Testicular Self-Examination Among College-Aged Males

Angela Pruitt Durham
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TESTICULAR SELF-EXAMINATION AMONG
COLLEGE-AGED MALES

by

ANGELA PRUITT DURHAM

A Thesis
Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Nursing
in the Division of Nursing
Mississippi University for Women

COLUMBUS, MISSISSIPPI

August 1998
Testicular Self-Examination Among
College-Aged Males

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Abstract

Testicular cancer represents the most common cancer of men ages 15 to 35 years, with peak incidence occurring in men between the ages of 20 and 34 yrs. Many men in this age group have a knowledge deficit of testicular cancer and testicular self-examination (TSE), a method for early detection of testicular cancer. A descriptive survey study, using the Health Belief Model as a theoretical framework, was conducted to answer the following two research questions: What is the incidence of TSE in men attending a southeastern state university and what are the factors affecting the practice of TSE? One hundred males at a southeastern state university were surveyed by questionnaire at the campus health center. The incidence of TSE was 22%. The primary factor influencing the practice of TSE was lack of knowledge. If clients are not practicing TSE, nurse practitioners need to explore reasons for not practicing TSE and reinforce the importance of monthly TSE in early detection of TSE. A qualitative study to explore reasons why men do not
practice TSE is appropriate since surveys do not always identify factors nor allow for subjects' personal input. Based on the findings, the researcher recommends increasing health care providers' awareness about the importance of TSE education. The researcher also recommends replication of the study with a more ethnically diverse sample. Further research on men's perceptions, attitudes, and behaviors regarding health promotion practices is encouraged.
Acknowledgments

I would like to express my sincere appreciation to all those who have encouraged and supported me throughout this research endeavor:

To my advisor and committee chair, Patsy Smyth, thank you for your guidance. To my committee members, Melinda Rush and Sandra Faulkner, thank you for your direction in the completion of my thesis.

To my husband, Tyler, thank you for standing by me the entire way. Thank you for your unconditional love, patience, and support. I acknowledge that without you I could not have completed this research.

To my parents, Jim and Mary Pruitt, thank you for your encouragement, love, and support throughout this year and always. You are responsible for much of my success.

To my other parents, Joseph and Betty Durham, I am so grateful for your wonderful support, love, and generosity. Thank you for making this possible.
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Chapter I

The Research Problem

Although breast self-examination and the risk of breast cancer is incorporated in routine preventive health care for most women, the same is not true for testicular self-examination or testicular cancer in men. In fact, many young men do not even know that they are at risk for testicular cancer (Goldenring, 1992). In 1996 the American Cancer Society reported 7,400 cases of testicular cancer and 370 deaths. There were an estimated 7,200 cases of testicular cancer and 350 deaths predicted for 1997 (American Cancer Society [ACS], 1997). "Testicular cancer is an uncommon disease with an incidence of only about 3 per 100,000 men per year. Nonetheless, testicular cancer represents the most common cancer in men from ages 15 to 34" (ACS, 1997, p. 10).

Despite the deaths caused by testicular cancer, testicular cancer has been proposed as a model for a curable cancer (Marsh, 1991). In fact, if the common types of testicular cancer are detected in early stages, there
is a 95% survival rate (ACS, 1997). Testicular self-examination (TSE) currently is the most productive early detection behavior and technique for detecting testicular changes in the early stages of testicular cancer. The National Cancer Institute (1992) reports that most of the testicular cancers are found by men themselves, often by doing TSE. TSE performed correctly and monthly has been shown to decrease the number of testicular cancer deaths (Dewald & Zientek, 1996). However, research has shown that the young men within the age group at risk evidence an insufficient knowledge level and practice of TSE. The focus of this study was to determine the incidence of testicular self-examination practice in college-aged men and the factors that affect the practice of TSE in this high-risk male population. The potential influential factors on the practice of TSE may include family history of cancer, previous knowledge of testicular cancer and TSE, medical history, and beliefs related to health promotion of TSE.

Establishment of the Problem

The incidence of testicular cancer has been steadily rising over the past 20 years in virtually all countries (Bergstrom et al., 1996; Stoker, 1995). The pattern of
increasing incidence appears to be worldwide, having been reported in the Baltic countries, Colombia, the United Kingdom, and the United States (Bergstrom et al., 1996). Within the peak incidence age group, certain men are more at risk than others. White males are four times more at risk than black males to develop testicular cancer. The two groups that are especially susceptible are men whose testicles descended into the scrotum after age 6 years and those whose testicles never descended (ACS, 1997). Men who have a history of cryptorchidism have a risk 10 times higher than those who do not (Souhami & Tobias, 1995). Atrophy of the testes from mumps orchitis or a viral infection can increase the risk, as well as having a twin, brother, or other family member with testicular cancer. The incidence of testicular cancer in men whose mothers were treated with the hormone, diethylstilbestrol, during pregnancy is still being studied. Other risk factors include high socioeconomic status, extra hormones (estrogen and/or progesterone), inguinal hernias, congenital anomalies of the genitourinary tract, first pregnancy, excessive nausea in early pregnancy, excess maternal weight, and possibly trauma (ACS, 1997).
In order to have an increased survival rate, testicular cancer must be diagnosed early. Unfortunately, almost half of testicular cancer patients are diagnosed in the advanced stages when the prognosis is not as favorable (Higgs, 1990; Roth, Nichols, & Einhorn, 1993). Although all men between the ages of 15 and 44 years are considered to be at risk, mortality rates contributed to testicular cancer are decreasing in all groups except in men between the ages of 15 and 35 years (Roth et al., 1993). The finding shows that those young men at the age of peak incidence of testicular cancer are the ones who need education on testicular and testicular self-examination (TSE) the most.

The major obstacle to early detection and treatment is young men’s lack of knowledge of the great danger of testicular cancer and the lack of awareness of the need for regular self-examination (Frank-Stromborg & Rohan, 1992). General knowledge of first-degree relatives about the possibility of family occurrence of tumor instructions for TSE are considered as the most suitable method from the standpoint of secondary prevention (Ondrus, Chrenova, Kuba, & Matoska, 1996). Teaching TSE in mid-adolescence is preferable so that the habit can be well-established
before the young men reach the age of peak incidence (Haggerty, 1983), age 20 to 35 (National Cancer Institute, 1992). Yet, Walker (1993), in surveying 136 high school students, found that the students did not know about testicular cancer and TSE (53.5%) and that very few (17.2%) high school students were practicing TSE. Similarly, results of a 6-month randomized survey study of 211 patients admitted to a state-operated clinic in a northeastern metropolitan area revealed that men in general were not aware of TSE (Schaffner, 1995). Sixty-one percent of the clients were between the ages of 21 and 34 years. In the 6-month period of inquiry, 3 out of 211 males interviewed understood the reason for a testicular exam (1.4% of the sample). Another concern in the study was that 208 of the sample had not even had a testicular exam (Schaffner, 1995). A survey study of 50 males at a university in Australia (Haslemore & Christison, 1995) demonstrated that most males were ignorant of testicular cancer and the importance of testicular self-examination for early detection.

Finney, Weist, and Friman (1995), who evaluated teaching methods of TSE, found that their college-aged population studied was unfamiliar with testicular cancer
and TSE. Therefore, Finney et al. recommended additional study to determine whether the incidence and adherence to early cancer detection practices are high in college-aged populations. The authors also suggested the need to promote long-term maintenance of TSE skills and accuracy. Christophersen, Finney, Friman, Glasscock, and Weigel (1986) recommended extensions of their pilot study on the college-aged population to explore strategies for practicing TSE more consistently and thoroughly and suggested more studies that support regular performance of TSE results in earlier diagnosis and treatment of testicular cancer.

The increasing incidence of testicular cancer and a favorable prognosis when detected at an early stage have triggered the implementation of educational efforts. However, many practitioners do not make instruction of TSE a part of routine practice (Willson, 1991). The implication that TSE is considered unimportant by practitioners is not surprising since there is still disagreement among authorities about the efficacy of teaching TSE. Buetow (1996) stated that there was insufficient evidence to justify routine screening for testicular cancer by health care providers and patients.
Morris (1996) also argued that since testicular cancer is so rare, TSE is unlikely to be worthwhile, and its potential for unnecessary medical procedures and anxiety in young men should not be ignored. Yet, empirical evidence documenting a link between training in cancer detection and increased anxiety in adolescent males is lacking (Morris, 1996).

In a preliminary study, Weist and Finney (1996) assessed whether training in TSE was associated with elevated state anxiety in two samples of adolescent males (29 ninth graders and 30 college underclassmen). For both groups, anxiety scores were well within normal limits at post-assessment, indicating that a purported cost of the procedure, anxiety, may in fact not exist.

Tesh, Selby-Harrington, Corey, and Cross (1995) cites leading medical authorities which discuss and recommend the performance of TSE. The American Cancer Society recommends a cancer checkup, which includes testicular examination, every 3 years for men over 20 and annually for those over 40 years. The American Academy of Family Physicians recommends a clinical testicular examination for men aged 13 to 39 years who have a history of cryptorchidism, orchiopexy, or testicular atrophy; this
policy is currently under review. The American Academy of Pediatrics recommends testes self-examination beginning at age 18 years. The American Urological Association recommends yearly health examinations beginning at age 15 years. The National Cancer Institute states that routine palpation of the testes should continue to be a part of the periodic physical examination, but the high-risk individuals with a history of cryptorchidism, gonadal dysgenesis, and Klinefelter’s syndrome should receive special attention. The U.S. Preventive Services Task Force recommends a clinical testicular examination for males ages 13 to 39 with a history of cryptorchidism, orchiopexy, or testicular atrophy. The Canadian Task Force on the Periodic Health Examination recommends that TSE should be included only for those at risk for the disease (Tesh et al., 1995).

In a 1989 summary of existing evidence on the benefit of breast self-examination (BSE), several points were made: (1) BSE is a “low tech” intervention in a society that is saturated with propaganda for “high tech,” the technological imperative; (2) interest and advocacy of BSE continue; and (3) notwithstanding no strong evidence supporting the role of BSE in reducing breast cancer mortality, it seems reasonable to help women perform BSE well when feasible. The belief continues that women can benefit from self-examination. (Baines, 1992, p. 1943)
The same could apply for testicular self-examination. Currently, evidence does not demonstrate that the practice of TSE can result in reduced mortality from testicular cancer, but, for some, the belief continues that men can benefit from self-examination (Baines, 1992).

A primary concern to health care providers should be that a paucity of knowledge exists in the age group most susceptible to testicular cancer (Schaffner, 1995). Further studies on the incidence of TSE within the population at risk would be beneficial by increasing health care providers’ awareness and influential factors regarding young men’s practice of TSE. The purpose of this research was to identify the incidence of TSE in college-aged men and to determine factors affecting the practice of TSE.

Theoretical Framework

The underlying concept of the Health Belief Model (HBM), developed by Rosenstock, Hochbaum, and Kegeles (Rosenstock, 1974) during the 1950s, is the belief that a person’s perception of health, illness, and treatment is a motivating force for performance of health promotion actions (Olson & Morse, 1996). These beliefs include susceptibility, severity, benefits, and barriers.
Susceptibility is the perceived personal risk of being affected by the disease under consideration. Severity is the perceived negative implications of the disease (Shiloh, Vinter, & Barak, 1997). The concept is based on the assumption that the more serious a problem is, the more likely a person will take action against it (Burak & Meyer, 1997). The perceived effectiveness of the behavior in question in reducing the threat of the disease describes benefits. Barriers include perceived costs and other negative aspects associated with preventive action, such as pain, inconvenience, and risks (Shiloh et al., 1997). The Health Belief Model posits that the likelihood of taking an action is determined by beliefs that barriers to action are outweighed by the benefits of the action (Burak & Meyer, 1997). Perceived susceptibility and perceived seriousness of the illness have a strong cognitive component and are somewhat dependent upon knowledge. For early detection of a disease, the individuals must also believe that they can have the disease, even without symptoms (Rosenstock, 1974).

Internal and external cues of action serve to stimulate or trigger health-related behaviors (Burak & Meyer, 1997). Within the Health Belief Model, TSE is
initiated as a result of an external or internal cue and is modified by demographic variables, the man's relationship to his primary care provider, and his past experience with illness (Olson & Morse, 1996). Motivation, or the desire to comply with the prescribed regimen, is also a key component (Polit & Hungler, 1995).

Another variable, confidence, was added by Rosenstock in 1988 (cited in Olson & Morse, 1996). According to the Health Belief Model, men perform TSE for the following reasons:

1. They view cancer as a serious health problem to which they are susceptible.

2. They believe the benefits of doing TSE outweigh the perceived barriers.

3. They have confidence in their ability to find an abnormality, if one exists (Olson & Morse, 1996).

Young men within the ages of high risk often believe that they are indestructible and immune to harm (Clore, 1993) and are a particularly difficult group to reach because they often do not seek health care (Bassett & McSherry, 1996). The possibility of disease is not of utmost importance to these young men. Instead, they are
usually egocentric and concerned with their self-image (Taylor, Lillis, & LeMone, 1993).

If a young man knows about testicular cancer and believes that the condition is not partial to anyone, including himself, he thinks that he is susceptible to the illness. He realizes that even if he does not have symptoms of cancer, he can still have the disease. If he knows how to perform TSE and believes that the benefits of TSE outweigh the costs, he will be inclined to practice it. If he finds a lump in his testicle, he may face embarrassment (perceived barrier) with the idea of having it examined. Yet, he may overcome this barrier when he sees a celebrity on television whose testicular cancer started as a lump in his testicle (external cue) (Rosenstock, 1974).

