Factors Which Influence College-Aged Men To Perform Testicular Self-Examination

Keith Odendahl

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FACTORS WHICH INFLUENCE COLLEGE-AGED MEN TO PERFORM TESTICULAR SELF-EXAMINATION

by

KEITH ODENDAHL

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 2000
Factors Which Influence College-Aged Men to Perform Testicular Self-Examination

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Abstract

Testicular cancer (TC) has been determined to be the most common malignancy in men 15 to 34 years of age. An estimated 7,400 new cases of TC will be diagnosed in 1999, and approximately 300 men will die this year from TC. Evidence suggests the incidence of TC is on the rise in North America, especially among Caucasian men. However, TC is nearly 100% curable if detected in its early stages. Testicular self-examination (TSE), a strategy employed by men to detect TC in its early stages, has not been endorsed by leading authorities on cancer. Education on the disease is almost nonexistent. The purpose of this descriptive study was to define the motivators and barriers to performing TSE. The theoretical framework employed was Becker’s (1974) Health Belief Model. The two research questions proposed were as follows: What are the motivators to performing TSE among college-aged men? And what are the barriers to performing TSE among college-aged men? The convenience sample consisted of 74 men ages 18
and over who were enrolled in a large land grant university in North Mississippi. The instrument utilized in this study was a survey questionnaire. Data were analyzed using descriptive and nonparametric statistics. Two significant motivators emerged to the performance of TSE in this study: being aware of TSE (.004) and having been taught to perform TSE by a health care provider (.000). The barriers to performing TSE were reciprocal to the motivators for practice. An implication for nursing is to include TSE educational programs for nurse practitioners in an effort to increase teaching of TSE by nurse practitioners in primary care. Recommendations for further study include a qualitative study to examine the attitudes and beliefs of health care providers toward education courses on TC and TSE and inclusion of a TC and TSE history section for at-risk male patients.
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Chapter I
The Research Problem

Testicular cancer has been determined to be the most common malignancy found in men between the ages of 15 and 34 years (Klein, Berry, & Felice, 1990). A multitude of research studies have been done to evaluate the knowledge level of men in relation to testicular cancer and testicular self-exam and to determine if education improves the practice of testicular self-exam. However, there has been no comprehensive research to determine what factors motivate or prevent the practice of testicular self-exam in college-aged men. This study was conducted in an effort to define specific factors that influence college-aged men to perform testicular self-exams.

Establishment of the Problem

The American Cancer Society (1998a) estimated that in 1999 approximately 7,400 new cases of testicular cancer would be diagnosed in the United States and 300 of those men affected would succumb to the illness. In its early
stages testicular cancer can be detected by testicular self-exam. Testicular self-exam is a simple procedure that can be used as a screening strategy to decrease the mortality rate associated with this cancer (Klein et al., 1990) which is almost 100% curable (McMaster, Pitts, & Wilson, 1994).

According to Stanford (1987), the patient who is diagnosed with testicular cancer and receives treatment for the disease in its early stages has an excellent prognosis. Richie, professor of urological surgery at Harvard Medical School, supports testicular self-exam as a worthwhile self-care procedure to help diagnose testicular cancer (Cooper, 1997). However, Meadus (1995) found that health care professionals have neglected to teach this self-care measure. Further, the current position of the American Cancer Society is that there is insufficient medical research to suggest that for men with average testicular cancer risk a monthly examination is any more effective than simple awareness and prompt medical evaluation (American Cancer Society, 1998b). On the other hand, the American Cancer Society does support the teaching of this procedure to men who are at increased risk. Additionally, the U.S. Preventive Services Task
Force rates routine screening for testicular cancer a Class C recommendation meaning "there is insufficient evidence to recommend for or against the inclusion of the condition in periodic health examination, but recommendations may be made on other grounds" (DiGuiseppi, Atkins, & Woolf, 1996, p. 866).

