answers were coded according to whether the subject left the item blank, tried to answer but didn't really know, had some idea but did not give a complete answer, or gave a complete answer (mentioning all aspects of the exam from the area of the body examined to the fact that it looks for infections and cervical cancer). Subjects were also asked why

women should have regular pelvic exams, and the answers were again coded by the above criteria.

In Table 13, some examples are given that demonstrate the way code numbers were assigned to answers given to the two open-ended questions. In coding these questions, the criteria were as follows: if the subject tried to answer the question, the answer was given a “1” to avoid labeling the answer as missing data or “left blank”; if the subject gave a reasonable but incomplete answer, it was coded as “2”; if the subject gave a complete answer (or included the missing details in answering the other question), it was coded “3”. The goal was to fairly code the knowledge presented even if it was written in answering the other question.

Table 13

Examples of Coded of Pelvic Exam Knowledge Questions

| Question                | Knowledge Level  |   |   |
|-------------------------|--|---|---|
|                         | Didn't Know<br>Scored as "1"   | Some Idea<br>Scored as "2"  | Complete<br>Scored as "3"   |
| Describe A Pelvic Exam  | A) "A very unpleasant exam. Not the most comfortable."<br>B) "It is when the doctor looks to see if anything is wrong."                                | A) "The doctor searches for disease in the vaginal area."<br>B) "When you go in to the doctor and he/she examines the inner and outer pelvic region looking for abnormalities." | A) "An exam in which a doctor examines a woman's vagina and cervix."<br>B) "The doctor examines the cervix and the ovaries. A lab test is taken to determine if there is any cancer of the cervix." |
| Why Have A Pelvic Exam? | A) "Sometimes there could be something wrong that the female is unaware of."<br>B) "I have no idea - maybe to check and make sure they can fertilize." | A) "Possibility of disease or pregnancy"<br>B) "If there is damage or disease, it should be detected early so treatment can start as soon as possible."                         | A) "To help control/prevent any cancers and/or STDs"<br>B) "So that women will be aware of their bodies and to prevent infections and cancer."  |

Note. The answers to the questions labeled A or B may not be from the same woman. Instead, A and B have been used to separate the two examples in each answer category for each question.

Please note that in the analysis of associations found later in this chapter these questions will be explored with respect to differences in knowledge and behavior between women of different ethnicity and sexual activity.

Table 14 shows respondents' perceptions of reasons why women would avoid a pelvic exam, using answers provided on the questionnaire. Subjects were also allowed space to write in other answers if they wished.

Table 14

Why a Sample of Female Undergraduates Reports Avoiding Pelvic Exams

| Reasons to Avoid Pelvic Exams | <u>n</u> | (%)  |
|-------------------------------|----------|------|
| 1 - Embarrassed               | 26       | (12) |
| 2 - Uncomfortable / Painful   | 31       | (15) |
| 3 - Unnecessary               | 20       | (10) |
| 4 - All Three                 | 79       | (37) |
| 5 - 1 and 3                   | 15       | (7)  |
| 6 - 1 and 2                   | 33       | (16) |
| 7 - 2 and 3                   | 7        | (3)  |

Note. N = 211 due to missing data. Percentages may not total 100 due to rounding error.

Reasons why a woman would avoid pelvic exams were collected by allowing subjects to circle any or all of 3 items: embarrassed, uncomfortable/painful, and don't think they need it. The numbers in Table 14 can be further analyzed to show that 53% of subjects circled item



number three (Don't think they need) either alone or in combination with other answers.

After circling any of the answers provided by the researcher, subjects were given space to write in any other reason that they could think of to avoid pelvic exams. These answers were numbered as they appeared for ease of analysis, with the repeats fit into broad categories, such as "financial" or "fear or results".

Table 15

Why Women Think Others Avoid Pelvic Exams

| Reason                            | <u>n</u> | (%)  |
|-----------------------------------|----------|------|
| Financial Reasons                 | 10       | (27) |
| Don't Know About Pelvic Exams     | 9        | (24) |
| Fear of Results                   | 8        | (22) |
| Fear of Procedure                 | 4        | (11) |
| Need To Take Time Off From Work   | 1        | (3)  |
| Cultural Reasons                  | 1        | (3)  |
| Discomfort with Male Practitioner | 1        | (3)  |
| "Feel Stupid"                     | 1        | (3)  |
| "Lazy"                            | 1        | (3)  |
| "No Fun"                          | 1        | (3)  |

Note. These answers were written in a space provided on the questionnaire. Percentages may not equal 100% due to rounding error. N = 37.

Table 15 shows answers written in by subjects in response to the question: "Why would some women avoid pelvic exams?" Among the reasons

suggested were finances, ignorance about the pelvic exam, fear of the results, fear of the procedure, and each of the following were suggested one time: “it is no fun”, uncomfortable with a male doctor, “feel stupid”, procrastination, cultural reasons, and taking time off from work.

Table 16 shows the relationship between pelvic exam behavior and having the practitioner a woman sees regularly either perform the pelvic exam or refer the woman to another practitioner for a pelvic exam. Participants were asked two questions: “does your regular practitioner do a pelvic exam/Pap smear at your yearly physical?” and “if No, does your physician refer you to a gynecologist?”

Table 16

Pelvic Exam Frequency When Performed by Regular Practitioner or  
When the Regular Practitioner Refers to Another Practitioner

| Exam Practitioner                | Yes (%) | <u>n</u> / <u>N</u> |
|----------------------------------|---------|---------------------|
| Pelvic by Regular Practitioner   | 33      | 73 / 220            |
| Referred To Another Practitioner | 40      | 58 / 145            |

Note. N is not equal to the total participants due to missing data. Women who answered yes to “does your regular practitioner do a pelvic exam at your yearly physical” did not answer the question of being referred to another practitioner.

Of those subjects who answered this question, 33% said that their regular practitioner does a pelvic exam at their yearly physical. Of the remaining respondents, 40% are referred to another practitioner by their regular

practitioner. Some respondents have no regular practitioner as evidenced by the 30% of the sample who never or very rarely have a yearly physical exam.

#### Analysis of Association - Pelvic Exam Behavior to Other Variables

The dependent variable, frequency of pelvic exams (categorized as adequate or inadequate), was compared to the other variables of the survey by chi-square tests. Particular attention was paid to the independent variables, which were: previous sexual activity, amount of other health services sought (having a regular physical exam and going to the dentist), knowledge about pelvic exams, perceived barriers to presenting for pelvic exams, care in eating/exercising, race, and major in college.

Significant results were seen when comparing pelvic exam behavior to having intercourse; taking the birth control pill; having ever had a sexually transmitted disease (STD); presenting for a yearly physical exam; having the practitioner at the yearly physical also perform a pelvic exam; having the practitioner at the yearly physical refer to another practitioner if he/she did not perform a pelvic exam; knowledge of what is involved in pelvic exams and why they are important; and race.

Chi-square tests between these factors and the dependent variable (having pelvic exams) were performed. Table 17 shows the sexual behaviors of subjects who reported seeking pelvic exams at adequate frequencies.

Table 17

Cross-Tabulation of Significant Variables to Seeking Regular Pelvic Exams –  
Self-Reported Sexual Behaviors

| Variable        | Adequate Pelvic Exams |      | $\chi^2$ | df | p Value |
|-----------------|-----------------------|------|----------|----|---------|
|                 | N/total               | (%)  |          |    |         |
| Had Intercourse |                       |      | 53.64    | 1  | < .0001 |
| Yes             | 90/145                | (62) |          |    |         |
| No              | 10/83                 | (12) |          |    |         |
| Pill            |                       |      | 71.08    | 1  | < .0001 |
| Yes             | 54/60                 | (90) |          |    |         |
| No              | 47/172                | (27) |          |    |         |
| STD             |                       |      | 8.70     | 1  | .0032 * |
| Yes             | 18/20                 | (90) |          |    |         |
| No              | 73/132                | (55) |          |    |         |

Note. Percentages may not equal 100% due to rounding error. \* Marginally significant value.

Comparing having had sexual intercourse to pelvic exam behavior produced  $\chi^2(1, N = 228) = 53.64, p < .0001$ , a significant result. For ever having a sexually transmitted disease, a value of  $\chi^2(1, N = 152) = 8.70, p = .0032$  was obtained, showing a marginally significant result. Being on the pill is highly significant with  $\chi^2(1, N = 232) = 71.08, p < .0001$ . In this sample, subjects who had had sexual intercourse were more likely to have adequate pelvic exams than subjects who had not had intercourse. Subjects who were

taking the birth control pill were more likely to have pelvic exams than those who were not, and subjects who have had an STD were more likely to have adequate pelvic exams than were subjects who had not had an STD.