Significance to Nursing

This research study adds to nursing’s body of knowledge by identifying the incidence of TSE in the college-aged population, the peak age group for occurrence of testicular cancer, and by determining the factors that affect the practice of TSE. The study impacts education and practice. Identifying a knowledge or practice deficit and its cause serves as a basis for the development of
more effective teaching programs for young men. This research study impacts the family nurse practitioner (FNP) in that nurses in primary care situations are faced with the tasks of testicular cancer education and detection. If the incidence of TSE in the college-aged population is low, primary care providers of this population, such as nurse practitioners, may be inclined to make changes geared to increasing their clients' knowledge and practice of TSE. FNPs can do this through incorporating TSE as a routine part of check-ups and by increasing awareness in the community. FNPs can help men feel a sense of personal responsibility for health promotional behaviors. Nurses must know where the deficiencies and strengths of their clients lie and why in order to channel educational efforts to those most in need and in the most appropriate manner (Morris, 1996).

The results of this research contributed to theory through the use of the Health Belief Model. For instance, if the majority of men studied are knowledgeable on TSE and testicular cancer, believe they are susceptible to the disease, and know the severity of it, they may be more likely to practice TSE. If indeed these men do practice TSE, this would reinforce the Health Belief Model. If the
men do not practice TSE, there may be other underlying factors that have not been considered which influence their lack of TSE.

Furthermore, this study contributed to research efforts focused on progress in the levels of knowledge and practice of TSE in this population. The study added to the body of research on testicular self-examination (knowledge, practice, and beliefs) for future studies to draw from and build upon. After implementing education and more effective education on TSE, nurses can compare earlier studies on the incidence of TSE in the college-aged population to the current incidence to measure progress. Additionally, based on the results of the study, nurses can better understand factors that influence the practice of TSE and can, then, recognize potential or real barriers to clients’ learning and aid in overcoming the barriers.

Assumptions

The assumptions for this study are the following:

1. Young adult males generally perceive themselves as healthy.

2. Subjects will be honest in their response to the questionnaire.
3. People are more likely to perform health promotion behaviors when they perceive the health promotion behavior is beneficial to their health.

**Statement of the Problem**

Testicular cancer is a life-threatening disease and most commonly affects men ages 15 to 35 years. Many men in this age group have demonstrated a knowledge deficit on testicular cancer and TSE. This study addressed the following question: What is the incidence of TSE in men attending a southeastern state university?

**Research Question**

Through this study, the researcher will answer the following research questions:

1. What is the incidence of TSE in men attending a southeastern state university?

2. What are the factors affecting the practice of TSE in men attending a southeastern state university?

**Definition of Terms**

The following terms are defined for this study:
Testicular self-examination: Theoretical: Testicular self-examination is a systematic examination of the testicle(s) for the purpose of detecting an abnormality. Operational: Testicular self-examination is a monthly systematic examination of the testicle(s) by manual palpation to detect early testicular cancer determined by self-report through the Piller-Durham questionnaire.

Men: Theoretical: According to Webster’s Dictionary (1989), men is defined as the plural form of man, a male human being. Operational: Men is defined as males enrolled in a southeastern state university who come to the campus health center seeking health care on the data collection days.
Testicular cancer is the most common cancer in men ages 15 to 35 years (ACS, 1997). Yet, research shows that the young men within the age group at risk evidence an insufficient knowledge level and practice of testicular self-examination (TSE). The focus of this study was to determine the incidence of TSE practice in college-aged men and the factors that affect the practice of TSE in this high-risk male population. Some potential influential factors on the practice of TSE may be family history of cancer, previous knowledge of testicular cancer and TSE, medical history, and beliefs related to health promotion and TSE.

The review of literature presented research studies which focused on the incidence of testicular self-exam among the population at risk, studies on knowledge levels of testicular cancer and TSE and practice of TSE among this population, studies on influencing factors of the practice of TSE, and studies using the Health Belief Model.
as the theoretical framework. Research results, conclusions, and researchers’ recommendations were considered in the design of this study.

Several studies have been conducted to determine the most effective teaching strategies for testicular cancer and TSE. Through these studies, a lack of knowledge on TSE and testicular cancer and practice of TSE was found in men within the age group at risk. In a seminar work by Christophersen et al. (1986), the researchers sought to evaluate the effectiveness of a brief and specific checklist for teaching TSE skills. These researchers found from their review of literature that men in the at-risk population knew very little about testicular cancer and self-examination and assumed that men learned TSE from informational pamphlets and films distributed by specialty organizations or by primary care providers. Since no objective studies had been conducted that documented the efficacy of teaching materials on TSE, a pilot study was developed to evaluate a checklist formulated by these researchers with specific steps needed to conduct TSE.

The design was a simple quasi-experimental analysis, a one-group pretest-posttest. Subjects were men who were recruited from the Greater Kansas City Metropolitan Area
by posted announcements at the University of Kansas. The first 10 volunteers between the ages of 18 and 40 years were entered into the study. Those who were medical students, residents, and physicians were ineligible.

The study was conducted at the Department of Audiovisual Services television studio at the University of Kansas Medical Center. The subjects signed an informed consent stating that they would agree to be filmed while conducting a TSE. The subjects were assured that the videotape would have a number code and only the researchers would have access to the videotape.

A researcher constructed a checklist in which specific steps were required for completion of a satisfactory TSE. Subjects were accompanied to the television studio by one of the researchers. Subjects were shown where to stand and informed that they would only be filmed from the navel to the mid-thigh area. The cameras were controlled from an adjacent booth, and the subject could watch his taped session on the monitor in the studio. They were shown where to stand and informed that they would only be filmed from the navel to the mid-thigh area.
For the pretest, the subjects were instructed to perform a TSE after the experimenter left the studio. No other instructions were given. The experimenter returned when the subjects were finished and were given the researchers' constructed educational checklist. After the subject's questions were answered, they were instructed to conduct a TSE by following the checklist steps. The experimenter left the studio, and the posttest TSE was taped.

After the posttest, the experimenter returned and asked if the subject had detected any lumps, masses, or other problems. Each subject was offered the opportunity to receive an examination by a board-certified urologist to check the accuracy of his TSE.

The pretest and posttest videotapes were randomly placed on a master tape. The film technician coded the pretest and posttest segments so that, following scoring, the results could be matched. The primary observer was not informed whether the segments were pretest or posttest. This observer scored the randomly ordered segments by noting the occurrence or nonoccurrence of each TSE step. The duration was measured using a stopwatch from the time
the subject first touched his testes or genital area to the end of that contact.

Interrater reliability was assessed by comparing two observer scores for three pretest and posttest videotape segments. Agreement was established at 86% for the observers.

Two methods were used to evaluate participants’ TSE technique: TSE video segments were rated first by a urologist, and then TSE was performed by a urologist, both of whom used a 7-point Likert-type scale following completion of the posttest.

Subjects were contacted by telephone 6 months following participating in the study to see how well they could describe the TSE checklist steps, how often they performed TSE after the training, where they performed TSE, whether they had contacted a physician about a discovered anomaly, and whether they had discussed TSE or shared the TSE checklist with other men. The average percentage of steps completed on the pretest was 35% (range = 0 to 57%); the average on the posttest was 97% (range = 85 to 100%). The results were t(9) = 11.73, p < .001.
The average duration of the TSE was 16 seconds for the pretest and 46 seconds for the posttest. Each subject showed an increase in self-exam time following training, with the increases ranging from 10 to 84 seconds.

The average pretest rating from the urologist’s social validation was 2.5 on a 7-point scale and 6.2 on the posttest. Nine out of 10 subjects reported no detection of lumps, masses, or other abnormalities following the posttest TSE. Six subjects were examined by the urologist; the other subjects declined and were told to seek a TSE from a private physician. The one subject who reported the lump was seen by a urologist who also detected the lump. It was diagnosed as epididymitis and treated with an antibiotic. No problems were detected in the other subjects.

Seven of the 10 subjects were interviewed by telephone 6 months after the study. All 7 accurately described the steps and reported continued performance on TSE when taking a shower or just before bed. They had not detected any anomalies or contacted a physician. They also had not shared the TSE checklist with other men.

Christophersen et al. (1986) concluded that a brief and specific educational checklist, when delivered in the
context of videotaped performance assessments, increased young men’s ability to conduct a satisfactory TSE. Although this study was not designed to investigate variables related to regular and accurate performance, the 7 men contacted at a follow-up accurately reported the checklist steps. Five of the 7 men reported continued performance of at least monthly TSE, and 2 men had performed fewer self-examinations than recommended.

Christophersen et al. (1986) recommended that extensions of this pilot study investigated strategies for maintaining regular and thorough self-exams, which are important for early detection of testicular problems. The researchers also suggested more studies be conducted which would support regular performance of TSE results in earlier diagnosis and treatment of testicular cancer.

The Christophersen et al. (1986) study was chosen for review because it shows that men in this age group lack education on testicular cancer and TSE, thus supporting this researcher’s efforts for further investigation of TSE in other populations at risk. The research also suggests that something as simple and brief as a checklist of steps on TSE can remedy a TSE knowledge deficit and help promote continued TSE. This suggestion applies to the Health
Belief Model in that the checklist is considered a cue to action, a trigger that reminds the man to practice TSE.

Walker (1993) sought to assess the effects of modeling and guided practice as components within a comprehensive TSE educational program for high school males. The author discovered that while information for young women on breast self-examination and pap smears had been readily available and well-publicized, little information had been available for young men on TSE. Walker (1993) believed that the absence of information should be a concern for health professionals and educators who work with young men. Therefore, the author studied the knowledge of high school males concerning testicular cancer, comfort in doing TSE, and frequency of self-reported TSE.

The dependent variables were knowledge of testicular cancer, comfort in TSE, and frequency of self-reported TSE. The independent variable was membership in one of three treatment groups.

Walker (1993) conducted the study using Bandura's Social Learning Theory to support the use of modeling. This theory states that learning may occur depending on four component processes: attention, retention, motor
reproduction, and motivation. The theory also explained that reinforcement of accurate behavior reproduction increased the effectiveness of the modeling. Walker (1993) established that Bandura's theory applied in acquiring a health-related skill.

The design of the study was quasi-experimental. The sample (N = 151) consisted of 10th-grade males from 10 health education classes during the fall semester at two southern suburban high schools. Group A (n = 32) received an educational program comprised of a TSE video, pamphlet, and questions/answers. Group B (n = 48) received the educational program comprised of TSE video, pamphlet, questions/answers, and modeling. Group C (n = 56) received an educational program comprised of a TSE video, pamphlet, questions/answers, modeling, and guided practice. The control group (n = 15) received no structured educational program.

Walker (1993) used a 31-item researcher-constructed questionnaire. The test-retest reliability coefficient was .70. Validity of the instrument was determined by a panel of reviewers. The t test for a paired sample was used to compare the individual scores on the pretest, posttest, and 2-month delayed posttest. Analysis of covariance was
used to compare group scores on each test. When significant differences in group scores occurred (p < .05), Duncan’s post hoc test was used to determine which groups were significantly different.

The results of comparing knowledge from delayed posttest scores to the pretest scores yielded an F-score of 12.566. This indicated that a significant difference (p = 0.000) occurred among all groups on the knowledge from the posttest scores. When comparing behavior posttest scores and the pretest scores, the analysis of covariance showed an F score of 8.120 and a significant difference of p = 0.000, indicating that a significant difference occurred between groups. A significant difference occurred among groups on comfortability delayed posttest to pretest with an F score of 4.198 and a significant difference of p = 0.000.

The study supported findings from previous research on the incidence of TSE. In this study, 17.2% of the sample (26 of 151) reported having performed TSE within 6 months before participation in this study. For those in the experimental group, 19.1% (26 of 136) indicated having performed TSE within 6 months before participation in a comprehensive TSE educational program. On the delayed
posttest, 55.8% (76 of 136) responded as having performed TSE during the 2-month period.

The study also supported findings from previous research regarding knowledge of testicular cancer. The mean score on a 15-item pretest taken by the 136 participants was 53.5%. After participation in the comprehensive TSE educational program, the mean score was 73.1% and no significant difference within treatment groups. Walker’s study found that the students did not know about testicular cancer and testicular self-examination and that very few (17.2%) high school students were practicing TSE.

Walker (1993) recommended that since people will be more likely to participate in an educational program when there is a need, local epidemiological studies recording the incidence of testicular cancer should be conducted and reported to the community. Walker also recommended a longitudinal study on a younger population, starting with junior high students and following them through high school with intermittent educational reinforcement and evaluation.

Walker’s (1993) study was germane to the present study because it validated the concept that individuals
are more motivated to practice health promotion behaviors if they feel that they are susceptible to the disease. Men who are at risk may be more likely to attend educational programs if they are aware of the local incidence of testicular cancer. Educational programs could increase the awareness in men of their risks for testicular cancer, in addition to the seriousness of cancer, thus increasing the motivation to practice TSE. The study also suggests that the incidence of TSE in the high school population is low, which supports this researcher's efforts for further investigation of the practice of TSE in other populations at risk, such as the college-aged population.

Finney et al. (1995) sought to evaluate the effects of two health education teaching methods, a pamphlet based on a task-analyzed checklist and two professionally developed films, on the completeness, accuracy, and maintenance of TSE. The researchers found a TSE knowledge and practice deficit in the college-aged population. Finney et al. (1995) believed that if TSE was taught in regular, effective steps (task analysis), a reduction in morbidity and mortality from testicular cancer would result.
Finney et al. (1995) used a quasi-experimental three-group design with a dependent variable, TSE skills, and an independent variable, teaching. The subjects were 48 males, aged 18 to 25 years, all undergraduate students at a large southeastern state university. Participants were recruited from undergraduate psychology courses and received extra credit for completing the study.