Other health organizations from which providers’ structure practice guidelines differ in their position on testicular self-exam. For example, the American Academy of Family Physicians recommends that a routine examination for testicular cancer be done on men between the ages of 19 and 39 years and adolescents between the ages of 13 and 18 years with a history of cryptorchidism, orchiopexy, and testicular atrophy. Another professional organization, the American Urological Association, recommends yearly examinations starting at the age of 15 years. Lastly, the National Cancer Institute recommends that routine examinations should be a part of periodic examinations, but high-risk individuals with a history of cryptorchidism, Klienfelters syndrome, and gonadal dysgenesis should receive special attention (DiGuiseppi et al., 1996).
Sufficient research has validated that testicular cancer and testicular self-exam education increase the practice of testicular self-exam for men who are at risk for developing the disease. The researchers' supposition has been that men do not perform testicular self-exam because they are not aware of the risk and have not been taught how to perform the procedure. Klein et al. (1990) found that teaching about testicular cancer and testicular self-exam drastically increased the practice of the procedure. These findings have been supported by Frank-Stromborg and Rohan (1992) who determined that knowledge of testicular cancer as well as testicular self-exam were lacking among men as well as health care providers, but education increased the teaching and practice of testicular self-exam. Frank-Stromborg and Rohan proposed that the best defenses against testicular cancer are educating men to perform testicular self-exam and seeking prompt medical attention when an abnormality is detected.

Post-White, Carter, and Anglim (1993) conducted a study to assess the knowledge, attitudes, beliefs, and teaching of cancer prevention and early detection among a population of nursing students. A pretest and posttest were implemented preceding a 6-month follow-up survey
which revealed that knowledge, attitude, and teaching of testicular cancer and testicular self-exam had improved. In a related study Nichols, Misra, and Alexy (1996) proposed to determine if public education improved cancer detection among a group of laypersons. Nichols et al. found several factors that significantly influenced cancer detection practice among the sample. These factors included gender, educational level, income status, and marital status. Additionally, Nichols et al. suggested that attitude and motivation were strongly influenced by a person’s beliefs.

The current researcher, a health care provider, has witnessed a lack of testicular cancer and testicular self-exam instruction for patients even when health care providers were educated on testicular cancer and testicular self-exam. This experience has been supported by Schaffner (1995) who found that only 1.4% of the men (N = 211) admitted at a large metropolitan hospital in New York City knew that they were at an increased risk for developing testicular cancer. These men were not aware of testicular self-exam, and their health care provider was not teaching or performing the procedure on them.
In another study on the practice of breast self-examination a similar procedure women can use to detect breast tissue abnormalities, Wagle, Komorita, and Lu (1997) found that a social support system increased the frequency of breast self-exam among women. However, only three women in the entire sample (N = 22) considered a health care provider as a part of their social support system. The findings from Wagle et al.’s study suggest that a lack of breast cancer and breast self-exam instruction also may be related to the lack of instruction by health care providers.

Lack of knowledge of testicular cancer and testicular self-examination has been the only identified barrier to screening for testicular cancer among men. McMaster et al. (1994) found that the knowledge level between two culturally diverse groups of men concerning testicular cancer and testicular self-exam was low. However, perceived benefits of performing testicular self-exam were high despite their lack of knowledge of the disease. Based on these results, it can be concluded that knowledge of testicular cancer and testicular self-exam may be a motivational factor on what motivates men to engage in testicular self-exam. Durham (1998) noted that only 22% of
college-aged men performed testicular self-exam. Lack of awareness was the significant influence cited by this sample for lack of compliance with practice.

Conflicting evidence has been found in the literature and in practice as to the benefit of testicular self-exam instruction. Westlake and Frank (1987) suggested that this disagreement is related to the low incidence of testicular cancer per capita of the population, making it impossible to acquire statistically significant results through research. Another reason cited for scant testicular self-exam research was cost. The cost of a longitudinal study to determine the morbidity and mortality caused by testicular cancer after testicular self-examination instruction compared to the usual presentation of testicular cancer would be enormous. The current researcher implemented this study to further evaluate the factors influencing men to practice testicular self-exam in an effort to determine if commonalities exist. By defining common motivators and barriers to performing testicular self-exam among college-aged men, health care providers will be able to develop better teaching strategies to increase the awareness of testicular cancer and the importance of performing testicular
self-examination on a monthly basis. A positive effect on the survival rate of men with testicular cancer is the ultimate goal.

Theoretical Framework

The Health Belief Model was used to guide this research endeavor. According to Becker (1974), health-seeking behavior is influenced by the person’s belief that he is threatened by a health problem which prompts him to seek care to reduce the threat. The Health Belief Model is made up of six major components: perceived susceptibility, perceived severity, perceived benefits, costs, modifying factors, and motivation (Polit & Hungler, 1999).

A person’s perception that a health care problem is relevant or that the diagnosis made by the health care provider is accurate is termed perceived susceptibility. In reference to testicular cancer, perceived susceptibility is only acknowledged by leading authorities in cases of predisposing factors, such as cryptorchidism, orchiopexy, and gonadal dysgenesis. Men with average risk for developing testicular cancer are essentially overlooked. This position inevitably creates a lack of cues to action, such as television commercials and public education for men. Without testicular cancer education,
men are not aware of the severity of testicular cancer that has progressed beyond its early stages of development. Even when perceived susceptibility is high, a person will not seek health care unless he believes that the illness will have severe effects on his social well-being as well as his body (perceived severity). The populace overlooks perceived severity of testicular cancer at large because of the low mortality rate associated with the disease.