Table 18

Cross-Tabulation of Significant Variables to Seeking Regular Pelvic Exams - Exams and Practitioners

| Variable                            | <u>Adequate Pelvic Exams</u> |      | $\chi^2$ | df | p Value |
|-------------------------------------|------------------------------|------|----------|----|---------|
|                                     | <u>n/total</u>               | (%)  |          |    |         |
| Yearly Physical                     |                              |      | 51.79    | 3  | < .0001 |
| Rarely                              | 14/70                        | (20) |          |    |         |
| 2-3 Years                           | 17/56                        | (30) |          |    |         |
| Annual                              | 54/84                        | (64) |          |    |         |
| Biannual                            | 15/21                        | (71) |          |    |         |
| Pelvic Exam By Regular Practitioner |                              |      | 46.06    | 1  | < .0001 |
| Yes                                 | 55/73                        | (75) |          |    |         |
| No                                  | 40/147                       | (27) |          |    |         |
| Referral By Regular Practitioner    |                              |      | 30.20    | 1  | < .0001 |
| Yes                                 | 31/58                        | (53) |          |    |         |
| No                                  | 10/87                        | (12) |          |    |         |

Note. Percentages may not equal 100% due to rounding error.

Having yearly physical exams and having pelvic exams were shown to be significantly related by  $\chi^2(3, N = 231) = 51.79, p < .0001$ . Having the

pelvic exam done as part of a yearly physical gave

$\chi^2(1, N = 220) = 46.06, p < .0001$ , a significant result. Having the regular physician refer to a gynecologist produced

$\chi^2(1, N = 145) = 30.20, p < .0001$ .

The more often a subject reported presenting for a regular physical exam, the more often she reported having a pelvic exam. Having the pelvic exam performed by the woman's regular practitioner is associated with more women seeking exams than those who are not offered the exam by the regular practitioner or do not have a regular practitioner. If the regular physician does not do a pelvic exam, but does refer the woman to another practitioner, more women seek pelvic exams.

Table 19

Cross-Tabulation of Significant Variables to Seeking Regular Pelvic Exams -  
Pelvic Exam Knowledge

| Variable        | <u>Adequate Pelvic</u><br><u>Exams</u> |      | $\chi^2$ | <u>Df</u> | p Value |
|-----------------|--|------|----------|-----------|---------|
|                 | n/total                                | (%)  |          |           |         |
| Know Pelvic     |  |      | 48.87    | 2         | < .0001 |
| Yes             | 88/141                                 | (62) |          |           |         |
| No              | 4/37                                   | (11) |          |           |         |
| Not Sure        | 9/49                                   | (18) |          |           |         |
| Describe Pelvic |  |      | 31.22    | 3         | < .0001 |
| Blank           | 10/26                                  | (38) |          |           |         |
| Didn't Know     | 12/57                                  | (21) |          |           |         |
| Some            | 39/94                                  | (42) |          |           |         |
| Complete        | 40/55                                  | (73) |          |           |         |
| Why Have Pelvic |  |      | 35.84    | 3         | < .0001 |
| Blank           | 7/21                                   | (33) |          |           |         |
| Didn't Know     | 12/52                                  | (23) |          |           |         |
| Some            | 38/101                                 | (38) |          |           |         |
| Complete        | 44/58                                  | (76) |          |           |         |

Note. Percentages may not equal 100% due to rounding error.

Table 19 shows the association between having regular pelvic exams and participant knowledge about the pelvic exam. Self-report of knowing or not knowing what a pelvic exam is showed a significant result of  $\chi^2(2, \underline{N} = 227) = 48.87, p < .0001$ . The open-ended question “describe a pelvic exam” was also significant with  $\chi^2(3, \underline{N} = 232) = 31.22, p < .0001$ .

Additionally, the open-ended question “why should women have pelvic exams” produced  $\chi^2(3, N = 232) = 35.84, p < .0001$ , a significant result.

A subject who reported that she knew what a pelvic exam was also presented for pelvic exams with a higher frequency than a woman who either reported that she did not know what a pelvic exam was or that she was not sure. The open-ended question “describe a pelvic exam” showed that subjects who were able to fully describe the exam were more likely to present for regular exams than were any of the other categories. Subjects who left the question blank presented for exams at a rate between those who showed some knowledge of the exam and those who showed no knowledge of the exam. The open-ended question “why should women have a pelvic exam” also showed that the more complete the answer, the more often the woman presented for pelvic exams. Again, the subjects who left the question blank presented for pelvic exams at a rate between those who had no knowledge and those who had some knowledge.

Table 20 shows the relationship between reasons to avoid the pelvic exam and pelvic exam behavior.



Table 20

Cross-Tabulation of Reasons Why Women Avoid Pelvic Exams to Seeking  
Regular Pelvic Exams

| Reasons To Avoid Exams         | <u>Adequate Exams</u> | <u>Adequate Exams</u> |
|--------------------------------|-----------------------|-----------------------|
|                                | n / Total             | %                     |
| 1 – Embarrassed                | 7 / 26                | 27                    |
| 2 – Uncomfortable /<br>Painful | 17 / 31               | 55                    |
| 3 – Unnecessary                | 4 / 20                | 20                    |
| 4 - All Three                  | 40 / 79               | 51                    |
| 5 - 1 and 3                    | 9 / 15                | 60                    |
| 6 - 1 and 2                    | 18 / 33               | 54                    |
| 7 - 2 and 3                    | 2 / 7                 | 29                    |

Note. Overall n total = 211 due to missing data. Percentages may not equal 100% due to rounding error.

Chi-square testing of this table type is not valid. However, looking at the percentages, those subjects who circled only that some women think the pelvic exam is unnecessary were also the least likely to seek regular pelvic exams. The next lowest rate of presenting for pelvic exams was among those subjects who circled only that some women find pelvic exams embarrassing, followed by those who thought some women found pelvic exams to be both uncomfortable and unnecessary. The highest rate of pelvic exam presentation was found among women who thought that some women would avoid pelvic exams because they find them embarrassing and unnecessary.

Table 21 shows the association between having had sexual intercourse and reasons to avoid the pelvic exam.

Table 21

Cross-Tabulation of Having Sexual Intercourse to Reasons Why Women Avoid Pelvic Exams

| Reasons To Avoid  | <u>Had Intercourse</u> | <u>Had Intercourse</u> |
|-------------------|------------------------|------------------------|
|                   | <u>n</u> / Total       | %                      |
| 1 - Embarrassing  | 14 / 26                | 54                     |
| 2 - Uncomfortable | 23 / 30                | 77                     |
| 3 - Unnecessary   | 8 / 19                 | 42                     |
| 4 - All Three     | 51 / 77                | 66                     |
| 5 - 1 and 3       | 11 / 15                | 73                     |
| 6 - 1 and 2       | 25 / 33                | 76                     |
| 7 - 2 and 3       | 4 / 7                  | 57                     |

Note. Percentages may not equal 100 due to rounding error.

The chi-square value for a table of this type is not valid. However, again, looking only at the percentages, it can be seen that subjects who had had sexual intercourse are more likely to report that women may avoid pelvic exams because they are uncomfortable. These subjects are also more likely to report that women may avoid pelvic exams as a result of a combination of feeling uncomfortable and embarrassed or as a result of a combination of finding pelvic exams embarrassing and unnecessary. Subjects who had not

had sexual intercourse were more likely to report that women may avoid pelvic exams because they are unnecessary.

Table 22 shows the relationship between race/ethnicity and pelvic exam behavior. It may be noted again that there were more Asian women in this sample than any other race or ethnicity.

Table 22

Cross-Tabulation of Significant Variables to Seeking Regular Pelvic Exams - Race/Ethnicity

| Variable    | <u>n</u> / Total | (%) Adequate | $\chi^2$ | <u>df</u> | p Value |
|-------------|------------------|--------------|----------|-----------|---------|
| Race        |                  |              | 51.63    | 4         | < .0001 |
| Asian       | 21 / 108         | (19)         |          |           |         |
| Caucasian   | 50 / 74          | (68)         |          |           |         |
| Hispanic    | 13 / 26          | (50)         |          |           |         |
| African-Am. | 10 / 12          | (83)         |          |           |         |
| Native Am.  | 0 / 1            | (0)          |          |           |         |
| Other       | 7/11             | (64)         |          |           |         |

Note. Percentages may not equal 100% due to rounding error. N = 232.