The subjects were first taught TSE, then involved in an intervention to help them remember to do TSE regularly, and scheduled for 3-month follow-up. No feedback on TSE was given during the study. All subjects received a discussion of the study that included purpose, procedures, and benefits, and a consent form was signed by each. Each subject was then randomly placed in a checklist group or in one of two film training groups.

Procedures for the three groups were conducted separately. Those in the checklist group were given an educational brochure which was easily readable and included a detailed performance of TSE. Participants were allowed adequate time to read the brochure, and questions were answered.

Those participants in the two film groups were instructed to view a film on testicular cancer. The
American Cancer Society group viewed the ACS film, and the Norwich Eaton film group watched the other training film. The films did not provide a step-by-step checklist but gave instructions on how to perform the TSE. Any questions the subjects had after viewing the films were answered by the investigators. The subjects completed a posttest TSE that was videotaped and an examination on an Adam C. S. Teaching Model.

After completion of TSE training, each subject received TSE adherence-monitoring instructions. They were given 10 stamped postcards addressed to the investigators dated in sequence for the 10 weeks after training. All were instructed to mail one in each week to report whether they had performed TSE and if they had detected any abnormalities. Then the subjects were randomized into two adherence groups, a social support and a control group.

The social support group consisted of subjects from the checklist group (n = 8) and the film groups (n = 16). The control group was comprised of the same number of subjects, similarly distributed. The control group was specifically instructed on conducting a weekly TSE. Those participants in the social support group identified someone who would remind them to perform TSE weekly.
The subjects received a letter at the end of the postcard follow-up period informing them that TSE could be performed monthly rather than weekly, and an ACS brochure on TSE was included in the letter. To evaluate continued incidence of TSE, each subject was scheduled for a 3-month follow-up visit after initial training. Seventeen of the subjects were not available.

Performance measures, the number of self-examination steps performed correctly, were obtained by direct observation of these videotapes. Other indications of completeness were duration and accuracy of TSE.

Four physicians viewed a sample of posttest videotapes that were randomly ordered without knowledge of subjects' group assignments. Adherence was measured by the return of postcards. Two observers scored 25% of the videotapes independently as well as drawings of lump detections for reliability estimates. An equal number of both the tapes and drawings was chosen from each group. Interobserver reliability for detection and completeness was 100% and 95%, respectively. Agreement on duration of the exam was 100%.

TSEs of the subjects in the checklist group were compared with subjects who viewed the ACS film and the
subjects who viewed the Norwich Eaton film using univariate analysis of variance (ANOVA). There was a significant effect found for completeness of TSE, $F(2, 45) = 3.10, p < .05$.

A significant univariate ANOVA also was found for duration of TSE, $F(2, 45), = 9.70, p < .0005$. Post-hoc Tukey HSD tests showed that the checklist group had significantly longer TSEs. The univariate ANOVA for the number of lumps accurately detected on the model of human testicles showed no significant differences among the three groups, $F(2, 45) = 2.01, p > .10$. Solid validity based on physicians' ratings of the TSEs on videotape of representative subjects was found to be similar for both the groups.

Nine subjects from the checklist group and 22 subjects from the films groups came back for the second filmed TSE. A repeated measures ANOVA showed a significant main effect for time, $F(1, 29) = 6.22, p < .05$, but no significant effects for group ($p > .10$) or for the group x time interaction ($p > .10$). Both groups showed declines in the number of steps performed at follow-up. For duration of TSE, a similar main effect was found for time, $F(1, 29) = 26.6, p < .001$, but no significant effects were found
for group or interaction \((p < .25)\), with a similar decline in duration for both groups. The relation between duration of TSE at posttest and at follow-up was high and was statistically significant, \(r = .80, p < .0001\).

TSE adherence between subjects in social support and control group was compared. The number of postcards returned by the social support group \((M = 7.5, SD = 2.7)\) was not significantly different from the control group \((M = 6.9, SD = 3.8)\), \(t(46) = .83, p < .35\). Self-reported TSEs of the social support group over the 10-week follow-up \((M = 6.1, SD = 2.8)\) were not significantly different from the control group \((M = 6.9, SD = 2.8)\), \(t(46) = .98, p > .30\). The training methods for teaching and promoting continuance were experimentally validated to be effective.

To evaluate the relationship between reported and actual practice of TSE, a Pearson \(r\) correlation coefficient was calculated for the number of reported TSEs between posttest and follow-up TSE and the completeness of TSEs at the 3-month follow-up assessment. The relation was moderate, statistically significant at \(r = .37, p < .05\). Therefore, adherence was high for those who were specifically instructed and those with social support instructions.
Training methods for teaching and maintaining TSE skills have been experimentally validated to be effective. Physicians and health educators can be more confident of the outcomes associated with this task-analyzed checklist or one of the films in this study. The task analysis checklist resulted in more TSE steps and longer TSEs than any professionally produced films designed to teach TSE. This study by Finney et al. (1995), therefore, indicates that the checklist method results in more complete and longer TSEs, although the clinical advantage for the checklist has not been determined in terms of physicians' ratings and findings of simulated lumps. Another finding by Finney et al. was that adherence was high for both those receiving general continuance instructions and those who had social support.

The results of the study by Finney et al. (1995) serve as a guide for larger future studies on the effects of regular TSE in early detection of testicular cancer and in determining if there are high-risk groups for whom TSE training should be focused. The findings of this study also suggest that appropriate TSE skills can be taught and maintained, although optimal performance was not produced by either method. Finney et al. recommended additional
study to determine whether the incidence and adherence to early cancer detection practices is high in college-aged populations and to determine how to promote long-term maintenance of TSE skills and accuracy.

Finney et al. (1995) established that college-aged men were unfamiliar with testicular cancer and TSE which further validates the need to study TSE in the college-aged population. Their recommendation relates to the current researcher’s efforts in that the current research addresses the incidence of TSE in the college-aged population. The aforementioned study also supports some concepts of the current researcher’s theoretical framework, the Health Belief Model, in that external cues to action (postcard reminders) promoted adherence to health promotion practices.

In a descriptive study by Misener and Fuller (1995), four research questions were addressed:

1. What are the current detection practices of primary care physicians regarding testicular cancer?

2. Is there a difference in the percentage of physicians who administer age-appropriate examinations and teaching about breast and testicular cancer?
3. Do primary care physicians who regularly practice self-examination techniques include this detection practice with clients more frequently than other physicians?

4. What are physicians' beliefs about their liability if they do not include testicular examinations as part of a routine exam and because of this omission a cancer is missed.

The purpose of this study was to examine the testicular cancer detection practices of primary care physicians. Using a mail questionnaire, a survey was conducted in one rural southern state. The sample was convenience, consisting of 232 physicians practicing in two medical facilities in the primary care specialities of family practice, general practice, internal medicine, and pediatrics. The researchers specifically designed a 21-item survey instrument for the study. Breast exams and colorectal screening were included for comparative and masking purposes. Questions included teaching and exam practices of primary care physicians concerning breast, colorectal, and testicular cancer detection. Physicians were also questioned on whether they displayed information regarding the three types of cancer in their offices and
whether they regularly performed gender-appropriate exams upon themselves. One of the items was aimed at measuring perceived liability. The survey was comprised mainly of dichotomous and categorical variables.

Envelopes were hand-addressed and marked "Private and Confidential" to increase the chance that the physician personally would get the envelope. The cover letter assured anonymity and described the procedures for reporting results.

The usable returned questionnaires for the study netted 116, a response rate of 50%. The final sample was comprised of 106 male and 10 female primary care physicians, ages ranging from 29 to 74 years. All of the responses were complete except for three dichotomous items on whether physicians routinely examined male clients' testes, instructed them on TSE, and had the clients do a return demonstration. Twenty-six of the respondents did not complete these three items, all of whom completed every other item. It seemed logical to the investigators that those who did not complete these three items were probably not doing the procedures and were reluctant to answer.
Descriptive data analysis showed that 83% of physicians perform routine breast exams on age-appropriate females, even if the presenting problem is not a breast-related condition. In contrast, 49% of physicians reported performing routine testicular exams with a visit for a condition not related to the testes. Physicians (86%) reported instructing women on BSE, and 16% requested the patient do a return demonstration. In contrast, 29% of physicians instruct male clients to perform TSE, and 4% of the physicians reported having their patients do return demonstrations. Sixty-eight percent of physicians regularly perform age-appropriate stool tests for occult blood when a patient presents with a condition not related to a gastrointestinal problem. When the physicians were asked if they displayed literature in their office on BSE, TSE, and colorectal cancer, the responses were as follows: 61%, 13%, and 18%, respectively. The physicians responded that they believe patients should perform gender-appropriate self-exams (breast, 97%; testicular, 92%).

Cochran’s Q statistic was computed to test for differences between the proportions for the percentages of positive responses regarding displaying literature, demonstrating BSE or TSE to clients, and having patients
return the demonstration. A value of 280.9 was obtained by the NPAR Tests Procedure in the Statistical Package for the Social Sciences (SPSS), the critical value for the test being 12.59 ($\chi^2$). The test was significant, showing some differences among the proportions.

For performance versus client education, the contrast was found to be statistically significant ($p = 0.0390$), indicating that physicians are more likely to do the exams than to instruct their clients in performing them. The findings on personal self-exam practices revealed that 60% of female physicians report BSE at least once a month, while 45% of male physicians reported doing TSE at least once a month. All of the female physicians reported doing BSE even if not as frequent as the American Cancer Society recommended, and 20% of male physicians reported never doing BSE or doing so less than once a year.

Although 92% of male physicians believed men should do TSE, only 45% of these physicians performed TSE monthly. Approximately 70% of those male physicians who do TSE report examining men appropriately. In contrast, 50% of the male physicians who do not do TSE report examining male clients.
Using the Likelihood Ratio chi-square on whether the physicians did personal TSE and all of three questions (Do you regularly examine men’s testes during an age appropriate physical? Do you routinely teach men TSE? Do you have men return the demonstration?) showed statistically significant results on the item concerning teaching TSE ($p < .004$). The phi coefficients for the same comparison was 0.32. The phi coefficients for the other two questions (doing the exam and having a patient return the demonstration) were 0.17 and 0.11, respectively. Thus, if the male physician regularly does TSE on himself, there was a positive correlation with appropriate exams and teaching, with the greatest correlation between doing the exam and teaching male patients to perform TSE. Only 7% of the practicing physicians answered that they believed they had liability dealing with the case described earlier, where a testicular exam was not performed and the client later discovered on his own that he had cancer.

These results support the findings from other research studies showing little change in testicular cancer detection practices during the past decade. The study also indicated that practices are far less persuasive for testicular examinations than for breast
examination. Only 49% of physicians did routine age-appropriate testicular exams in men, in contrast to 83% who reported performing age-appropriate breast exams on women and 68% who reported age-appropriate colorectal screening.

Combined with other data, the study showed that men do not know that they should perform TSE nor do physicians perform testicular exams. Physicians were more likely to teach female clients about BSE (86%) than men about TSE (29%). When the men were being examined, they were not being taught TSE; and when they were taught, they were not required to give a return demonstration. Only 16% of the physicians asked the women to return the demonstration, and 4% of the physicians asked male clients to return the demonstration. Therefore, the impact of teaching is questionable. The physicians' beliefs about their lack of liability demonstrated the continuing need for established peer review and ethical standards of care concerning prevention and early detection.

Misener and Fuller (1995) suggested that since healthy men, mainly in the age group at highest risk for testicular cancer, do not seek health care as often as women, it is essential to include age-appropriate
screening and teaching during the infrequent encounters. Based on this study, the researchers recommended increasing awareness of physician providers on the importance of testicular exams, given the increased incidence of testicular cancer, the low cost of the exam, and the excellent results of early intervention. In addition, they suggested that assessment of practice patterns of nurse practitioners who also give care for men in the at-risk age group would be important to establish early detection.

The study conducted by Misener and Fuller (1995) was relevant to the current study because these researchers deduced that, by increasing the awareness of men on the importance of TSE, the men would be more likely to insist their health care provider include TSE as a part of a routine physical. The researchers also stated that if clients are to be active participants in their own health care they must first be made more aware of TSE practice.

A study conducted by Schaffner (1995) revealed findings of lack of awareness of TSE by the age group at highest risk for testicular cancer, possibly due to practitioners excluding it from a part of routine practice. A 6-month study of a randomized and prospective
sampling of males admitted to a state-operated clinic in a northeastern metropolitan area to determine level of knowledge of self-exam was done, the population coming from both urban and rural areas in the western part of the state. The researcher interviewed 211 male clients, 61% of them between the ages of 21 and 34 years and the next largest age group between the ages of 35 and 49 years. African-Americans comprised 52% of the group and Caucasians comprised 38% of the group. The sample was mainly single (56%). Three out of 211 males (1.4% of the sample) interviewed knew about testicular self-exam.

Results from this survey indicated that men in general are unaware of TSE and that this could be due partly to practitioners not including instruction of TSE as part of routine practice. The researcher suggests that it could also be due to the controversial literature concerning the benefit of TSE. Schaffner (1995) recommended that more research be done to further examine both public awareness of TSE and successful teaching modalities for this self-exam practice. This recommendation influenced the current researcher’s study on the incidence of TSE in the college-aged population.
Katz, Meyers, and Walls (1995) performed a study to assess (a) cancer knowledge and its relationship to self-examination, (b) gender differences in this area, (c) barriers to self-examination, and (d) personality variables related to preventive action. The sample was comprised of 178 college students (44% males, 56% females), the majority of them Caucasian, single, and from middle- to upper middle-class backgrounds. The average age for men was 23.33 years and 21.43 for women. All of the participants were attending college for the 1993-1994 academic year.