Perceived benefits refers to the belief that a health-preventive measure will prevent an illness or medical treatment will help cure a specific illness. Perceived benefits of testicular cancer and testicular self-examination education for men without significant risk factors have been largely discounted by researchers as well as leading authorities, such as the American Cancer Society, the U.S. Preventive Services, and the American Academy of Family Practice. However, some studies have found that men view testicular self-exam as a worthwhile procedure after being educated on testicular cancer and testicular self-exam.

Perceived cost refers to the accessibility to treatment for a specified disease, its modalities,
complexity, and duration. Motivation refers to the willingness to comply with health-preventive practices prescribed and the belief that one should adhere to the health care provider’s recommendations. Motivational factors have shown to improve the practice of testicular self-exam. These factors include knowledge and awareness of the disease. Finally, modifying factors, such as personality, education level, and sociodemographics, influence the person’s decision on whether to learn about testicular cancer and testicular self-exam or practice testicular self-exam. Several modifying factors have been identified in previous research conducted on early cancer detection methods. These factors include a social support system, educational level, gender, income status, and marital status.

Becker’s (1974) Health Belief Model was an excellent framework in guiding this study about factors which influence the practice of testicular self-exam. Findings obtained from previous research validate that there are motivational factors and barriers influencing men to practice testicular self-exam, such as lack of knowledge of testicular cancer and testicular self-exam among men as well as health care providers.
Significance to Nursing

The current study was implemented to add to the body of nursing knowledge by accumulating statistical data to further explain what motivates college-aged men to perform testicular self-exam and what prevents college-aged men from practicing testicular self-exam. Additionally, the researcher tested the Health Belief Model as a theoretical framework for health promotion and illness prevention.

The researcher felt that the results from this study would be useful to primary care providers, such as family nurse practitioners, because they need to know what motivators and barriers exist among college-aged men in practicing testicular self-exam. With this knowledge, the researcher hopes primary care providers will improve or change teaching strategies in an effort to increase this self-care practice among college-aged men. Ultimately, the researcher hopes new teaching strategies will reduce the mortality rate associated with this disease.

Assumptions

Four assumptions have been declared for this research study:
1. Testicular cancer is the most common malignancy found in men between the ages of 15 and 34 years.

2. Testicular self-exam is a self-care strategy to screen for testicular cancer.

3. If testicular self-examinations were practiced by college-aged men, more testicular cancer would be detected in this age group.

4. If college-aged men perceived that they are susceptible to testicular cancer, they will perform testicular self-examinations.

Statement of the Problem

Extensive research has been conducted to evaluate the knowledge level of men in relation to testicular cancer and testicular self-exam and also to determine if education improves the practice of testicular self-exam. However, there has been no comprehensive research to determine which factors motivate and prevent the practice of testicular self-exam in college-aged men. This study was undertaken to define specific factors which influence college-aged men to perform testicular self-exam.
Research Questions

The research questions that guided the study were as follows:

1. What are the factors that motivate college-aged men to perform testicular self-exam?

2. What are the barriers to performing testicular self-exam among college-aged men?

Definition of Terms

The following terms were defined for this study:

Testicular self-examination. Theoretical: a four-step procedure used to detect abnormalities, such as malignant growths. According to Mosby’s Medical, Nursing, & Allied Health Dictionary ("Testicular Self-Examination," 1998), the first step includes inspection of the testes in a mirror. The second and third steps involve palpation and manipulation of the testes with the thumb and fingers. The last step involves palpation of the epididymis of each testicle. Operational: knowledge of a four-step procedure used to detect abnormalities including malignancies as determined by the Modified Piller-Durham Questionnaire.

Motivation. Theoretical: "a psychological feature that arouses an organism to action; the reason for action" (Webster’s revised unabridged dictionary, 1996, p. 1).
Operational: any psychological factor that causes college-aged men to perform testicular self-exam as determined by the Modified Piller-Durham Questionnaire.

Barriers. Theoretical: "any obstruction; any theory which hinders approach as attack. Any limit or boundary, or a line" (Webster’s revised unabridged dictionary, 1996, p. 2). Operational: any obstruction or limit that hinders college-aged men to perform testicular self-exam as determined by the Modified Piller-Durham Questionnaire.