Race/ethnicity compared to pelvic exams was also significant,  $\chi^2(4, N = 232) = 51.63, p < .0001$ . Asian women made up the largest part of the sample (47%), and had the lowest rate of presentation for pelvic exams (19%). The next lowest rate of presentation for pelvic exams was among Hispanic women, who had a rate of 50% (this does not include the Native American rate because only one individual fell into that group). The

African-American women in this sample had the best rate at 83%, although this may not be representative due to the small size of the sample (12 individuals) and the fact that the majority of this group was from a health-related major.

### Logistic Regression

Data analysis using logistic regression was performed using variables derived from the independent variables listed in Chapter 3: previous sexual activity, amount of other health services sought, knowledge about pelvic exams, care in eating/exercising, race, and major in college. Variables that were found to be insignificant by chi-square testing were left out of the model. These were diet, exercise, and major in college. Some additional variables found to be significant by chi-square testing were added into the model. The final eight variables used in the regression analysis were: (a) Having had sexual intercourse, (b) being on the pill, (c) having had an STD, (d) going to the dentist, (e) having a regular yearly physical exam, (f) having the regular practitioner do a pelvic exam, (g) being of Asian race, and (h) knowledge of pelvic exams (derived from adding the scores from the two open-ended questions “Describe a pelvic exam” and “why do you think women should have pelvic exams?”).

Table 23 shows the odds ratios (with 95% confidence intervals) and p values for the 8 variables used in the logistic regression model.

Table 23

Odds Ratios (ORs) with 95% Confidence Intervals (CIs) for Logistic Regression  
of Variables Used to Describe Pelvic Exam Behavior

| Variable                    | OR    | 95% CI       | p     |
|-----------------------------|-------|--------------|-------|
| Had Sexual Intercourse      | 4.05* | 1.61 - 10.22 | .003  |
| Using Birth Control Pills   | 5.82* | 1.98 - 17.04 | .001  |
| Having Had an STD           | 5.14  | 0.60 - 43.78 | .13   |
| Seeing the Dentist          | 1.48  | 0.91 - 2.39  | .11   |
| Having a Physical Exam      | 2.44* | 1.50 - 3.94  | .0003 |
| Pelvic by Reg. Practitioner | 3.36* | 1.32 - 8.53  | .01   |
| Being of Asian Descent      | 0.19* | 0.07 - 0.48  | .0005 |
| Knowledge of Pelvic Exam    | 1.26  | 0.98 - 1.62  | .07   |

Note. \* = Significant odds ratios. Knowledge is marginally significant. The variable STD is suggestive, but not significant.

The result of the logistic regression shows that some combination of the 8 variables is strongly associated with pelvic exam behavior

(log likelihood = -78.38, likelihood ratio = 160.97,  $p < .0001$ , 8 df). Using the  $p$  values associated with each variable, it is possible to see that two variables from the model, seeing the dentist and having had an STD, were not significant. In addition, with  $p = .07$ , the variable knowledge of pelvic exams (describe exam + why exam) was only marginally significant

Looking at the remaining 5 variables, it can be seen that having had sexual intercourse, using the pill, having a regular physical exam, and having the

pelvic exam done by the regular practitioner all contribute to having more regular pelvic exams done. Being of Asian race contributes to having fewer pelvic exams done.

## Chapter 5

### DISCUSSION

This study sought to determine whether a group of college-aged women were following the American Cancer Society recommendations for having a pelvic exam and Pap test on a yearly basis. If it was found that the sample was not seeking yearly pelvic exams, further questions on the survey attempted to find out why. The results shown in the previous chapter showed that 51% of this sample was not seeking regular pelvic exams, and outlined some possible reasons why.

It is perhaps most useful to use the outcome of the logistic regression as a model for looking at pelvic exam behavior. It is clear that many factors contribute to seeking or avoiding pelvic exams. The variables with the biggest impact in this study were having had sexual intercourse, using the pill, having a regular physical exam, having the regular practitioner do the pelvic exam, and being of Asian race.

#### Data Analysis Limitations

In addition to the limitations discussed in Chapter 1, additional limitations to this study were discovered during data analysis. These limitations arose from missing data or incomplete answers by subjects, format of questions, misunderstanding of questions by subjects, ambiguous wording of questions, and questions left out of the survey by the researcher.

The first limitation was that some questionnaires were returned without being completely filled in. While subjects who had never had sexual intercourse were asked to bypass the section about sexual behaviors, subjects who were sexually active were given the option of skipping any question that made them uncomfortable, and for some this included questions about sexuality. Subsequently, this part of the analysis had to be done on less than the total sample.

Another limitation was the assumption by the researcher that subjects who had never had sexual intercourse were not using the birth control pill. This could be a limitation because some women are prescribed the birth control pill for irregular periods or other conditions unrelated to contraception. This caused a potential loss of valuable data that might have shown a subclass of women who were not sexually active but were required to have a yearly pelvic exam because they were using birth control pills.

A third limitation was that some subjects did not understand the open-ended questions. This was most evident on question #26, "Why do you think women should have regular pelvic exams?" Several respondents answered "yes" to this open-ended question. It seems that some may have read this question as "Do you think women should have regular pelvic exams?" Also, upon re-reading question #26, it was noted that the wording could lead women to think of positive reasons for having pelvic exams, when, if left on their own, the same women might say that pelvic exams are unnecessary. As a result, some women may have left this question blank because they could not think of a positive reason for pelvic exams, and that



means lost data. This limitation may have also contributed to a less negative picture of pelvic exams than the subjects might have otherwise painted.

It was difficult to score the open-ended questions (#25 and #26) because some participants implied that they knew more than they were writing, yet were sloppy in answering the questions. The answers could only be coded based on what was written rather than what was implied. Therefore, some subjects were likely to have been given lower knowledge scores than they deserved. It is also possible that some subjects were given higher knowledge scores than they deserved because they were clever at wording their answers.

In question #27, “does your regular physician do a pelvic exam/Pap smear at your yearly physical?”, it should be noted that more accurate information could have been gathered by adding the option “I have no regular practitioner” to the response options. This question is also limited by the language used - the word “physician” might have caused women to answer this question differently than if it had been worded “does your regular practitioner (doctor, midwife, nurse-practitioner, etc.) do a Pap smear at your yearly physical”. Similarly, it might have also been helpful to include the possibility that a woman’s regular practitioner is a gynecologist rather than a general practitioner.

Question 7, “which of the following best characterize your eating patterns over the last year?”, also appears to have been frequently misinterpreted. The dietary elements (fat, sugar, salt, and fiber) were all presented in one question asking the subject to circle “high”, “moderate”, or “low” for each

dietary item. Because of this, some subjects failed to circle a category for each element. For example, a subject might have circled “moderate fat” and ignored sugar, salt and fiber intake, apparently thinking that the question had been answered.

About 5% of the main sample misread the line in the demographics section titled “year in school” and gave the year they were completing the survey, which contributed to missing data. However, this is not a serious threat to the validity of the data as it is not a critical variable.

Because no questions were asked about subjects’ feelings regarding cervical cancer, it is not possible to include that as a variable in the analysis. This could turn out to be a severe limitation because it has been shown in past research that fear can be a powerful motivator, influencing the subject to avoid thinking about the disease under study. Dignan, et al. (1990) found that fear leads to fatalistic thinking (that is, cancer equals death or possibly disfiguring treatments), and this leads to an avoidance of discussing cancer. In the present study, including an item about cervical cancer could have added the dimension of avoiding pelvic exams due to fear to the data analysis. As it is, a few women did write in that fear of Pap test results might deter women from having pelvic exams.

### Limitations of Second Sample Methodology

Due to the length of time between original data collection and analysis, a ten percent second sample was collected to improve the validity of the results. The second sample was intended to make sure that the San Jose

State University campus population had not changed much in the intervening five years, and that the survey results would still have relevance for college health services. One problem with this second sample strategy was that it was difficult to approach several classes for a random sample of their female students. Taking a few participants from each class would be both time consuming and potentially insulting for the majority of the class members. For this reason, the second sample was drawn from only one class, and that caused it to be more homogeneous than the main sample.

During this study, many lessons were learned. However, none of the limitations that emerged during data collection and analysis significantly compromised the insight offered by the 232 respondents. Indeed, the limitations of this study will translate to improvements in the next phase of this research.

### Background

The driving question, which prompted this research, was whether a sample of college women from San Jose State University would turn out to be similar to women surveyed at the University of California, Berkeley in their avoidance of pelvic exams. In the previous study (Wilson, 1988), approximately half of the female respondents failed to seek adequate pelvic exams even though they sought yearly physicals and dental exams regularly. In the present study, a similar result was noted: 51% of the sample reported that they never or very rarely had a pelvic exam, while 30% reported never or very rarely having a yearly (regular) physical, and only 8% reported never or very rarely visiting their dentist.