Data were collected by questionnaires, men completing the Testicular Cancer Awareness Survey and women completing the Breast Cancer Awareness Survey. Both were developed by the authors and consisted of 24 yes-no questions, multiple-choice questions, and Likert-style self-ratings. The items assessed personal and family history of breast/testicular cancer, fear of developing cancer (perceived susceptibility), awareness of self-examination practices, whether self-examination was done on a routine basis, and confidence that self-examination was being performed correctly. The subjects were asked to check reasons they did not perform self-examination.
Another section assessed knowledge about breast/testicular cancer and methods for early detection in which questions were taken from pamphlets prepared by the American Cancer Society.

The last part of the questionnaire had three personality measures which either are known to be related to health promotion or have a theoretical relationship to the construct. These measures are internality of health locus of control as measured by the Multidimensional Health Locus of Control Scale (MHCL), perceived social support as measured by the Revised UCLA Loneliness Scale (UCLA), and worry about illness or physical symptoms as measured by the Hypochondriasis Scale from the MMPI-2 (HS).

Ninety-eight percent of the women knew about breast self-examination and mammography, but only one third of them practiced breast self-examination routinely. The most commonly cited reasons were lack of knowledge (20%), forgetfulness (26%), and feeling uncomfortable doing the procedure (15%). Thirty percent of the women rated their knowledge of correct breast self-examination as poor to very poor, while 26% rated it as good to excellent. Fifty-one percent rated their fear of getting breast cancer as
average in comparison to their peers but believed that they were moderately to highly susceptible to the disease. Only 5 out of 13 questions on breast cancer from the Breast Cancer Awareness Survey were answered correctly by at least half the sample.

Forty-six percent of the men were aware of TSE, and only 19% practiced it routinely. Over half of these men (59%) said the reason was lack of knowledge. Thirty-eight percent thought that TSE was not important to their health. Sixty-two percent of the men believed that they knew less about testicular cancer than their friends, while 75% rated their knowledge of correct TSE as poor to very poor. Nine percent of the men considered themselves vulnerable to testicular cancer.

On the Testicular Cancer Awareness Survey, the average score was 5.4 or 42% correct, and only 4 of 13 items were answered correctly by 50% or more of the sample. The men were poorly informed about the prevalence of testicular cancer, survival rates, known risk factors, correct TSE, and, most importantly, the fact that testicular tumors are usually discovered by self-examination.
Breast cancer was more common in families of the women in the study than testicular cancer was in the families of the men (22% vs. 0%). This aids in explaining why women felt more susceptible to breast cancer than men did to testicular cancer, $t(176) = 2.31, p = .02$. Women also believed that they were better informed on breast cancer, $t(176) = 5.63, p = .0001$, and they were more familiar with correct self-examination, $\chi^2(1) = 63.3, p = .0001$. More women were practicing self-examination regularly, $\chi^2 = 4.22, p = .04$, and more of them believed that they were performing self-examination correctly, $t(177) = 6.53, p = .0001$. For men, the biggest barrier to self-examination was lack of knowledge, $\chi^2 = 28.53, p = .0001$; for women the biggest barrier was forgetfulness, $\chi^2 = 7.03, p = .008$, and embarrassment, $\chi^2 = 4.48, p = .03$.

Katz et al. (1995) observed a modest but significant relationship ($p < .05$) between responses that self-examination was being done routinely and perceived knowledge of breast/testicular cancer (.38) and fear of cancer (.23). Internal health locus of control, loneliness, and hypochondriasis were unrelated (all $r < .10$) to cancer knowledge and self-examination in men and women.
A standard multiple regression analysis was done using a composite measure of cancer awareness as the dependent variable. The latter measure was the participant’s total score on the knowledge portion of the questionnaire plus answers to two additional questions, "I have heard about breast/testicular examination" and "I practice breast/testicular self-examination regularly." Scores on the MHLC, UCLA, HS, self-rated knowledge about breast/testicular cancer, fear of developing the illness, and confidence self-examination was being performed correctly were the independent variables. R for regression (.39) was significantly different from 0, F(6, 171) = 5.20, p = .0001, and only two of the independent variables (fear of cancer, p = .02, and confidence self-examination was being performed correctly, p = .009) significantly contributed to prediction of the cancer awareness measure.

One of the most important findings was that young men and women in the study showed significant knowledge deficits about risk factors, warning signs, and self-examination practices for testicular and breast cancer, respectively. While less than half of the men knew about testicular self-examination, almost all women were aware of breast self-examination and mammography. Similarly, the
majority of men said that they were uninformed about testicular cancer, felt ignorant about correct TSE, and only one in five were doing TSE routinely. One third of the women examined their breasts regularly.

Although accounting for a small part of the variance, the best predictors of cancer awareness and self-examination were fear of cancer and self-rated confidence that self-examination was being performed correctly. These findings are consistent with the Health Belief Model which assumes that perceived susceptibility to cancer motivates protective action. The results indicate that relatively few young women and even fewer young men are practicing a simple health promotional behavior that could save their life. Katz et al. (1995) recommended increasing people’s awareness of cancer and self-exam practices, possibly by informative and persuasive reminders in mass media or even concrete incentives. Again, this research study supports the current researcher’s study since it is consistent with the Health Belief Model and evidences a knowledge deficit of testicular cancer and TSE in college-aged men.

Katz et al. (1995) stated that they believe increasing the public’s awareness of cancer and early detection behaviors, mainly through the media, could
remedy the knowledge deficit of the groups at risk. In an attempt to evaluate the public knowledge of cancer detection and prevention, a pilot study by Nichols, Misra, and Alexy (1996) examined the attitudes, knowledge, and behaviors of 172 laypersons. The researchers underwent the study as a first step toward developing interventions to ensure that the public recognize the warning signs of cancer.

The sample (N = 172) was convenience and composed of laypersons 18 to 80 years of age who were willing to participate. The sample was 85% Caucasian, 11% African-American, and 4% other. Ninety-four percent had health insurance. There were 83 male and 89 female participants. The average age of the sample was 38 years.

Thirteen percent of women reported doing monthly BSE, 64% reported doing BSE when they remembered to, and 23% reported never doing BSE. For the 83 men, 58% reported doing TSE once a month, 30% reported doing TSE when they remembered to, and 12% reported never doing TSE.

Two percent of the participants said that they now had or had had cancer, and 78% reported knowing someone who had or had had cancer. When asked about their feelings on cancer detection, 12% had slightly to very positive
feelings, 33% had equally positive and negative feelings, and 55% had slight to quite negative feelings about cancer detection.

The instrument used for data collection was based on Fishbein and Ajzen’s Model of Reasoned Action and was devised by the students in the graduate class and the investigators. The model was made to predict volitional behavior and help in understanding psychological determinants of cancer detection.

The first section of the tool had 30 questions about the individual, health practices, and risk status in a forced-choice format. The second section was on identifying the seven cancer warning signals. The third section consisted of attitudes toward cancer detection methods, evaluated in a semantic differential format as the third section. The list section had 24 Likert-formatted statements or beliefs about the importance of cancer detection. Before data were analyzed, a Cronbach’s alpha was done on each scale and ranged from 0.8031 to 0.8897.

Race was significantly related to all subscale scores on the Attitudes Toward Cancer Detection Scale, and level of education was positively related to attitude scores.
toward BSE, mammography, pap smear, and rectal exam. Married women were more likely to get a mammogram. Annual household income was significantly related to scores on mammography, pap smear, rectal exam, TSE, and Beliefs about Cancer Detection Scale. Knowing someone with cancer was significantly related to scores on TSE, BSE, and pap smear.

Nineteen percent of the sample could not identify any of the cancer warning signals. Three was the median number of warning signs identified correctly, and 32 items were listed incorrectly as warning signs. The Theory of Reasoned Action states that attitudes and motivation to comply influenced by the perceived beliefs of others are predictors of compliance behavior, but this was not found to be true in this study. Only a weak association was found between behavior and motivation. Attitude and motivation to comply were strongly influenced by beliefs.

A principal component factor analysis with varimax rotation was done, and a secondary data analysis technique was used to determine if the 72 items on attitudes and belief could be seen as an indicator of a general attitude and belief index. Factor analysis revealed that the items on attitudes loaded on three factors: positive economic
(eigen value = 10.24, variance = 13.7%), positive emotional attitude (eigen value = 4.3, variance = 5.8%), and negative attitudes of the respondent (eigen value = 5.1, variance = 6.8%). The last component was the individual's beliefs about cancer (eigen value = 9.6, variance = 12.9%).

The variables that loaded on each factor were combined into indices with another Cronbach's alpha calculated to measure the internal consistency of these scales, the alpha coefficients ranging from 0.77 for negative attitude index to 0.92 for the positive economic attitude index.

As the negative attitudes of the participants increased, the practices decreased. Zero-order correlations for all five indices ranged from 0.0137 to 0.677. Positive correlations were found for all except practice and negative attitudes, $r = -0.113$.

The regression analysis showed that gender had the greatest impact on the predictive value of a person's practices, $R^2 = 0.16$. Positive attitude on economics increased the $R^2$ to 0.361. Marital status increased the $R^2$ to 0.353. The overall model was significant, $F = 7.689, p = .0001$. 
The researchers recommended that the study be replicated with a more culturally diverse and larger sample. Nichols et al. (1996) recommended that further study of how and why people learn about cancer detection is needed as are intervention studies. The study is applicable to the present researcher’s study in that this researcher described influencing factors on the practice of TSE as was done in the above study. The study also indicated that many men were not performing TSE regularly, if at all.

In a seminal study by Neef, Scutchfield, Elder, and Bender (1991), the purpose of the study was to determine the level of TSE awareness and practice and to identify characteristics related to TSE awareness and practice in a sample of college-aged men. A 26-item survey was given to 404 male college students during the first few minutes of 19 health-related or introductory psychology classes at San Diego State University.

The average age was 22 years, primarily white (78%), single (88%), and Christian (74%). More than 41% stated they had been taught TSE, and 23% said they had examined their testicles at least once in their life. Of the 92 who had practiced TSE once, 37% (representing 8.5% of the
total population) reported doing TSE monthly. Only those individuals who practiced TSE monthly were included in the study.

Having heard of TSE and testicular cancer, prior knowledge of the recommendation for monthly practice, reporting personal control over the development of cancer, and being aware of risk factors associated with testicular cancer were significant predisposing factors ($p < .01$). Although it was considered that the subjects who felt embarrassed about the subject would be reluctant to carry out TSE, this was not found to be the case ($p < .05$).

"Having learned TSE through written materials" was not significantly associated with monthly TSE. Yet, "having been instructed personally" was significant ($p < .01$). The correlation matrix indicated several factors as being highly correlated with monthly TSE. Ninety-four percent correlated was having practiced TSE in the past 6 months. Those respondents who had been taught TSE and practiced it within the last 6 months had a 92% correlation.

The regression analysis showed the analyzed factors explained 26% of the variation in the dependent variable, frequency of TSE practice. The most common responses to
why participants did TSE were that they felt they were prevention oriented and wanted to be safe. Having had past medical genital problems was another frequent response.

Those who did not practice TSE said that they would start monthly TSE if they received more information on TSE and testicular cancer. Some respondents stated that they would adopt practice if they believed they were at risk for testicular cancer.

Forty-two percent of the subjects reported being taught TSE. This number is higher than those reported in many other studies and could be due to the fact that most of the students sampled were enrolled in a health-related class and were, therefore, aware of health issues. Age and college class standing were significantly associated with monthly TSE, and regular monthly practice was more common among those 23 to 25 years of age and 26 years of age and over.

Neef et al. (1991) recommended that factors of TSE compliance continue to be studied lest an intervention be ineffective or improperly aimed. This study further supports that many men do not know how to do TSE, are not practicing TSE, or are not practicing TSE regularly. The aim of this study is also similar to the current
researcher’s purpose, and the sample is also college-aged men.

The Health Belief Model has been used as a theoretical framework in some studies conducted which assess screening behaviors for early cancer detection in high-risk populations. In a study by Burak and Meyer (1997), constructs of the Health Belief Model (HBM) were used to examine the gynecological screening beliefs and behaviors of a sample of 400 college women. Gynecological screening and pap smear testing are considered essential health practices due to the causal association between certain types of human papillomavirus (HPV) and cervical cancer. The purpose of this study was to use the framework of the Health Belief Model to examine the gynecological screening beliefs and behaviors of college women. A second purpose was to test the applicability of the Health Belief Model in predicting gynecological screening behaviors and intentions.

The sample consisted of 400 undergraduate females at the New England State College. The study was approved by the college’s human subjects committee, and then self-administered questionnaires were distributed at midyear hall and floor meetings to female students living on
campus. Each female was given an informed consent, the questionnaire, and an envelope. The women were told that participation was voluntary and the questionnaire was anonymous.

Neef et al. (1991) developed the questionnaire to be administered to college-aged women. The instrument’s validity was assessed by a panel of experts in female and adolescent health including clinicians, health educators, and a psychologist. The instrument was field tested for readability and comprehension with student representatives of the population being studied, and the reliability of the instrument was assessed with the test-retest method on a subsample of the population (n = 45), with an interval of one week between administration. The correlation scores for knowledge, information, and demographic items ranged from .91 to 1.0, while the correlation coefficients for belief items ranged from .58 to .91. The total correlation score was $r = .913$.

The part of the questionnaire relevant to the current study were items that assessed the gynecological screening behaviors, beliefs, and cues to action of college-aged women. The women were questioned on whether they had ever had gynecological exams and pap smears, approximate dates
of their last exams and pap smears, if they planned on having a gynecological exam and pap during the current year, if they had engaged in sexual intercourse, their age at first intercourse, and if they had ever had a sexually transmitted disease (STD) or abnormal pap smear.

Beliefs about gynecological screening and pap tests as well as cues to action were examined using the constructs of the Health Belief Model. Respondents were asked to ascertain the likelihood of their getting STDs or cervical cancer using a 5-point Likert-type scale to assess susceptibility. Items asking about the seriousness of STDs and cervical cancer as well as treatment and cures for each measured severity. The severity items were measured with Likert-type items, also. Benefits were measured with questions examining the importance of gynecological exams and pap tests to reproductive and overall health. Benefits were also measured with a Likert-type scale.

Pain as a barrier was estimated using 5-point items ranging from 1 (very painless) to 5 (very painful). To obtain the benefits-minus-barriers score, the barrier score was subtracted from the benefit score. Five items were examined that might cue a woman to have a
gynecological exam. Respondents were asked if their mothers had talked with them about gynecological exams, if they had learned about pap smears and gynecological exams in health education classes, if they had health insurance, if they knew whether their student health services or infirmary provided gynecological exams and pap smears, and if they knew if they could get a pelvic exam and pap smear with no insurance at the student health center. These parameters provided information about embarrassment and cost as potential barriers.

The ages of the sample ranged from 18 to 23 years, with a mean age of 19.1 years. Of the 400 participants, 290 of them, or 72%, reported that they had gynecological exams and pap smears. Of these 72%, 82% (n = 222) reported having the exams and pap smears within the past year with almost 15% (n = 43) having been examined within the past 6 months. Sixty percent (n = 239) reported that they planned to have pap smears within the current academic year. Of the participants, more than 80% had engaged in sexual intercourse. The mean age at first sexual intercourse was 16.3 years. Fifty-two of the women stated they had had abnormal pap smears, and 22 stated they had STDs.
The subjects did not see themselves as highly susceptible to STDs. More than 81% (n = 324) thought that they were “very unlikely” or “unlikely” to get an STD. Only 4% believed themselves “likely” or “very likely” to get an STD. The subjects were less sure about their susceptibility to cervical cancer. Forty-four percent (n = 170) stated that it was unlikely or very unlikely that they would get cervical cancer in their lifetimes, while 16% believed it was likely or very likely they would get cervical cancer. Forty-four percent replied with a neutral response.

There were strong beliefs about the severity of STDs and cervical cancer as 99% (n = 395) believed that STDs were serious or very serious, and 73% disagreed or disagreed strongly that STDs were easily treated and cured. The subjects had similar beliefs on the severity of cervical cancer as more than 98% (n = 392) responded that cervical cancer was a serious or very serious disease. Almost 50% of the participants (n = 196) disagreed or strongly disagreed that cervical cancer was easily treatable and curable in most women.

Subjects were very positive in their beliefs that gynecological screening and pap smears were beneficial to
their health. Almost 90% (n = 357) strongly agreed or agreed that regular pelvic exams were necessary for reproductive health. More than 93% stated that pap smears and pelvic exams were important to their health.

Thirty-six percent (n = 121) believed that pelvic exams were painful or very painful, while 29% responded that the exams were painless or very painless. Sixty-two percent (n = 236) of the women believed that pelvic exams were embarrassing or very embarrassing, while 18% responded that the exams were not embarrassing. Gynecological exams were believed by 42% (n = 147) to be expensive or very expensive, whereas less than 11% of the women thought the exams to be cheap or very cheap.

Cues to action that might predispose women to get pelvic exams and pap smears were examined. Sixty-five percent (n = 258) stated that their mothers had talked with them about pelvic exams. Of the 93% of the participants who stated that they had sexuality education classes, only 40% of them had been taught about pap tests or gynecological screening in these classes. Almost 95% of the women (n = 382) stated that they had health insurance; of these, 86% were covered by their parents’ policies while 14% had student health insurance. Only 32% of the
study participants knew that they could get pap smears and pelvic exams at the student health services or infirmary. Four percent knew that it was not necessary to have student health insurance to get pap smears and exams at the infirmary.

There were significant differences between the women who had had gynecological exams and pap smears (n = 290) and those who had not (n = 110) in the benefits-minus-barriers and cues to action variables. The women who had had pelvic exams and pap smears were more likely to believe the benefits of the exam were greater than those women who had not had exams, and they also had many more cues to action than those who had not had exams.

There were also significant differences among the women who intended to have exams and pap smears as compared with the nonintenders, the most significant noted in benefits-minus-barriers and susceptibility. Multiple regression analysis was done to determine the use of the Health Belief Model in predicting the pelvic screening behavior of the subjects. Regression on the severity, susceptibility, benefits-minus-barriers, and cues to action resulted in a multiple correlation of .381 and p = .0001. The constructs of the Health Belief Model were
successful in predicting almost 15% of the variance in screening behavior. The benefit-minus-barriers and cues to action gave the strongest beta weights.

Multiple regression analysis was conducted with intention to have exams as the dependent variable, and this analysis resulted in a multiple correlation of .328 and \( p = .0001 \). Once again, the benefits-minus-barriers and cues to actions contributed the most to the variance.

Even though the Health Belief Model constructs were only able to explain 15% of the variance in screening behavior and 11% of variance in intentions, the results of this study provide important data about the beliefs of college-aged women. For instance, the majority of the subjects did not believe themselves susceptible to STDs. The results also suggested that many students may not know the association between sexually transmitted HPV and cervical cancer. Another noteworthy finding was that 40% of the women who stated that they had attended sexuality education classes reported that they had learned about pelvic exams and pap smears in their classes.

Although the Health Belief Model's structure resulted in important information on the beliefs of college-aged women on gynecological screening, it was not too useful in
predicting their intentions and behavior. This could be due to the egocentrism that causes adolescents to believe that they are indestructible, the importance of peer influence, and the knowledge that their health-seeking behavior is not drive by a desire to avoid disease. Therefore, the results of this study show that beliefs may provide important but not sufficient explanations for women’s gynecologic screening behavior. Burak and Meyer (1997) recommended further research that can be applied to understanding young women’s behaviors and to increasing their preventive actions.

The Burak and Meyer (1997) study applies to the current research because it shows that the use of the Health Belief Model framework in the study resulted in important information regarding the subjects’ beliefs. Similar to the questionnaire used in the study conducted by Burak and Meyer (1997), several of the items on the present researcher’s questionnaire administered to the subjects also assess concepts of the Health Belief Model such as perceived susceptibility and benefits versus costs. Their study further backs the belief, as stated in the theoretical framework section of this study, that the majority of adolescents, regardless of sex, do not feel
that they are susceptible to disease or injury. The age of these subjects may be similar to those in the current study, thus perceived susceptibility may be similar.

In a study conducted by Olson and Morse (1996), concepts of the Health Belief Model as well as constructs from other theoretical frameworks were utilized to answer the following research questions: (1) "What factors are associated with doing and not doing breast self-examination (BSE)?" and (2) "Are the factors related to doing and not doing BSE, as identified in this study, different from those in existing frameworks?" (p. 580).

An ethnoscientific method was chosen in order to learn about individual women's BSE experiences and "elicits implicit and explicit culturally patterned beliefs" (p. 580). A qualitative design was used to determine whether a model drawn exclusively from interview data would identify any constructs not previously identified as part of the BSE experience. Interviews were conducted, following ethical clearance, with women who responded to advertisements in local newsletters and on a radio talk show. Those subjects thought to have different points of view were recruited. Articulate women of different ages with various educational, marital,
occupational, religious, and BSE practice backgrounds were sought.

The sample consisted of 13 women who had never had breast cancer, ranging from 31 to 65 years of age. Some were married and some were not, and the education level ranged from fifth grade to graduate studies. A variety of occupational and religious groups were represented. Seven participants practiced BSE, and the other six did not.

Data were collected by tape-recording face-to-face interviews with the subjects. The initial questions were general, beginning by asking women to talk about common women's health concerns, including both their own thoughts as well as things they had learned from other women. These recordings were transcribed and transferred to a mainframe computer for content analysis using QUAL. Sixty-one key words or phrases were identified and were transcribed verbatim on cards for sorting.

In the second interview, subjects were asked to perform several card sorts (dyadic, triadic, and Q-sort), to name every pile, and to determine the similarities and differences among the piles. The subjects were encouraged to make additional cards they felt were missing. In the
third interview, the subjects examined the taxonomies and made suggestions for change.

The findings show that participants did not readily discuss breast cancer and BSE. The subjects had negative views on it when asked directly and acknowledged breast cancer was a major concern for women and that the thought of having breast cancer seemed terrifying. The women generally agreed that discussions about breasts and cancer were undertaken privately, between mothers and daughters, or with a physician, if at all.

The subjects tended to think of BSE in one of two ways: a way of finding a lump that might be breast cancer or a way of finding a lump that probably was breast cancer. The meaning of breast cancer was negative, regardless of the role attributed to BSE, and viewed as a serious and disfiguring disease that often ends in death.

There was agreement among both “doers” and “non-doers” of BSE interviewed in this study that “doers” of BSE examined their breasts at least once every 3 months. The first domain, Do BSE, consisted of reasons to perform BSE. There were two primary reasons. For some women, BSE is conducted “to find cancer in time” as a screening activity. For a second group of women, BSE is done to “be
healthy." The second domain, Do Not Do BSE, consisted of reasons for not doing BSE. This domain had two segregates, preoccupied and uninformed.

The BSE frequency model was developed by analyzing the sequencing of data and comparing taxonomies for either doing or not doing BSE. When women who knew about BSE were asked how they got information about BSE, they described a group of cultural factors, such as having permission to talk about breasts and feeling comfortable doing the touching of their breasts required in BSE. The second factor associated with BSE was "believing information." Not all participants believed it was possible to find breast cancer in time to cure it. The third factor associated with BSE practice is the "meaning that having breast cancer" would have in one's life, in terms of treatment and potential death. The fourth factor associated with BSE practice is being able to take some time for one's self. Women who performed BSE talked of BSE as a part of what they did for themselves. Those who did not do BSE frequently said that they did not have time to do BSE, although none expressed regrets over not having time to do BSE.
According to the Health Belief Model, the belief that one is susceptible to breast cancer is associated with doing BSE regularly. Some of the subjects followed this pattern, and others did BSE because it was simply what they did to care for themselves, a reason much broader than “finding breast cancer.” Based on the Health Belief Model, the belief that breast cancer is a serious health problem is associated with doing BSE. This, too, was not confirmed for all women. Women who did BSE to “take care” of themselves did not talk about the seriousness of breast cancer. Other women did not even do BSE because they thought breast cancer was so serious that it would kill them, regardless of early detection. In general, the group of women who did BSE found difficulty in identifying a cue that had triggered the onset of their BSE practice.

Considering all of these points, the Health Belief Model was not sufficiently comprehensive enough to explain all the patterns of compliance and noncompliance in this study. Olson and Morse (1996) found that the models traditionally used to study health behavior, one being the Health Belief Model, overemphasized the contribution of cognition and under emphasized the contribution of culture.
The researchers recommended that given the private nature of talk about breasts and cancer in this culture, nurses and others who plan to teach women how to do BSE should do so privately and one-on-one. Olson and Morse (1996) also recommend that women first be asked if they want to learn how to do BSE. Although the answer may be no, the researchers believed that the recognition of the right of individuals to choose whether to receive information on BSE shows respect for their autonomy. The researchers stated that if the client does not want to learn, she will probably not be receptive to the information, thus preserving the nurse-client relationship, saving time, and leaving the door open for future discussions on this and other topics of importance to health.

The above study is of relevance to the present research for several reasons. Although the Health Belief Model did not completely explain all reasons for compliance and noncompliance with BSE, it did serve as an explanation for some of the reasons, such as perceived susceptibility and perceived seriousness. The important concept of the women’s social culture was also brought to the attention by Olson and Morse (1996) in the explanation
of reasons for doing or not doing BSE. Culture is also one of the factors considered in the analyzation of data on the current researcher’s qualitative item on the questionnaire. For those women who do not practice TSE, the item requires a specific reason as to why they do not practice TSE.

Olson and Morse (1996), in their recommendations, discussed a different approach to incorporating self-examination education into a plan of care for clients, asking the client, first, if they would like to learn the technique and not proceeding without permission. While considering a patient’s autonomy may be important, many health care providers neglect teaching self-examination altogether and offer the client no such option.

In summary, all the studies in the review of literature provide more evidence that the majority of men in the population at risk (high school and college) are unfamiliar with testicular cancer and TSE and are not practicing TSE. Some of the studies reinforce the Health Belief Model, the theoretical framework on which this study is based. Other studies mentioned specifically suggest that additional research be done to determine incidence of TSE in college-aged populations, directly
supporting this researcher’s efforts. Together, all of these studies help strengthen the basis for this researcher’s study and provide assistance in developing an optimal research study.
Chapter III

The Method

The purpose of the study was to identify the incidence of TSE among college-aged men and the factors influencing the practice of TSE. In this chapter the design, variables, setting, population, and sample are discussed. The data collection techniques, instrumentation, and procedure are also explained in depth.

Design of the Study

The descriptive survey design was undertaken by this researcher to identify the incidence of TSE in the college-aged population and factors affecting the practice of TSE. This study identifies frequency of self-exams performed by college-aged men and influencing factors of TSE performance. A descriptive study is the most appropriate design since "descriptive studies are undertaken to describe what exists in terms of frequency or occurrence (or its presence versus absence" (Polit & Hungler, 1995, p. 150).
Variables

The controlled variable in this study was college-aged men. The variables of interest were frequency of TSE and influencing factors for the practice of TSE. Intervening variables included previous knowledge of TSE, a family history of cancer, and an increased awareness of cancer.