The similarities between the two university populations shows both that college women have not changed much during the four years between studies and that women on two different college campuses are not very different in this regard. It is possible that the two colleges being in the same part of the country has something to do with this result. Focusing the second study on this one health issue (pelvic exams) was useful because it showed a tendency to avoid pelvic exams and began to shed some light on why women might avoid these exams.

### Preventive Health Behaviors

A paper by Norman et al. (1991), looked at the multidimensional thinking behind preventive health behaviors.

... reflecting the findings that preventive health behavior encompasses primary and secondary prevention, active and passive approaches, sustained behavior (toothbrushing), sporadic behavior (check-ups), and one-time behavior (immunizations). Individuals who think of preventive health behavior primarily as taking charge of one's health in an active or direct way - for example, with good nutrition, exercise, and getting enough sleep - may not be as inclined to view visiting the doctor for a check-up as a component of preventive health behavior. Other individuals may view the direct and indirect components of preventive health behavior as equally important. (p. 223)

In the current study, as in the past pilot study (Wilson, 1988), there was a clear difference between the way women sought pelvic exams and the way they sought other preventive health examinations. Because low cost examinations were available through San Jose State University, and because

83% of the sample reported having some kind of health insurance, cost should not be a barrier to having pelvic exams for the majority of this population. This sample appeared to pay attention to getting enough sleep, eating a good diet, and exercising - perhaps this allows them a sense of being healthy that would account for disregarding basic preventive examinations. That would be consistent with the words of Norman et al. above. Feeling that one is healthy can not be the whole picture, however, as it does not explain the difference between regular physical examinations and pelvic examinations.

### Knowledge, Attitudes, and Behavior Towards Pelvic Exams

The inconsistency between seeking dental exams and physical exams but not pelvic exams, as reported by participants in this study, might be explained by the related knowledge, attitudes, and behavior shown by the respondents. The following discussion illuminates the relationships between respondents' pelvic exam behaviors and some of their other behaviors as well as their attitudes towards the pelvic exam. It is useful to use the Health Belief Model here as an added dimension towards explaining the data produced by this research.

### Sexuality and Attitudes Towards Pelvic Exams

One factor that is likely to have had an influence on the findings is that 36% of the sample reported that they had never had sex. Not being sexually active might lead young women to think they do not need to have pelvic exams. Indeed, the chi-square of pelvic exam behavior related to having had

sex was significant. This variable must be complicated, however, by those subjects also using the birth control pill, because this birth control choice requires a yearly pelvic exam to renew the prescription.

In the study sample, 53% of the subjects specifically circled “don’t think they need [them]” (either alone or in combination with other answers) in response to the question “why would some women avoid pelvic exams?”, and this could be part of the complex explanation for why so many women avoid these exams. Women who circled only “don’t think they need [them]” (9% of the total sample) were less likely to have had adequate pelvic exams than those who circled other reasons or multiple reasons. This group was also the least likely to have had sexual intercourse. These factors together suggest that women who have not had sexual intercourse are more likely to think that they do not need pelvic exams, even though the American Cancer Society guidelines state otherwise. While women who are sexually active are at higher risk of cervical cancer, women who are not sexually active are not immune to it.

One of the most common write-in answers to the question “why would some women avoid pelvic exams?” was “don’t know about pelvic exams”, which might indicate that women do not know what they are and why they are important. Another commonly included write-in answer was that women are “scared of the results”, which is consistent with research showing that fear of finding out you have cancer can dissuade people from seeking cancer screenings even when there is a good chance of a cure for that type of cancer.

In this sample, 37% of women circled all three of the answers offered as possible deterrents to seeking a pelvic exam - these were “embarrassed”, “uncomfortable/painful”, and “don’t think they need [them]”. This clearly indicates that for more than a third of the sample the pelvic exam is seen as something which is difficult at best to go to. While the pelvic exam may not be all of these things to each of those individuals, they can picture another woman avoiding a pelvic exam because of them.

It made sense that having a sexually transmitted disease (STD) would give a woman the feeling that she is not immune to disorders of the reproductive system. Add that a practitioner might have told her that she is at higher risk of cervical cancer, and this would account for the chi-square result from this survey that subjects who had been treated for an STD were more likely to seek regular pelvic exams, although the logistic regression showed this variable to be only suggestive, not significant.

Using the birth control pill was also a significant predictor for having regular pelvic exams, for the simple reason that having a yearly pelvic exam has been mandatory in the past for renewal of the birth control pill prescription. Unfortunately, this could change as this researcher has heard through the grapevine that the pill is now being dispensed in some areas without the required exam to help reduce the unwanted pregnancy rate. The cervical cancer consequences of this action could be tragic! Further, dispensing prescriptions for the birth control pill without a pelvic exam could have an impact on the diagnosis of STDs and pelvic inflammatory disease, which could in turn cause a rise in infertility problems later.

## Other Exams and Pelvic Exams

Women in this study who had a yearly physical exam were more likely to also have a yearly pelvic exam. This finding is consistent with previous studies which have found that people who believe that preventive health exams are necessary for good health will be more likely to present for cancer screenings in general. However, this does not explain why some women who have a yearly physical do not seek pelvic exams as well. The answer to this question must lie in a distillation of all the factors.

Having a general practitioner offer a pelvic exam at the time of a yearly physical or give a referral to a specialist have been shown by past research to improve consent to the pelvic exam and attendance for future pelvic exams, so it is not surprising to find these factors represented in this study as well. In this sample, 33% of women reported having a pelvic exam done by the practitioner at a yearly physical exam. This group is more likely to have a pelvic exam than women who do not have a regular practitioner do the exam. Further, if the regular practitioner does not do a pelvic exam but does refer to another practitioner, 40% more women will have a pelvic exam that otherwise might not have.

Women who report that they do not know or are unsure about what a pelvic exam is may not understand the importance of the exam, or that it is necessary for them to have one. It is easy to see that women who do not have knowledge of pelvic exams and what they are for would not recognize that they should seek pelvic exams on a regular basis.



The association between knowing what a pelvic exam is, or self-report of that knowledge, presents a “chicken and egg” problem. In other words, which came first - having pelvic exams or knowing about pelvic exams? It makes sense that a woman must have some reason to have the first pelvic exam, but the more exams she has the more she might know about the procedure and why it is being done. This is harder to measure than the fact that women who know more were presenting more often for exams. Indeed, the logistic regression result implies that knowledge of pelvic exams is a confounded variable, only marginally significant when it is separated from being sexually active.

It is possible that further investigation would reveal cultural reasons for the last significant factor: in this sample, being of Asian descent was highly associated with not seeking regular pelvic exams. Certainly part of the answer lies in the finding that not being sexually active was associated with having fewer pelvic exams, and the Asian group was less likely than the overall sample to be sexually active. Yep (1993) noted that Asian cultures view illness, death, and sexuality as taboo topics. This makes education about any potentially deadly illness related to sexual parts of the body very difficult to present effectively to this audience. This study did not address the variety of Asian cultures that are represented in the sample, and it is possible that very different results would be found in different groups of Asians. Groups that could have been present in this sample include Filipino, Vietnamese, Chinese, Korean, Japanese, and Thai, among others. It was also possible that Asian respondents might represent a wide range of

women from recent immigrants through fourth generation United States residents.

### Analysis With Health Belief Model Constructs

The Health Belief Model helps put the analysis of this study into a theoretical perspective, although the limitations of the model have made it less useful as the basis for the survey design. Certainly, the methodology of this study has been influenced by the constructs of the Health Belief Model. Each of the five components of the Health Belief Model is addressed below in the context of this survey.

#### Perceived susceptibility

Do women feel susceptible to sexually transmitted diseases (STDs) or cervical cancer? Some answers to this question can be drawn from these results. Specifically, since many subjects circled “don’t think they need [them]”, in response to why women might avoid pelvic exams, it can be concluded that there is a group of women who do not feel susceptible to STDs or cervical cancer. Although the chi-square test between the question “why would some women avoid pelvic exams” and reported pelvic exam behavior was not valid, it should still be noted that in the category of women who circled only the answer “don’t think they need [them]”, only 20% were having pelvic exams on at least a yearly basis. Of the other 80%, all reported “never or very rarely” having pelvic exams.