Setting, Population, and Sample

Setting. The setting was in a rural state university town in Northeast Mississippi.

Population. The population consisted of male students enrolled in a southeastern state university between the ages of 18 and 25 years.

Sample. A convenience sample consisted of approximately 100 men who attended the southeastern state university and who sought care at the campus health center on data collection days. Participation was voluntary. Faculty were not asked to participate.

Data Collection

Techniques/instrumentation. The instrument used was a 12-item questionnaire, the Piller-Durham Questionnaire (see Appendix A). This questionnaire had been used in a
prior quasi-experimental study by Piller on a sample of high school males. Written consent from Howard Piller to use a modified version of his tool was obtained (see Appendix B). The questionnaire was revised with the addition of some pertinent questions to this study as well as the deletion of some questions that were not relevant to this particular study.

The purpose of the questionnaire was to gather personal information about the sample. The items are checklist, fill-in-the-blank, multiple-choice questions. Questions 1-3 on the form relate to demographic data, such as age, year in school, and race. Questions 4-10 relate to exposure to others with cancer in general as well as testicular cancer specifically, awareness of a greater risk factor of testicular cancer in this age group, knowledge of TSE, and knowledge of correct practice of TSE. Questions 11 and 12 relate to the participants’ practice of TSE, where the participant learned TSE, frequency of practice, and reasons reported for not performing TSE. One question, age, was fill-in-the-blank. Five questions were multiple-choice, and eight questions (two of these were part of one question) were yes/no. None of the 12 questions were scored right or wrong as there is
no right or wrong answer for demographic information. The modified version was reviewed by a panel of experts who determined face validity within the confines of this study.

Procedure

Approval to conduct the study was obtained from the Committee on Use of Human Subjects in Experimentation at Mississippi University for Women (see Appendix C) and from the university and health center in which the investigation took place (see Appendix D). Following approval, this researcher first notified the medical director at the health center of the data collection days as well as the researcher's presence and the process of data collection.

Once this notification had taken place and agreement on the data collection days had been reached, the researcher went to the health center on the data collection days and asked men in the waiting area of the campus health center if they would be willing to participate in this study. The researcher wore an identification pin with name, nurse practitioner graduate student, and Mississippi University for Women. Upon approaching potential participants, the researcher asked
if they were a student or faculty member. If the person was a faculty member, the researcher did not consider them a potential participant. The procedure was carried out in a cultural and contextually sensitive manner so as not to embarrass, intimidate, or disturb the patients. The investigator asked the potential participants if they would like to participate in the research study and explained to them that it consisted of them completing a self-administered questionnaire which was to be placed inside a box once finished.

For those willing to participate, a consent form (see Appendix E) and pen were presented. A clipboard was also available, if needed. The investigator explained that their answers would remain confidential as a coding system would be used and told them that anonymity would also be maintained by reporting the data as group data. The potential participants were assured that only the investigator would have access to the information provided by them. The researcher answered any additional questions regarding the study that the potential participants had as well as clarified any questions on the content of the consent form. Once a signature and date on the consent form was obtained, a questionnaire was given to the
subjects to complete. The investigator then informed the participants to drop their completed questionnaires into the covered box and pick up an American Cancer Society pamphlet on testicular cancer and testicular self-exam (see Appendix F) to keep for a source of information. On the pamphlet, the name and telephone number of the investigator were written in the event that any of the participants had any further questions or concerns regarding testicular cancer or testicular self-exam. The investigator was available while the participants were completing the questionnaire to answer or clarify any questions. Upon completion of the questionnaire, the subjects dropped the form into a covered box where the data were stored until data collection was complete for the day. The box was taken by the investigator at the end of each data collection day where no one else could access the completed questionnaires. The data collection took place on one day per week starting in the middle of the spring semester 1998 and ceased at the end of the semester when the desired number of subjects participated.

Data Analysis

Data analysis involved descriptive statistics, including frequencies and percentages for questions 1 to
11. (Question 12, a qualitative question, was analyzed using themes and bracketing.) To determine factors influencing the practice of TSE, correlations between several items and outcome measures were done. Practice of TSE correlated with age, class, race, family history of cancer, knowledge of testicular cancer, whether the subject had heard of TSE, knowledge of someone with testicular cancer, whether a health care provider examined testicles, and whether the subject had been taught TSE. Correlations were conducted using the Pearson product-moment for continuous items, point by serial to measure dichotomous items, and phi-coefficient to measure two dichotomous items. For instance, correlations between practice and age, class, race, and number of times were conducted.
Chapter IV

The Findings

A descriptive survey design study was conducted to identify the incidence of testicular self-examination (TSE) practice in college-aged men at a southeastern state university and to describe the factors influencing the practice of TSE. Data were collected using the Piller-Durham Questionnaire. The Health Belief Model provided the theoretical basis for the current study. This chapter delineates the sample and the results of data analysis.

Description of Sample

The sample (N = 100) consisted of men attending a southeastern state university who presented to the college health center and were willing to participate in the study. The men ranged in age from 18 to 37 years, with a mean age of 22.33 years and a median age of 22.00 years. The majority of the sample (30.0%) were senior college-aged students. Caucasians comprised the majority of the sample (78.0%), while the remainder of the sample was African American, Asian, Native American, and other. A
summary of the demographic characteristics can be found in Table 1. Since the sample consisted of 100 men, frequencies and percentages were identical. Therefore, only percentages were presented in Table 1.

Table 1

Summary of Sample Demographics for Age, Educational Level, and Race Using Percentages

<table>
<thead>
<tr>
<th>Demographics</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
</tr>
<tr>
<td>18-21</td>
<td>49.0</td>
</tr>
<tr>
<td>22-24</td>
<td>30.0</td>
</tr>
<tr>
<td>25-28</td>
<td>13.0</td>
</tr>
<tr>
<td>29-37</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Educational level</strong></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>16.0</td>
</tr>
<tr>
<td>Sophomore</td>
<td>18.0</td>
</tr>
<tr>
<td>Junior</td>
<td>20.0</td>
</tr>
<tr>
<td>Senior</td>
<td>30.0</td>
</tr>
<tr>
<td>Graduate</td>
<td>13.0</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>10.0</td>
</tr>
<tr>
<td>Asian</td>
<td>9.0</td>
</tr>
<tr>
<td>Asian Indian</td>
<td>1.0</td>
</tr>
<tr>
<td>Caucasian</td>
<td>78.0</td>
</tr>
<tr>
<td>Mediterranean Islander</td>
<td>1.0</td>
</tr>
<tr>
<td>Native American</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Note. N = 100.
Items 4-10 on the Piller-Durham Questionnaire assessed the subjects' knowledge of testicular cancer and TSE, their risk factors for testicular cancer, and their opportunities for learning TSE. Over half of the sample (N = 53) reported on item 4 that they had blood relatives living or who died from cancer. The types of cancer reported were as follows: lung, colon, breast, bone, prostate, lymph nodes, brain, skin, ovarian, and liver.

Those who had heard of testicular cancer (item 5) comprised 79 of the 100 participants of the sample. On item 6, 11 of 100 men stated that they knew someone who had had testicular cancer. On item 7, 84 of 100 men reported that both their testicles descended as a child. Of the 6 men out of 100 who stated that both of their testicles did not descend as a child, one man practiced TSE.

On item 8, 53 of 100 men reported that they had heard of TSE. The participants reporting on item 9 that they had had a testicular exam by a health care provider comprised 53 of 100 men in the sample. On item 10, which asked if the participants had been taught TSE by a health care provider, 13 of 100 men reported yes.
Results of Data Analysis

The Piller-Durham Questionnaire was used to collect data, specifically items 11 and 12, to answer the two research questions. Data were analyzed using percentiles. The first research question was what is the incidence of testicular self-examination (TSE) among men attending a southeastern state university? The incidence of TSE was 22% (n = 23). Twenty of these subjects reported TSE performance within the last 6 months. The mean number of times TSE was reported to be conducted within the last 6 months was 2.55 times. Of these 20 subjects, 10% (n = 2) reported never, 20% (n = 4) reported once, 20% (n = 4) reported twice, 25% (n = 5) reported three times, 15% (n = 3) reported four times, and 10% (n = 2) reported six times.

All of the men who reported TSE practice (n = 23) responded to a question in which the participants were asked where they learned to do TSE. Table 2 reflects this data. Five of the 7 who answered other reported they learned TSE from television, military, pamphlet in the health center, healthcare magazine, and father.
Table 2

**Learning Sources for the Practice of TSE Presented in Percentiles**

<table>
<thead>
<tr>
<th>Source</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>7</td>
<td>30.4</td>
</tr>
<tr>
<td>Nurse</td>
<td>4</td>
<td>17.4</td>
</tr>
<tr>
<td>Health education</td>
<td>5</td>
<td>21.7</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>30.4</td>
</tr>
</tbody>
</table>

The second research question was what are the factors influencing the practice of TSE in men attending a southeastern state university? The factors influencing the practice of TSE are presented in Table 3. The predominant factor was lack of knowledge. Seven of the 9 who reported other specified what they meant by "other." Their responses were as follows: (a) "My fiancé plays with them enough; she will tell me if anything feels different," (b) "Don't really think about it," (c) "Did not think I could be affected at this age," (d) "I haven't thought about it," (e) "sounds kind of painful," (f) "no real cause," and (g) "Don't really care; I figure I'll notice if it happens."
Table 3

Factors Influencing the Practice of TSE Presented in Percentiles

<table>
<thead>
<tr>
<th>Factor</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSE not important</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Did not know about TSE</td>
<td>29</td>
<td>29.0</td>
</tr>
<tr>
<td>Did not know how to do TSE</td>
<td>36</td>
<td>36.0</td>
</tr>
<tr>
<td>No time</td>
<td>2</td>
<td>2.0</td>
</tr>
<tr>
<td>Testicular cancer will not happen</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Note. n = 79.

Additional Findings

Since Caucasians are four times more at risk than African American males to develop testicular cancer (American Cancer Society, 1997), cross-tabulation between race and relatives having cancer was done to determine how many cases of cancer occurred in each race. Cross-tabulation between race and having been taught TSE by a health care provider also was conducted to determine how many subjects were taught TSE by a health care provider in
each race. A summary of these findings can be found in Tables 4 and 5.

Table 4

Cross-Tabulation Between Race and Relatives Having Cancer

<table>
<thead>
<tr>
<th>Race</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>5</td>
<td>55.6</td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>22.2</td>
</tr>
<tr>
<td>Caucasian</td>
<td>45</td>
<td>57.7</td>
</tr>
</tbody>
</table>

Table 5

Cross-Tabulation Between Race and Having Been Taught TSE by Health Care Provider

<table>
<thead>
<tr>
<th>Race</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>1</td>
<td>7.7</td>
</tr>
<tr>
<td>Asian</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Caucasian</td>
<td>12</td>
<td>15.6</td>
</tr>
</tbody>
</table>
The researcher also was interested in determining significant correlations among the variables. The Pearson product-moment correlation was utilized at the $p \leq .05$ level of significance to determine the relationship between those who had heard of testicular cancer and their likelihood to practice TSE utilizing the total scores on the Piller-Durham Questionnaire. A significant relationship emerged, $r(79) = .219$, $p = .03$. Subjects who were aware of testicular cancer were more likely to practice TSE. Also, the significant relationship, $r(53) = .512$, $p = .00$, between a prior knowledge of TSE and the likelihood of TSE practice was tested. The researcher determined that those subjects who had prior knowledge of TSE engaged in TSE practice. A positive relationship between having been taught TSE, $r(53) = .509$, and the practice of TSE was determined. However, the number of subjects were insufficient to determine the $p$ value. There was a significant negative relationship between not knowing how to do TSE and the practice of TSE, $r(36) = .350$, $p = .01$. Therefore, those who did not know how to perform TSE were less likely to practice TSE.
Chapter V

The Outcomes

Testicular cancer is the most common cancer of college-aged men. Testicular self-examination (TSE) is a method for detecting testicular cancer at an early stage. This researcher found, through an extensive review of literature, that many college-aged men demonstrated a knowledge deficit about testicular cancer and TSE. A descriptive survey design study, using the Health Belief Model as a theoretical framework was conducted to identify the incidence of TSE in the college-aged population and the factors influencing the practice of TSE. Males attending a southeastern state university were surveyed by the researcher using the Piller-Durham Questionnaire at the university health center. Data were analyzed using descriptive statistics and correlational coefficients. This chapter presents a discussion of the findings and the conclusions, implications, and recommendations that resulted from these findings.
Summary of Findings

The sample was comprised of 100 men attending a southeastern state university ranging in age from 18 to 37 years with a mean age of 22.33. Undergraduate students made up most of the sample (84%) with seniors being the predominant class (30%). The majority of the sample (78%) were Caucasians.

The first research question was what is the incidence of testicular self-examination (TSE) in men attending a southeastern state university? The incidence of TSE in men attending a southeastern state university was 22%. For men who practiced TSE, the mean number of times for the last 6 months was 2.55. Of those who practiced TSE, the majority (30.4%) related that the medical doctor was their source of TSE education.

The second research question was what are the factors influencing the practice of TSE in men attending a southeastern state university? Additional findings revealed significant correlations (p < .05) among knowledge of testicular cancer, knowledge of TSE, having been taught TSE and lack of knowledge of TSE technique. If the subjects had heard of testicular cancer, they were more likely to practice TSE (p = .032). The subjects were
more likely to practice TSE if they had heard of TSE ($p = .000$). The participants were more likely to practice TSE if they had been taught TSE, although this was not significant concerning the number of times the men performed TSE in a 6-month period. There was a negative relationship between not knowing how to do TSE and the practice of TSE ($p = .013$). Those who did not know how to do TSE were less likely to practice TSE. Therefore, the main factors correlated with a TSE practice deficit in this sample were that they did not know about TSE and they did not know how to do the same. Race was not a significant factor for the practice of TSE in this sample.

**Discussion**

The research question findings on the incidence of TSE in the current study (22%) are similar to the findings in the study by Neef et al. (1991) in which 404 college-aged males at San Diego University were surveyed. Twenty-three percent reported examining their testicles at least once in their life. Of the 23% who had practiced TSE once, 37% reported doing TSE monthly. Walker (1993) reported a TSE incidence of 17.2% among high school students. The similarity between the current study results (22%) and Walker's (1993) study findings (17.2%) is disturbing,
considering the different educational levels of the populations studied. Expectations would be that well-educated and more mature college-aged men have a markedly higher TSE incidence than the high school population. Nichols et al. (1996) surveyed 83 men between the ages of 18 and 80 years with a mean age of 38 and found that 88% reported practicing TSE. Fifty-eight percent reported doing TSE once a month, and the remaining 30% reported doing TSE when they remembered. The incidence of TSE reported in the study by Nichols et al. (1996) is four times higher than the incidence in the current study. This could be due to the fact that the mean age of 38 in the sample studied by Nichols et al. (1996) was considerably higher than the mean age of 22 years in the current study. One could speculate that with increased age comes increased knowledge. In another study, Katz et al. (1995) conducted a survey on 78 college-aged men, and their findings showed a 19% rate of TSE practice. These results (19%) are similar to the current study findings (22%) and further demonstrate that a lack of TSE practice exists among college-aged men.

For those men (n = 20) who answered how many times they performed TSE within the last 6 months, only 2%
reported practicing TSE on a monthly basis. The mean number of times TSE was reported within the last 6 months was 2.55 times. The American Cancer Society (1995) recommends monthly TSE which has been shown to decrease the number of testicular cancer deaths (Dewald & Zientek, 1996). The outcomes reported in this study are lower than the results from the study of 83 men by Nichols et al. (1996) in which 58% reported doing TSE once a month. The researcher surmises that knowledge deficit regarding TSE is the critical cause for lack of correct practice.

Some demographic findings were worthy of discussion. Christophersen et al. (1986) studied 10 men between the ages of 18 and 40 years who were videotaped doing TSE and judged against a TSE checklist. It was discovered that once the subjects learned how to do TSE, they were more likely to practice it. This supports the demographic responses which revealed that knowledge of TSE and being taught TSE positively influenced the practice of TSE. Thus, the subjects were more likely to practice TSE if they had heard of testicular cancer which reinforces some aspects of the Health Belief Model. The Health Belief Model states that perceived susceptibility and perceived seriousness of the illness have a strong cognitive
component and are somewhat dependent upon knowledge. One could speculate that the subjects felt that they were susceptible to the disease and, therefore, practiced early detection behaviors. The participants were also more likely to practice TSE if they were aware of TSE and knew how to perform the procedure. Lack of knowledge on testicular cancer, TSE, and how to perform TSE acted as barriers in the practice of TSE in this sample (Becker, 1974).

Fifty-three percent of those surveyed reported that they had heard of TSE, and 53% reported that a health care provider had examined their testicles. Therefore, of those who reported having heard of TSE, all (100%) reported that they had also been examined by a health care provider. Thirteen percent of those surveyed reported that they had been taught TSE by a health care provider. In a study by Misener and Fuller (1995), 232 physicians were surveyed in a rural southern state. Twenty-nine percent of the physicians reported instructing males to do TSE, and 4% reported having their patients do a return demonstration. The reported teaching of TSE by physicians (29%) in the Misener and Fuller study is more than twice the number of reported teaching of TSE reported by the male clients in
this sample (13%). One could speculate that the physicians who had contact with the subjects were uncomfortable teaching TSE or did not feel that it was enough of a risk for the young men in order to teach TSE.

The findings in this study of a 53% knowledge rate of TSE and a 53% rate of testicular examination by a health care provider were surprisingly high when compared to Schaffner's (1995) study results. Schaffner (1995) interviewed 211 male clients (61% of them ages 21 to 34) in a state-operated, northeastern metropolitan area and found that 1.4% (n = 3) knew about TSE. Schaffner attributed this knowledge deficit to "practitioners excluding it from a part of routine practice" (p. 11). However, study results of the knowledge rate of TSE (53%) are similar to the findings of Katz et al. (1995) who indicated that of the 78 college-aged men surveyed, 46% of the men were aware of TSE. Neef et al. (1991) found that of the 404 college-aged males surveyed at San Diego University, more than 41% stated they had been taught TSE.

Finney et al. (1995) in their study to evaluate the effects of TSE teaching methods on TSE practice also reported a knowledge deficit in men (N = 48) attending a large southeastern state university, although no
statistics were reported in the study. The researcher purports that more practitioners are including education of TSE in their practice.

Seventy-nine percent of the sample in this study reported that they had heard of testicular cancer. These findings were surprising when compared to the findings in the literature review. The number 79% may be suspect since many of the men may have answered affirmatively in order to seem knowledgeable on the subject, even if they actually were not.

The 79% testicular cancer awareness rate in the current study was higher than the results in Walker's (1993) study on high school males' knowledge of testicular cancer and TSE. The mean score on a 15-item pretest on testicular cancer taken by 136 participants was 53.5%. The lower knowledge rate of testicular cancer in Walker's (1993) study could be attributed to youth and lack of experience in the sample. Walker's (1993) study further demonstrated that men most at risk for testicular cancer were not aware of their risk and have no knowledge of early detection techniques (TSE) for testicular cancer.

Katz et al. (1995) found that the college-aged men (N = 78) surveyed were poorly informed about the prevalence
of testicular cancer, survival rates, and known risk factors. On the Testicular Cancer Awareness Survey, the average score was 5.4 or 42% correct, and only 4 of 13 items were answered correctly by 50% or more of the sample. The testicular cancer awareness rate (42%) in the study by Katz et al. also is lower than the current study’s results (79%). The study by Katz et al. (1995) further demonstrates a low incidence of testicular cancer knowledge in college-aged men.

Eleven percent of the sample stated that they knew someone who had testicular cancer. Of those, only 4 reported that they practice TSE. In this sample, the findings demonstrate that knowledge of someone with testicular cancer does not necessarily make one more inclined to practice TSE. This finding does not support perceptions of the Health Belief Model because knowing someone with testicular cancer should have stimulated an internal cue to action for practicing health promotional behaviors such as TSE. The outcomes of this study did not strongly suggest that knowing someone with testicular cancer acted as a trigger for the men to practice TSE (Becker, 1974).
Eighty-four percent of the sample stated that both their testicles descended as a child. Of those men who reported that their testicles did not descend as a child, one practiced TSE. These sample findings are disturbing because studies have concluded that men with undescended testicles have a 10 times greater risk for developing testicular cancer than those who do not have undescended testicles (Souhami & Tobias, 1995).

Of the 22% of the sample who reported TSE practice, almost a third (30.4%) learned TSE from a medical doctor, and, equally, almost a third (30.4%) learned from a nurse or health education class. The 30.4% (n = 7) who reported other sources of learning about TSE reported learning from television, military, pamphlet in the health center, health care magazine, and father. These results are similar to the findings by Misener and Fuller (1995) who surveyed 232 physicians in one rural southern state. Twenty-nine percent of physicians reported instructing male clients to perform TSE, and 4% of the physicians reported having their patients do a return demonstration. Only 13% of the physicians surveyed displayed literature in their office about TSE. This finding may help explain why only two men in the current study reported learning
TSE from a pamphlet in the health center and a health care magazine.

Finney et al. (1995) concluded that adherence to TSE was high for both those receiving general continuance instructions from the health care provider on monthly TSE and those who had social support, or someone to remind them to practice TSE every month. The current study results support these findings, demonstrating that those men who received specific instruction on how to do and how often to do TSE were more likely to perform the exam.

The results of the research question about factors which influenced the lack of practice of TSE were mixed. On the item, "If you never do TSE, what is the reason," over a third (36%) of the sample answered that they did not know how to do TSE, and 29% reported that they did not know about TSE. The results of this study demonstrate that the predominant factor in lack of practice of TSE (65%) of the sample was a lack of knowledge concerning TSE. In a survey study by Katz et al. (1995) of 78 college-aged men, 46% of the men were aware of TSE, and only 19% practiced it routinely. Over half of these men (59%) said the reason was lack of knowledge. These findings (59%) are strikingly similar to the current study results (65%) because
knowledge deficit was the predominant reason for not doing TSE. Katz et al. (1995) reported that the biggest barrier to TSE was lack of knowledge. The results of the current study support the Health Belief Model because a lack of knowledge can act as a barrier to health promotional behaviors such as TSE (Becker, 1974).

Some additional factors stated by participants in the practice of TSE were that, "TSE is not important (2%), TSE would not happen to him (1%), and they did not have time (1%)." One may speculate that those participants may have perceived themselves to be at no risk or they did not know the value of TSE in early detection of testicular cancer. Another speculation is that the individuals did not value their health and, therefore, saw no reason to practice TSE. For the individual who reported that "TSE would not happen to him," it could be considered that the subject did not consider himself susceptible to testicular cancer, or he may have responded that testicular cancer could not happen to him due to some anatomical defect (castration). In the study by Katz et al. (1995), 9% of those surveyed considered themselves vulnerable to testicular cancer. The results in the Katz et al. (1995) study are somewhat higher than the current study's 1%. Therefore, one may
speculate that denial of susceptibility to testicular cancer by the subjects of the current study was not a major issue.

The remainder of the respondents reported other reasons. Of these responses, two of the men stated that they did not “think about it.” So, 2% contribute their lack of practice of TSE to the fact that they did not remember to do it. Here, an external cue to action (TSE card to hang in the shower) as described by the Health Belief Model might remedy their forgetfulness. Three of the men who responded to “other” demonstrated a knowledge deficit about testicular cancer and TSE. The subject who responded that he “did not think [he] could be affected at this age” was unaware that he was in the at-risk age group for testicular cancer and, thus, demonstrated a perceived lack of susceptibility. The respondent who stated that TSE “sounds kind of painful” had probably never been educated on how to do a TSE, a painless exam, if done correctly. The subject whose reason for not doing TSE was “no real cause” either was unaware of his risk for developing testicular cancer or did not feel that he was vulnerable to the disease.
Another respondent to “other” on reasons for not performing TSE did not seem concerned with early detection. He stated that he “[did not] really care” and thought that he would “notice if it happens.” Apathy could be considered another factor influencing a lack of practice of TSE in this sample. Another subject stated that his “fiancé plays with them enough” and would “tell [him] if anything feels different.” Therefore, the factor influencing lack of TSE was dependence on someone else to do the detection.

There were some cross-tabulation findings between race and the percentage of reported cancer. Over half of the sample reported that they have blood relatives living or who died from cancer. Of those who answered yes to having cancer in their family, Caucasians comprised more than half (57.7%). African Americans followed closely at 55.6%, and Asians made up 22.2%. These reports are similar to incidence reports of testicular cancer since Caucasians are more at risk than African American males to develop the disease (American Cancer Society, 1997). Therefore, the current study findings show that, although Caucasians are more likely to develop testicular cancer, there is no difference in TSE practice with respect to race.
In another cross-tabulation finding between race and whether or not a health care provider taught the subject how to do TSE, over 15% of Caucasians reported being taught TSE by a health care provider, while only 7.7% of African Americans reported being taught. Zero percent of Asians reported being taught TSE by a health care provider. These findings may reflect the health care providers' perceptions of their patients' risks for testicular cancer. Caucasians are at greater risk than African Americans. Perhaps, the health care providers believe that since African Americans are at less risk than Caucasians it is not as important to include teaching TSE in their care.

Limitations

There were two potential limitations identified. The first limitation identified was sample bias. The sample’s ethnicity represented primarily Caucasian with 10% African Americans which is less than the 33% strata for Mississippi. However, the sample has merit in that the size was large and may represent minorities in a college population. Findings may then be generalizable to other male college populations.
The second limitation was instrumentation in the current study. The instrument lacked established validity and reliability since it had been used one time with high school students and never with college-aged men. Modifications were made relevant to changing format and adding questions. However, the tool was the only survey questionnaire available to solicit information relative to the research questions and was assumed to have face validity within the confines of this study.

Conclusions

There is only a 22% incidence of TSE practice in men attending a southeastern state university. This finding is similar to other researchers (Christophersen et al., 1986; Katz et al., 1995; Neef et al., 1991; Nichols et al., 1996; Walker, 1993).

Lack of education has the greatest influence on lack of TSE practice among college-aged men. This conclusion is supported by the Health Belief Model in that decreased knowledge is a barrier to health promotional behaviors. The Health Belief Model serves to explain that those who know how to perform TSE are more likely to practice TSE.
Implications for Nursing

The current study’s findings have implications for nursing in four areas as follows:

Practice. Since only 53% of the sample reported being examined by a health care provider, nurse practitioners in the primary care setting are in a prime position to improve these statistics by making testicular examination a part of their routine physical exam. Only 13% of the sample reported being taught TSE by a health care provider. Of those who practiced TSE, 17.4% reported being taught by a nurse. Therefore, as a professional who prides himself or herself on health promotion, nurse practitioners should incorporate TSE as an educational component of every male physical exam just as breast self-examinations are taught. Nurse practitioners should ask their male clients if they are practicing monthly TSE.