### Perceived barriers

Are pelvic exams seen as so unpleasant that the benefits are not worth the discomfort? Certainly, many women are not seeking regular pelvic exams, and this fact placed beside the list of reasons to avoid the pelvic exam shows that barriers could indeed be part of the picture. Over one-third of the sample circled all three of the options listed by the researcher (embarrassing, uncomfortable/painful, and don't think they need [them]) as reasons why women would avoid pelvic exams, indicating that they can certainly picture someone avoiding the exam for these reasons. It is not too far of a stretch to generalize that participants in the study would mostly select reasons that were applicable to themselves, although some answers would have to be what they imagine other women might feel.

### Cues to action

Do health practitioners give women the message that pelvic exams are an important part of their health care? It is clear from this study that when health practitioners either offer to perform a pelvic exam, or refer to another practitioner, women are more likely to have a pelvic exam. This could be due to many factors, including: mentioning the exam reminds the woman to have one, respect for the advice of a regular practitioner influences the decision to have a pelvic exam, respect for any authority could cause the woman to have an exam she might not choose otherwise, or perhaps the convenience and cost savings of having the pelvic exam done with a regular physical influences women to give consent.

### Perceived severity

Do women think sexually transmitted diseases (STDs) or cervical cancer are dangerous to health or social standing? None of the questions in this study address women's feelings towards STDs or cervical cancer. It is, therefore, not possible to include this factor in the current analysis.

### Perceived benefits

Do women believe that pelvic exams are an effective way to reduce health problems? Again, the current research did not address this question.

The fact that some subjects have regular pelvic exams points to the conclusion that they must think that this exam has merit, and the reasons for that are likely to be a combination of all the above points.

### Insight From Current Research

The instrument for this study was written in 1991 and data collection commenced in 1992. For this reason, the literature review (Chapter Two) did not include references closer to the present date. However, the study data can be revisited in light of some interesting developments since data collection.

In Chapter Two, the recommendation for Pap test frequency was reported using the "Cancer Facts and Figures" publication (ACS, 1992). An updated version of the "Cancer Facts and Figures" publication has since been released (ACS, 1996). The recommendation has not changed in that time:

women over 18 years of age or who are sexually active should have a pelvic exam and Pap test annually. After three consecutive exams with normal findings, the practitioner may perform the test less frequently for that individual. Also reported in that publication, from 1962 to 1992, the death rate from cervical cancer dropped 67% (ACS, 1996).

In a study of girls in the tenth grade, Jubelirer et al. (1996) found that those who were sexually active were more likely to know something about the Pap test. Most of their sample had heard of cervical cancer and the Pap test, but could not specifically describe the pelvic exam. Barriers to seeking pelvic exams included: embarrassment, pain/discomfort, fear of cancer, fear that parents would discover they were sexually active, and cost. The authors emphasized that adolescent girls should be given better education to help them overcome the barriers to obtaining pelvic exams.

Wilcox and Mosher (1993) examined rates of screening tests taken by women aged 15-44 years who had participated in the National Survey of Family Growth in 1988. They found that 67% of their sample reported undergoing a Pap test or pelvic exam in the previous 12 months. In addition, they discovered that of those women who had a family planning service visit, more than 90% had been given a Pap test. These authors concluded that regardless of risk status, those women who are generally less likely to use health services are also those who are less likely to have screening tests of any type. Women identified as being least likely to seek health services included: those with little education, those with low income, and women of American Indian, Hispanic, or Asian/Pacific Islander descent.

Najem et al. (1995) studied a group presumed to be knowledgeable about disease prevention: medical, dental, and nursing students. This group of students was found to have higher than average compliance with many health promotion behaviors, including healthy eating, low rate of smoking, low rate of heavy alcohol consumption, and high rates of breast exams and pelvic exams. They report that 79% of female students had regular pelvic exams. These authors seem surprised that over 27% of undergraduate nursing students and 14% of all female students had never had a Pap test. The reasons given most often why subjects had never had a pelvic exam or Pap test were that they did not think these were necessary for them, and that they believed they were not at risk.

The Pap test was used as a factor influencing compliance with screening mammography in a study by Beaulieu et al. (1996). This study was also applicable to this literature review as it used Health Belief Model variables in the analysis of mammography compliance. Regular Pap testing was associated with a higher level of compliance with mammography, and this is consistent with the body of literature found in Chapter Two. Perceived barriers to obtaining a mammogram were the only parts of the Health Belief Model which were found to effect mammography compliance. The barriers identified in this study were fear of the procedure or the results, and time constraints/losing time from work. Similar reasons have been found for why women avoid pelvic exams, as cited in the main Literature Review.

In a study of Asian-American college students, Yep (1993) found that HIV preventive behaviors are influenced by the severity of the threat to health,

the barriers to practicing these behaviors, and some aspects of Asian culture. The author suggests that the predictive power of the Health Belief Model could be improved by incorporating cultural factors into any tests of the model. It was found that perceived susceptibility was not a factor in HIV preventive behavior adoption by this population, possibly because many young people do not see themselves as vulnerable to diseases of any kind. Optimistic bias was noted as another reason the sample did not feel susceptible to HIV - like many other populations, they may be underestimating their personal risk. Perceived benefits of HIV preventive behaviors turned out to be positively associated with the actual practice of these behaviors.

In a discussion useful to the current research, Yep points out that “some Asians appear to believe that thinking about illness and death, taboo topics in Asian cultures, may become a self-fulfilling prophecy” (p. 199). Further, it is suggested that health messages directed at this group should emphasize the positive aspects of behavior change. It is also noted that Asians are often inhibited about publicly discussing sexuality issues. The implication for the current research is that the Asians in the survey that are not having adequate pelvic exams may need educational materials that have been carefully crafted to downplay the sexual components of cervical cancer and pelvic exams, while stressing the importance of these procedures to their continued good health.

Revisiting the literature has allowed the determination that this work on pelvic exam behaviors is still needed and valid. It can be stated with

confidence that the population of college women is a special group with respect for pelvic exams. This group of women should be having pelvic exams annually under the American Cancer Society guidelines, yet there is evidence they are not having them as recommended.

### Significance

Based on the recommendations of the American Cancer Society, too large a percentage of women in this sample are not having pelvic exams as often as they should, and some have never had a pelvic exam. It appears that the reasons for this behavior are complex, but that much of it can be explained by the following chain of events: The pelvic exam is connected with sexuality, so when a woman is not sexually active, she feels that the pelvic exam is not necessary for her. Pre-cancerous cervical cell changes can happen in any woman, regardless of whether she is sexually active, and these cell changes can progress to fully invasive cervical cancer if left untreated. If caught early, cervical cancer has a disease-free survival rate between 91 and 96%, but the only way it can be caught early enough is through compliance with the recommendation for annual pelvic exams including Pap tests.

This study suggests many implications for health educators, student health practitioners, and women's health practitioners in general. The following chapter enumerates these implications and offers some recommendations for future practice and study.



## Chapter 6

### RECOMMENDATIONS

The analysis of data collected for this study has clearly shown that some women at San Jose State University need more information about pelvic exams and Pap tests, and in particular, information about why this prevention is important to them and their health. Pelvic exams, regardless of the part of the body they are performed on, must be separated from sexuality in the minds of women so that no matter what their sexual behavior, they will have the tests. The early detection of cervical cell changes could mean the difference between life and death for some women, and the difference between one simple treatment and hysterectomy and/or months of cancer therapy for others. For women who link the pelvic exam to possible future babies, emphasis could be on the loss of fertility possible from undetected pathologies. Encouraging women to make annual Pap tests a habit will improve the quality of life for many women as they age, and college is a good place to start - before the risk of cervical cancer begins to rise!

#### Implications for Health Education Practice

There are implications for both health educators and college student health providers in this research. For health educators, there is a message that women need to be informed about the American Cancer Society recommendations for annual pelvic exams and Pap tests. In addition, health

educators must be aware of the cultural differences, which may affect the woman's ability to assimilate the information when it is presented. In particular, care must be taken with Asian students so that the sexual issues surrounding pelvic exams are played down, and the emphasis is placed instead on the positive health benefits of these exams. It must be conveyed that the embarrassment or discomfort associated with this exam is bearable when put in the context of having good health. In addition, those women of any cultural background who express a fear of the procedure can potentially be reassured by a referral to a female practitioner.

### Guidelines for Practitioners

Practitioners who provide services to college-aged women can make the pelvic exam and Pap test a more comfortable procedure by taking the time to go slowly and explain everything they do as well as why it is being done. Women are more comfortable with the pelvic exam when a practitioner they see regularly for other examinations offers to do the pelvic exam. When the regular practitioner does not do the pelvic exam, a referral to another practitioner is a good way to improve the chances that their patient will have a pelvic exam done. Finally, to reduce the embarrassment the woman feels during a pelvic exam, it would help to have more female practitioners available, and practitioners should remember that no matter how many pelvic exams they have performed it could still be the first one this patient has had. Practitioners need to remember to be gentle and talk the woman through the exam. Referrals should be based more on feedback

from patients as to which practitioners are gentle and patient during exams and less on the gender of the practitioner.