Strategies for motivation and encouragement of clients to do TSE monthly are necessary. If the clients are not practicing TSE, nurse practitioners need to explore reasons for not practicing TSE and reinforce the importance of monthly TSE in early detection of TSE. The nurse practitioner also should teach the client correct TSE, if applicable. Another method that could be used to
validate the client's knowledge of TSE is to request client demonstration of TSE. Programs need to be developed to increase the community's awareness of testicular cancer and TSE.

Research. The findings of the current study are significant because the need for community knowledge of testicular cancer and TSE is apparent. The current study results also add to the body of research and provide a scientific basis for actions taken to improve men's knowledge on testicular cancer and TSE. Dissemination of the research outcomes allows for improved practice and further research. Results of this study are inconclusive because of lack of research with college-aged men and TSE. Perhaps, a qualitative study to explore reasons why men do not practice TSE is appropriate since surveys do not always identify factors nor allow for subjects' personal input. Additionally, since TSE is recommended monthly, longitudinal data collection would help to more accurately determine correct TSE practice.

Theory. The current research has implications for theory in that it supports concepts contained in the Health Belief Model. For instance, a knowledge deficit was demonstrated to be a barrier in the practice of TSE
because such ignorance influenced the subjects’ perceived susceptibility and perceived seriousness of testicular cancer. If the subjects did not know about testicular cancer, the population at risk, and the terminal aspect of the disease, they did not know to prevent it. Even if they did know about testicular cancer, many did not know about TSE and its value in the early detection of testicular cancer. Therefore, the nurse practitioner should include concepts of the Health Belief Model and recognize real or potential barriers to TSE practice and help clients overcome them.

Education. Based on the outcomes of this study, it is important for nurse practitioners and other clinicians to have an increased awareness regarding the importance of testicular exams and teaching TSE. This awareness is especially important since there has been an increase in the incidence of the condition in recent years. TSE is important to the current health care industry because of the low cost of the examination compared to the treatment for cancer, the low risks of TSE, and the positive results of early intervention. Therefore, it would behoove nurse practitioners to make a conscious effort to increase community awareness of testicular cancer and TSE. Some
ways to increase awareness of the public include nurse practitioners incorporating testicular cancer and TSE education into office visits, increasing media coverage of the condition and the early detection technique, and holding community education sessions that cover the topic.

**Recommendations**

Based on the outcomes of the current study, the investigator recommends the following:

**Research.**

1. Replication with a more ethnically representative sample.

(2) Implementation of a qualitative design to explore men's attitudes, perceptions, and behaviors in the use or nonuse of TSE.

3. Development of more refined instruments for describing the incidence of TSE and testing the effectiveness of teaching methods of TSE.

4. Replication using a data collection procedure to add reciprocal effects between causal and model variables.

**Practice.**

1. Development of the Health Belief Model as a framework to predictors of compliance behaviors such as TSE.
2. Implementation of detection screening for testicular cancer in communities.
References


American Cancer Society. (1995). For men only: Testicular cancer and how to do TSE. American Cancer Society (82-250M-Rev. 6/95-No.2093-LE.


APPENDIX A

PILLER-DURHAM QUESTIONNAIRE
Piller-Durham Questionnaire

Directions: Please answer all questions. Thank you.

1. Age: _____

2. What year are you in college?
   ___ a. Freshman
   ___ b. Sophomore
   ___ c. Junior
   ___ d. Senior
   ___ e. Graduate student
   ___ f. Post-graduate student

3. What race are you?
   ___ a. Asian or Pacific Islander
   ___ b. African American or Black
   ___ c. Caucasian or White
   ___ d. Native American or Alaskan Native
   ___ e. Other (please specify): ________________________________

4. Do you have any blood relatives living or who died with cancer?
   ___ a. Yes   Type of cancer: ________________________________
   ___ b. No

5. Have you heard of testicular cancer?
   ___ a. Yes
   ___ b. No

6. Do you know someone who has had testicular cancer?
   ___ a. Yes
   ___ b. No

7. Did both of your testicles descend as a child?
   ___ a. Yes
   ___ b. No

8. Have you heard of testicular self-exam (TSE)?
   ___ a. Yes
   ___ b. No
9. Has a health care provider ever examined your testicles?
   ___ a. Yes
   ___ b. No

10. Did a health care provider teach you how to do a testicular self-exam (TSE)?
    ___ a. Yes
    ___ b. No

11. Did you practice testicular self-exam (TSE)?
    ___ a. Yes
    ___ b. No

    If yes, then:
    A. Where did you learn to do TSE?
       ___ a. Medical doctor
       ___ b. Nurse
       ___ c. Health education class
       ___ d. Other (please specify):______________________
       ___ e. Do not practice TSE

    B. How many times have you conducted TSE within the last 6 months?
       ___ a. Never (If never, proceed to question 12)
       ___ b. Once
       ___ c. Twice
       ___ d. 3 times
       ___ e. 4 times
       ___ f. 5 times
       ___ g. 6 times
       ___ h. Other (please specify):______________________

12. If you never do TSE, what is the reason?
    ___ a. Testicular self-examination is not important.
    ___ b. Did not know about testicular self-exam.
    ___ c. Did not know how to do testicular self-exam.
    ___ d. No time
    ___ e. Testicular cancer will not happen to me.
    ___ f. Other (please specify):______________________
APPENDIX B

PERMISSION TO USE TOOL
November 10, 1997

Ms. Angela Pruitt Durham
328 Critz Street
Starkville, MS 39759

Dear Angela:

I am writing to give you permission to copy and modify the demographic tool used in my study, "A Comparison of Teaching Strategies Promoting Continued Performance of Testicular Self-Examination in the Adolescent."

The results of your study, "Incidence of Testicular Self-Examination Performance in Men Attending a Southeastern University" would be of interest to me as additional data concerning testicular self-examination.

I wish you success in your research!

Sincerely,

(Bro.) Howard F. Piller, RN, MSN, FNP-C
APPENDIX C

APPROVAL OF THE COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION OF MISSISSIPPI UNIVERSITY FOR WOMEN
February 23, 1998

Ms. Angela Durham  
c/o Graduate Program in Nursing  
Campus

Dear Ms. Durham:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research with the additional requirement that facility permission be secured, if necessary.

I wish you much success in your research.

Sincerely,

Susan Kupisch, Ph.D.  
Vice President  
for Academic Affairs

SK:wr

cc: Mr. Jim Davidson  
    Dr. Mary Pat Curtis
APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL
FORM FOR THE PROTECTION OF HUMAN
SUBJECTS IN RESEARCH FROM
MISSISSIPPI STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD APPROVAL FORM
FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH
MISSISSIPPI STATE UNIVERSITY

STATEMENT OF BOARD: IRB DOCKET # 98-032

This is to certify that the research proposal entitled "Incidence of Testicular Self-Examination in College Aged Men and Factors Affecting the Practice of Testicular Self-Examination." submitted by: Name: Angela Pruitt Durham
Department: Graduate Nursing Department at MUW
Name of Advisor: Patricia E. Smyth
to Sponsored Programs Administration for consideration has been reviewed by the Regulatory Compliance Officer or the IRB and approved with respect to the study of human subjects as appropriately protecting the rights and welfare of the individuals involved, employing appropriate methods of securing informed consent from these individuals and not involving undue risk in the light of potential benefits to be derived therefrom.

Administrative Approval Date: ________________
(A) Contingent upon receipt____________________
(B) All necessary documents were received.

Expedited Approval Date: February 19, 1998
(A) Contingent upon receipt of____________________

X (B) All necessary documents were received.

Full Board Approval Date: ________________
(A) Contingent upon receipt of____________________

(B) All necessary documents were received.

Robyn B. Remotigue, MSU Regulatory Compliance Officer
February 19, 1998

Institutional Review Board Member
Date
(Revised form 8/96)
STATEMENT OF PRINCIPAL RESEARCHER/INVESTIGATOR

Title of Project: "Incidence of Testicular Self-Examination in College Aged Men and Factors Affecting the Practice of Testicular Self-Examination."

IRB Docket#: 98-032
Date of Approval: February 19, 1998

I understand that approval of this research involving human subjects is contingent upon my agreement:

(1) To report to the Institutional Review Board for the Protection of Human Subjects in Research any adverse effect or research related injuries which might occur in relation to the human experimentation.

(2) To submit, in writing for prior IRB approval, any alterations, revisions, or amendments to the plan of human research. (Call 325-3994 for the necessary forms)

(3) To maintain copies of all pertinent information related to the research activities in this project, including copies of informed consent agreements obtained from all participants.

(4) To adhere to all MSU Policies and Procedures Relating to Human Subjects, as written in accordance with the 45 Code of Federal Regulations 46.

Signature of Researcher/Investigator  Date

Signature of Advisor  Date

This form will be signed by you and your advisor (if you are a student) and return this page only to:

Robyn B. Remotigue
Regulatory Compliance Officer
Sponsored Programs Administration
Mississippi State University
P.O. Box 6156
Mississippi State, MS 39762

Campus Address: Sponsored Programs Administration
Mail Stop 9564
APPENDIX E

FACILITY APPROVAL
February 20, 1998

Subject: Angela Pruitt Durham

To Whom It May Concern:

Ms Durham has contacted this office and received permission to conduct her research project entitled “Incidence of Testicular Self-Examination in College Aged Men and Factors Affecting the Practice of Testicular Self-Examination” at the Longest Student Health Center. She has contacted us regarding this project and has been given permission to carry it out provided that she does it in a cultural and contextually sensitive manner so as not to embarrass, intimidate or disturb our male patients. Physicians will be available to provide TSE counseling should the patient so desire.

Robert K. Collins, M.D.
November 12, 1997

Angela Pruitt Durham
328 Critz Street
Starkville, MS 39759

Dear Ms Durham:

The Longest Student Health Center will be happy to assist you in your study "Incidence of Testicular Self-Examination Performance in Men Attending a Southeastern University". In order to be in compliance with IRB regulations, this project needs to be submitted to the Institution Review Board for protection of human subjects. Ms Robyn B. Rematigue is the IRB administrative officer. She can be reached at 325-7404 or faxed at 325-2803. The IRB application document is available at the MSU web site under Sponsored Programs. The next meeting of the IRB will be the second Wednesday in December. I would strongly urge you to be in correspondence with her as soon as possible in order to meet that deadline if you plan to start the first of the Spring semester.

I will be happy to assist you in anything you need.

Sincerely,

Robert K. Collins, M.D.

RKC ls
APPENDIX F

CONSENT FORM
Consent Form

My name is Angela Pruitt Durham. I am a registered nurse and a graduate student at Mississippi University for Women. I am doing a research study in partial fulfillment of the requirements for the degree of Master of Science in Nursing as a Family Nurse Practitioner.

The study you have been asked to participate in is being conducted in order to determine the incidence of testicular self-examination (TSE) in the college-aged population. You were selected because you are a male and at an age when TSE should be practiced so that potential testicular disorders may be detected and early medical diagnosis and intervention may be secured.

The time needed to conduct this study should not exceed 20 minutes. You will be asked to respond to a 12-item questionnaire which asks for your knowledge, attitudes, and practices regarding testicular cancer. You have the right to refuse to answer any question(s) that you choose. When the questionnaire has been completed, you will be asked to place it in a covered box in this waiting room. This will conclude your participation in the study.

At no time will your name and your responses to the questionnaires be associated with each other; a coding system will be used to maintain confidentiality. Anonymity will also be maintained by the reporting of data as group data. Only the investigator will have access to the information you provide.

You are making a decision whether or not to participate. Your decision whether or not to participate will not affect the health care you receive at the clinic. Your signature indicates that you have read the information provided above and have decided to participate. You have the right to withdraw from this study at any time.

________________________________________  _______________________________________
Signature of Participant                       Date
APPENDIX G

PAMPHLET ON TESTICULAR CANCER
AND TSE
TREATMENT

Surgery is usually the preferred treatment, and in certain cases it may be used together with radiation therapy or chemotherapy.

A GOOD CHANCE OF CURE

Although the five-year survival rate for all cases of testicular cancer is 94%, the most common type of testicular cancer—seminoma—has a survival rate approaching 100 percent in cases detected and treated early.
Cancer of the testes—the male reproductive glands—is one of the most common cancers in men 15 to 34 years of age. It accounts for 3 percent of all cancer deaths in this group.

If discovered in the early stages, testicular cancer can be treated promptly and effectively. It's important for you to take time to learn the basic facts about this type of cancer—its symptoms, treatment, and what you can do to get the help you need when it counts.

A MAJOR RISK FACTOR

Men who have undescended or partially descended testicle are at a much higher risk of developing testicular cancer than others.

However, it is a simple procedure to correct the undescended testicle condition. See your doctor if this applies to you.

WHAT CAN I DO?

Your best hope for early detection of testicular cancer is a simple three-minute monthly self-examination. The best time is after a warm bath or shower, when the scrotal skin is most relaxed.

Roll each testicle gently between the thumb and fingers of both hands. If you find any hard lumps or nodules, you should see your doctor promptly. They may not be malignant, but only your doctor can make the diagnosis.

Following a thorough physical examination, your doctor may perform certain x-ray studies to make the most accurate diagnosis possible.

WHAT ARE THE SYMPTOMS?

The first sign of testicular cancer is usually a slight enlargement of one of the testes, and a change in its consistency.

Pain may be absent, but often there is a dull ache in the lower abdomen and groin, together with a sensation of dragging and heaviness.