It can also be helpful to remember that even a patient who has had many pelvic exams may never have had the procedure explained. In this study, one 30 year old participant reported having yearly pelvic exams since age 18, yet she thought that a series of rings were inserted to open her vagina, and that the practitioner reached into her uterus to check her ovaries. This example clearly shows that having exams does not mean that the patient understands what is happening under the drape during an exam.

### Implications for Policy

There are policy implications for the Student Health Service at San Jose State University (SJSU) and for other colleges and universities offering health services to their students. Like so many other college campuses, SJSU has an emphasis on sexuality education, HIV/AIDS education, and condom awareness. These are key strategies for helping to reduce the problem of sexually transmitted diseases among sexually active students. Unfortunately, however, the sexual message has buried vital information about the pelvic exam and Pap test for those women who are not sexually active, or who are embarrassed by open discussion of sexuality even though they may be sexually active.

Education programs aimed at the general campus population, as well as students enrolled in classes focused on general health and human sexuality, with an emphasis on the positive health implications of annual pelvic exams

for every woman, could help to get the information to the students who need it. The educational message is even stronger when presented in a format they can hear and internalize. Because the Spartan Health card available at San Jose State University includes a free yearly pelvic exam, it would be beneficial to the campus population to advertise that this is a benefit, while explaining what the exams are for and who should have them.

### Recommendations for Future Research

The current research could have been made clearer with the addition of questions regarding the way women feel about cervical cancer and sexually transmitted diseases, as well as the addition of a question “what reasons would cause you personally to avoid having regular pelvic exams” to supplement the question “why would some women avoid pelvic exams”. It could be useful to include women who have either had babies or abortions in any future research as these women might be more knowledgeable about pelvic exams due to the frequency of these procedures during pregnancy, no matter what the outcome.

A logical extension of this research would be to collect data from focus groups and individual interviews to add to our understanding of women’s feelings on this topic. It would also be beneficial to make some attempt to collect data from participants at a later date to determine if the educational component of this study had any affect on pelvic exam behavior.

Finally, I would like to repeat this study using only Asian students, after making changes to the questionnaire to focus more on pelvic exams and less

on sexuality, as well as adding scales to measure how much effect the different barriers to pelvic exams have on these students. The reason I would like to survey only Asian students is the diversity of Asian cultures in the San Francisco Bay Area. With so many Asian cultures and distinct degrees of acculturation, it seems unrealistic to expect all Asian women to respond the same way to this issue. As one of the most rapidly growing populations and one that seems to be at the highest risk for missing an exam that is so important for their health, this population needs to be targeted for further research and educational efforts.

The ideal next step is a study which uses a pre- and post- test format, combined with a random sample of survey participants being recruited into focus groups or individual interviews, and with special attention to separating the Asian race category into different Asian cultures.

This study asked if a sample of female undergraduate students from San Jose State University were seeking pelvic exams on a yearly basis as recommended by the American Cancer Society, and if not, why? The answer to this question turned out to be that a surprising 51% of the sample was not having pelvic exams as recommended. Some of the reasons for this appear to be that women (a) find pelvic exams physically unpleasant, (b) find pelvic exams emotionally unpleasant, (c) do not think they need pelvic exams because they are not sexually active, or (d) are not offered a pelvic exam by a trusted practitioner. Having this information is an important first step towards the design of education programs aimed at improving

college women's compliance with the American Cancer Society's guidelines for pelvic exam and Pap test frequency.

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## APPENDICES

## Appendix A

### CONSENT FORM AND HUMAN SUBJECTS APPROVAL

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College of Applied Sciences and Arts • Department of Health Science  
One Washington Square • San José, California 95192-0052 • 408/924-2970

## **AGREEMENT TO PARTICIPATE IN RESEARCH**

**Responsible Investigator: Sabrina Wilson, MPH Candidate**  
**Title of Project: Student Attitudes Towards Pelvic Exams**

I would like to invite you to participate in a research study investigating the behavior of student women with respect to pelvic exams and factors which can damage a woman's health.

You will be asked to fill out an anonymous survey in the presence of the investigator and return it before you leave.

Because this study addresses women's health, there are some very explicit questions regarding sexual behavior. These questions may violate your morals or values, and if they do, you may leave them blank.

While the research itself does not include any direct benefit to the subjects, the educational materials available from the investigator may help the subjects to make health decisions in the future. Findings from this investigation will be made available to the Student Health Service at SJSU so that they can plan appropriate programs.

The results of this study may be published, but because there is no record of the names of the participants, individuals can not be identified.

Questions about this study or requests for copies of the results may be addressed to the principal investigator at (415) 965-3160. Complaints about the research may be presented to the Chair of the Health Sciences Department, Dr. Helen Ross, at (408) 924-2970. Questions or complaints about research, subjects' rights, or research related injury may be presented to Serena Stanford, PhD., Associate Vice President of Graduate Studies and Research, at (408) 924-2480.

No service of any kind, to which a subject is otherwise entitled, will be lost or jeopardized if a person chooses to "not participate" in this study.

Consent is given voluntarily, and is indicated by filling out the survey and taking this page with you when you leave. A subject may refuse to participate in the study or in any part of the study. If a subject decides to participate in a study, he or she is free to withdraw at any time without prejudice to the subject's relations with San Jose State University or any other participating institutions.

  
-----  
Sabrina Wilson, Principal Investigator  
Graduate Student, Health Science Department



**San José State**  
UNIVERSITY

**Office of the Academic  
Vice President**

**Associate Vice President  
Graduate Studies and Research**

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TO: Sabrina Cuddy  
720 E. Charleston Rd.  
Palo Alto, CA 94303

FROM: Serena W. Stanford *Serena W. Stanford*  
AAVP, Graduate Studies & Research

DATE: May 14, 1997

The Human Subjects-Institutional Review Board has approved your request to use human subjects in the study entitled:

**"Student Attitudes Towards Pelvic Exams"**

This approval is contingent upon the subjects participating in your research project being appropriately protected from risk. This includes the protection of the anonymity of the subjects' identity when they participate in your research project, and with regard to any and all data that may be collected from the subjects. The Board's approval includes continued monitoring of your research by the Board to assure that the subjects are being adequately and properly protected from such risks. If at any time a subject becomes injured or complains of injury, you must notify Serena Stanford, Ph.D., immediately. Injury includes but is not limited to bodily harm, psychological trauma and release of potentially damaging personal information.

Please also be advised that all subjects need to be fully informed and aware that their participation in your research project is voluntary, and that he or she may withdraw from the project at any time. Further, a subject's participation, refusal to participate, or withdrawal will not affect any services the subject is receiving or will receive at the institution in which the research is being conducted.

If you have any questions, please contact me at (408) 924-2480.

The California State University:  
Chancellor's Office  
Bakersfield, Chico, Dominguez Hills,  
Fresno, Fullerton, Hayward, Humboldt,  
Long Beach, Los Angeles, Maritime Academy,  
Monterey Bay, Northridge, Pomona,  
Sacramento, San Bernardino, San Diego,  
San Francisco, San Jose, San Luis Obispo,  
San Marcos, Sonoma, Stanislaus

## Appendix B

### SURVEY INSTRUMENT



Please Circle The Appropriate Answer Next To Each Question Below:

1. How would you rate your overall physical health?  
(1) Excellent    (2) Good    (3) Fair    (4) Poor
2. How often do you go to a dentist?  
(1) Never or Very Rarely    (2) Every 2-3 years  
(3) Once a year    (4) Twice a year
3. How often do you have a physical check-up?  
(1) Never or Very Rarely    (2) Every 2-3 years  
(3) Once a year    (4) Twice a year
4. How often do you have a gynecological check-up?  
(1) Never or Very Rarely    (2) Every 2-3 years  
(3) Once a year    (4) Twice a year
5. In the last year, have you been to SJSU Student Health Service for health care?  
(1) Yes    (2) No
6. Do you have health insurance?    (1) Yes    (2) No  
If Yes, is it:  
(1) Private Insurance (Metropolitan, Blue Cross, etc)  
(2) Kaiser/other HMO    (3) Spartan Health Card    (4) MediCal  
(5) Other (please specify) \_\_\_\_\_    (6) Don't Know
7. Which of the following best characterize your eating patterns over the last year? (Circle all that apply)  
(1) High Fat    (2) Moderate Fat    (3) Low Fat    (4) High Sugar  
(5) Moderate Sugar    (6) Low Sugar    (7) High Salt    (8) Moderate Salt  
(9) Low Salt    (10) High Fiber    (11) Moderate Fiber    (12) Low Fiber
8. How many times per week do you work, play, or exercise hard enough to make you perspire and breathe heavily for at least 20 minutes?  
(1) Less than one per week    (2) One    (3) Two    (4) Three  
(5) Four    (6) Five    (7) Six    (8) Seven

9. How many hours of sleep do you usually get at night? \_\_\_\_\_

10. Have you ever had sexual intercourse? (1) Yes (2) No

If you answered "No", please skip to question 24 below.

11. Which of the following best describes your sexual behavior in the last five years?

- (1) I have only had sex with men
- (2) I have only had sex with women
- (3) To some extent I have had sex with both men and women
- (4) I have not had sex in the last five years

12. Have you ever had a sexually transmitted disease?

- (1) Yes (2) No

13. Do you have a primary sex partner? (That is, someone to whom you feel committed and with whom you have sexual intercourse)

- (1) Yes (2) No

If you answered "No", please skip to question 17 below.

14. If you answered "Yes" to the last question, how long have you been involved in this primary relationship?

- (1) Less than 6 months (2) 6 months to 1 year
- (3) 1 - 2 years (4) 2 - 3 years (5) More than 3 years

15. Do you use condoms with your primary partner?

- (1) Never (2) Rarely (3) Sometimes (4) Always

16. Does your primary partner have sex outside your relationship?

- (1) Yes (2) No (3) Don't know

17. Do you ever have sex with someone who is not your primary partner?  
[You, A) do not have a primary partner and you have sex, or B) have  
a primary partner but also have sex with others]

(1) Yes (2) No

18. Do you use condoms with this person or these people?

(1) Never (2) Rarely (3) Sometimes (4) Always

19. What is the method of contraception you use most often?

(1) Condom (2) Diaphragm (3) Pill (4) IUD (5) Sponge  
(6) Cervical Cap (7) Condom/Foam (8) Foam (9) Norplant  
(10) Withdrawal (11) Rhythm (12) None (13) Sterilization

If you use the Pill or Norplant, how long on it? \_\_\_\_\_

20. How often do you use the above method?

(1) Every time (2) Most of the time (3) Sometimes

--> If you answered "most of the time", or "sometimes", what  
other method(s) do you use?

Please List: \_\_\_\_\_

21. How many sex partners have you had in the last year?  
(12 month period)

(1) None (2) One (3) Two to Five (4) Six to Ten  
(5) Eleven to Fifty (6) More than Fifty

22. Have you ever had a "One-night stand"? (Sex with someone you didn't  
know very well, usually just once)

(1) Yes (2) No

23. Have you ever had a baby?

(1) Yes (2) No

If Yes, how many have you had (carried to term)? \_\_\_\_\_

24. Do you know what a pelvic exam is?

(1) Yes (2) No (3) Not sure

25. Please describe what you think a pelvic exam is.

26. Why do you think women should have regular pelvic exams?

28. Why would some women avoid pelvic exams? (Circle All That Apply)

(1) Embarrassed (2) Uncomfortable/Painful (3) Don't think they need  
(any other reasons?) \_\_\_\_\_  
\_\_\_\_\_

27. Does your regular physician do a pelvic exam/pap smear at  
your yearly physical?

(1) Yes (2) No

If No, does your physician refer you to a gynecologist?

(1) Yes (2) No

We would like to ask some questions about you to see if we have a  
realistic mix of the campus population:

29. RACE or ETHNIC BACKGROUND

(1) Caucasian (white) (2) Black (3) Asian/Pacific Islander  
(4) Hispanic (5) Native American (6) Other (Specify) \_\_\_\_\_

30. AGE \_\_\_\_\_

31. Year In School \_\_\_\_\_ Major \_\_\_\_\_

32. Are you a regular SJSU student? (1) Yes (2) No

If No, where do you usually attend college? \_\_\_\_\_

33. Are you a Foreign Student? (1) Yes (2) No

THANK YOU for your participation!

## Appendix C

### CODEBOOK

## Code Book

### Women's Attitudes Towards Pelvic Exams

Sabrina L. Cuddy

| <u>Question</u>  | <u>Code</u>  | <u>Variable</u> |
|--|--|-----------------|
| 1) How would you rate your overall physical health?                                | 1 = Excellent<br>2 = Good<br>3 = Fair<br>4 = Poor  | Health          |
| 2) How often do you go to a dentist?   | 1 = Never or Very Rarely<br>2 = Every 2-3 Years<br>3 = Once a Year<br>4 = Twice a Year   | Dentist         |
| 3) How often do you have a physical check-up?                                      | 1 = Never or Very Rarely<br>2 = Every 2-3 Years<br>3 = Once a Year<br>4 = Twice a Year   | Pysical         |
| 4) How often do you have a gynecological check-up                                  | 1 = Never or Very Rarely<br>2 = Every 2-3 Years<br>3 = Once a Year<br>4 = Twice a Year   | Gyn             |
| 5) In the last year, have you been to SJSU Student Health Service for health care? | 1 = Yes<br>2 = No  | StuHeal         |
| 6) Do you have health insurance?   | 1 = Yes<br>2 = No  | Insuranc        |
| 6a) If Yes, what is it?  | 1 = Private Insurance<br>2 = Kaiser/HMO<br>3 = Spartan Health Card<br>4 = MediCal<br>5 = Other<br>6 = Don't Know<br>7 = Spartan Card + Other | InsWhat         |

7) Which of the following best characterize your eating patterns over the last year?

|       |                                     |          |
|-------|-------------------------------------|----------|
| Fat   | 1 = High<br>2 = Moderate<br>3 = Low | DietFat  |
| Sugar | 1 = High<br>2 = Moderate<br>3 = Low | DietSuga |
| Salt  | 1 = High<br>2 = Moderate<br>3 = Low | DietSalt |
| Fiber | 1 = High<br>2 = Moderate<br>3 = Low | DietFibe |

8) How many times per week do you work, play, or exercise hard enough to make you perspire and breath heavily for at least 20 minutes?

1 = Less than one per week  
2 = One  
3 = Two  
4 = Three  
5 = Four  
6 = Five  
7 = Six  
8 = Seven

perspire

9) How many hours of sleep do you usually get at night?

(enter nearest half hour)

sleep

10) Have you ever had sexual intercourse?

1 = Yes  
2 = No

sex

(skip questions 11-23 if No)

11) Which of the following best describes your sexual behavior in the last five years?

1 = I have only had sex with men  
2 = I have only had sex with women  
3 = To some extent I have had sex with both men and women  
4 = I have not had sex in the last five years

behav

12) Have you ever had a sexually transmitted disease?

1 = Yes  
2 = No

std

|   |   |          |
|---|---|----------|
| 13) Do you have a primary sex partner (someone to whom you feel committed and with whom you have sexual intercourse)  | 1 = Yes<br>2 = No<br><br>(If No, skip questions 14-16)  | Primary  |
| 14) How long have you been involved in this primary relationship?   | 1 = Less than 6 months<br>2 = 6 months to 1 year<br>3 = 1-2 years<br>4 = 2-3 years<br>5 = More than 3 years | lenrelat |
| 15) Do you use condoms with your primary partner?   | 1 = Never<br>2 = Rarely<br>3 = Sometimes<br>4 = Always  | primcond |
| 16) Does your primary partner have sex outside your relationship?   | 1 = Yes<br>2 = No<br>3 = Don't Know   | partsex  |
| 17) Do you ever have sex with someone who is not your primary partner? [You, A) do not have a primary partner and you have sex, or B) have a primary partner but also have sex with others] | 1 = Yes<br>2 = No   | yousex   |
| 18) Do you use condoms with this person or these people?  | 1 = Never<br>2 = Rarely<br>3 = Sometimes<br>4 = Always  | othcond  |



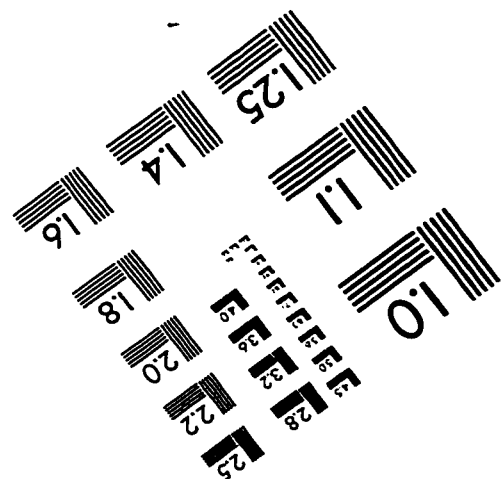
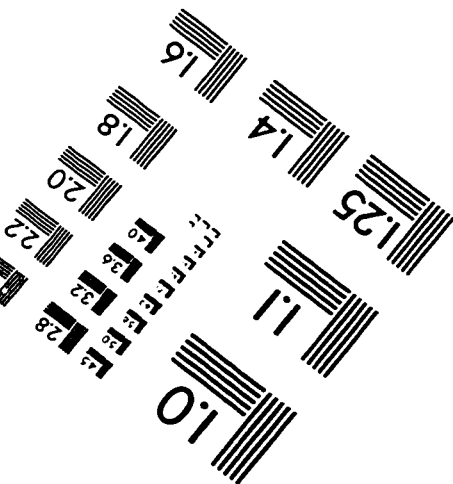
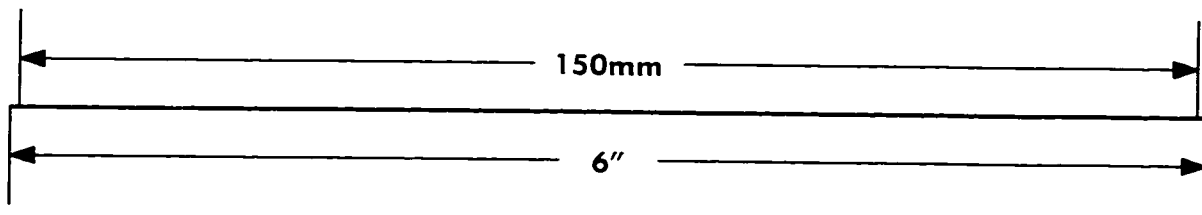
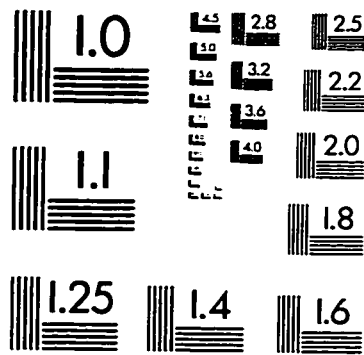
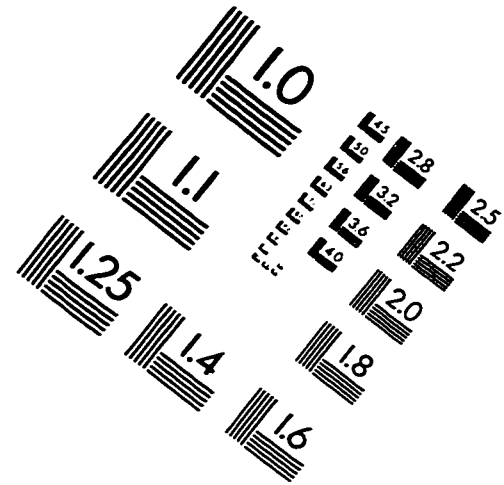
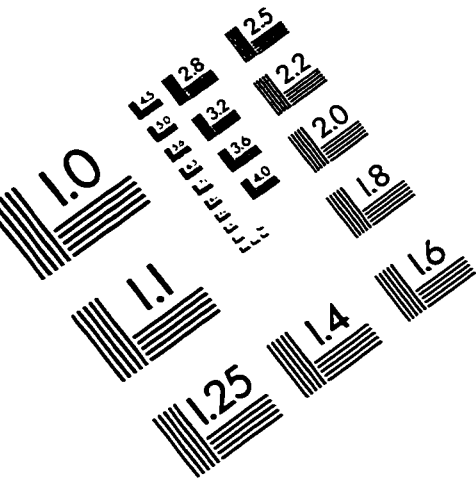
|  |  |          |
|--|--|----------|
| 19) What is the method of contraception you use most often?  | 1 = Condom<br>2 = Diaphragm<br>3 = Pill<br>4 = IUD<br>5 = Sponge<br>6 = Cervical Cap<br>7 = Condom and Foam<br>8 = Foam<br>9 = Norplant<br>10 = Withdrawal<br>11 = Rhythm<br>12 = None<br>13 = Sterilization<br>14 = Pill and Condom<br>15 = Condom and Withdrawal<br>16 = (item dropped)<br>17 = Pill and Condom/Foam | Cntrcept |
| 19a) On Pill?<br>(re-coded from time on pill)  | 0 = No<br>1 = Yes  | timepill |
| 20) How often do you use the above method?   | 1 = Every Time<br>2 = Most of the Time<br>3 = Sometimes  | oftuse   |
| 20a) If you answered "most of the time" or "sometimes", what other method(s) do you use?                   | (See number codes from question 19 above)  | othmeth  |
| 21) How many sex partners have you had in the last year?<br>(12 month period)                              | 1 = None<br>2 = One<br>3 = Two to Five<br>4 = Six to Ten<br>5 = Eleven to Fifty<br>6 = More than Fifty   | numpart  |
| 22) Have you ever had a "one-night stand"? (sex with someone you didn't know very well, usually just once) | 1 = Yes<br>2 = No  | onenight |

|   |  |          |
|---|--|----------|
| 23) Have you ever had a baby?   | 1 = Yes<br>2 = No  | baby     |
| 23a) If Yes, how many have you had (carried to term)?                               | (use number given)   | numbaby  |
| 24) Do you know what a pelvic exam is?  | 1 = Yes<br>2 = No<br>3 = Not Sure  | knowexam |
| 25) Please describe what you think a pelvic exam is.                                | 0 = Left Blank<br>1 = No Knowledge<br>2 = Some Knowledge<br>3 = Complete Knowledge   | descexam |
| 26) Why do you think women should have regular pelvic exams?                        | 0 = Left Blank<br>1 = No Knowledge<br>2 = Some Knowledge<br>3 = Complete Knowledge   | whyexam  |
| 27) Why would some women avoid pelvic exams? (circle all that apply)                | 1 = Embarrassed<br>2 = Uncomfortable/Painful<br>3 = Don't think they need<br>4 = All Circled<br>5 = 1 and 3 Circled<br>6 = 1 and 2 Circled<br>7 = 2 and 3 Circled  | whyavoid |
| 27a) Any other reasons?   | 1 = Scared of Results<br>2 = Don't know about<br>3 = "no fun"<br>4 = Financial Reasons<br>5 = Uncomfortable with a male doctor<br>6 = Feel Stupid<br>7 = Scared of Procedure<br>8 = Lazy<br>9 = Cultural Reasons<br>10 = Time from work/kids<br>11 = Cultural and Fear | whyother |
| 28) Does your regular physician do a pelvic exam/Pap smear at your yearly physical? | 1 = Yes<br>2 = No  | Regexam  |

|  |  |          |
|--|--|----------|
| 28a) If No, does your physician refer you to a gynecologist? | 1 = Yes<br>2 = No  | refer    |
| 29) Race or Ethnic Background                                | 1 = Caucasian (white)<br>2 = Black<br>3 = Asian/Pacific Islander<br>4 = Hispanic<br>5 = Native American<br>6 = Other   | race     |
| 30) Age  | use number given   | age      |
| 31) Year In School   | 1 = Freshman/First<br>2 = Sophomore/Second<br>3 = Junior/Third<br>4 = Senior/Fourth<br>5 = Grad/Fifth  | yearschl |
| 31a) Major   | 1 = Engineering/Computer Science<br>2 = Biological Sciences<br>3 = Health Sciences (including Pharmacy, Physical Therapy, Optometry, Nursing, and Occupational Therapy)<br>4 = Physical Sciences (Chemistry and Physics)<br>5 = Humanities (History, Journalism, Advertising, Public Relations)<br>6 = Social Sciences (Psychology, Sociology, Criminal Justice, Political Science)<br>7 = Business (Accounting)<br>8 = Undeclared<br>9 = Liberal Arts (Interior Design, Theatre Arts, Music, Art, Graphic Design, Radio/TV/Film)<br>10 = Education<br>11 = Aviation<br>12 = Math/Economics<br>13 = Physical Education, Human Performance, Recreation<br>14 = Double Major | Major    |

|  |   |         |
|--|---|---------|
| 32) Are you a regular SJSU student?              | 1 = Yes<br>2 = No                       | regstud |
| 32a) If No, where do you usually attend college? | 1 = Evergreen<br>2 = Cal. State Hayward | wheren  |
| 33) Are you a Foreign Student?                   | 1 = Yes<br>2 = No                       | foreign |

# IMAGE EVALUATION TEST TARGET (QA-3)



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