College-aged men. Theoretical: any male enrolled in an institution of higher learning. Operational: any male 18 years of age or older enrolled in an institution of higher learning in North Mississippi.
Chapter II
Review of the Literature

A review of the literature was conducted to determine the knowledge level of testicular cancer and testicular self-exam among college-aged men, motivational factors that affect the practice of early cancer detection methods including testicular self-exam, and if education improved the practice of testicular self-exam among men at risk for developing testicular cancer. This researcher found a minimal amount of research conducted over the last 10 years.

There have been many attempts to teach young men about testicular cancer and testicular self-exam, but there is no published research available to determine the effectiveness of those teachings. However, Klein, Berry, and Felice (1990) sought to develop and evaluate a new reliable method for teaching young men about testicular cancer and testicular self-exam. A second intention of their research was to incorporate those teachings into the
health curricula of all high school and college-aged male students.

The target population was 15- to 20-year-old males who were seeking health services at one of three institutions: a private physician’s office (n = 5), San Diego Student Health Services (n = 53), and the University of San Diego Adolescent Medicine Clinic (n = 8). A nonprobability convenience sample was obtained by asking approximately 120 potential subjects to participate. The final sample included 66 young men ranging in age from 15 to 20 years who agreed to be subjects.

In preparation, the researchers developed a booklet specifically designed to teach risk factors and common signs of testicular cancer. A section with diagrams showing how to perform a testicular self-exam and what abnormalities deserved medical attention was included.

A longitudinal/follow-up design was chosen for this study. A programmed-learning approach was employed to allow for individualized learning rate. Klein et al. (1990) believed this approach enhanced learner motivation.

Data were collected as each participant answered a pretest questionnaire while waiting to be seen in the respective clinic. The pretest had basic questions about
testicular cancer and testicular self-exam from which the knowledge base of the participants would be defined. Upon completion of the pretest, each participant was given the teaching booklet developed by the researchers. After completing the booklet, a posttest questionnaire was taken. The scores were then calculated to determine the teaching effectiveness. Approximately 2 years later a follow-up study was conducted to determine if the information in the booklet increased knowledge about testicular cancer and the practice of testicular self-exam. The follow-up sample included 44 subjects; the remaining sample (n = 22) were lost to attrition.

Results were tabulated and statistically analyzed using McNemar’s chi-square and the Wilcoxon signed-rank test with subjects’ pretest scores as the control for the posttest questionnaire. Klein et al. (1990) found the results of the pretest confirmed the knowledge deficit among young men concerning risk factors associated with testicular cancer. Only 45% of the sample had been familiar with testicular cancer, and more than 90% of them had not been taught testicular self-examination. The immediate posttest included nine objective questions. The subjects’ average score was 93%, validating that the
booklet is an adequate teaching tool for testicular cancer and testicular self-exam. For the posttest (2 years), the researchers confirmed that almost all remaining participants could identify common symptoms of testicular cancer and had performed at least one self-exam (Klein et al., 1990).

The findings of Klein et al. (1990) support similar research studies already conducted, reporting that teaching about testicular cancer and testicular self-exam drastically increased the practice of the procedure. Klein et al.’s (1990) study is germane to the current researcher’s endeavor because it validates that knowledge is a motivational factor which influences young men to perform testicular self-exam.

“No comprehensive attempt has been made so far in previous studies to analyze the factors which determine TSE [testicular self-exam] and to establish whether these factors are applicable cross culturally, hence the selection of two diverse samples” (McMaster, Pitts, & Wilson, 1994, p. 155). Due to the recent mass media interest of testicular cancer in Britain and the lack of health education or mass media interest in Zimbabwe, the researchers believed that the factors influencing
testicular self-exam would be different between the two groups. Independent variables were knowledge of testicular cancer and testicular self-exam, perceived susceptibility to the development of testicular cancer, perceived benefits of testicular self-exam, and perceived barriers to testicular self-exam. The dependent variables were the scores obtained from two culturally diverse groups of undergraduate men.

McMaster et al. (1994) used a descriptive design. The convenience sample included 343 male social science students. “Subjects were recruited from students attending undergraduate psychology lecture in the Polytechnic of East London and the University of Zimbabwe, Harare” (p. 155). The subjects were 170 British men with a mean age of 22.7 years and 153 Zimbabwean men with a mean age of 24.7 years who were attending lecture in their respective university at the time the questionnaire was given out.

Data were obtained with a questionnaire developed by McMaster et al. using the Health Belief Model that contained multiple scales. One scale was used to evaluate the perceived susceptibility to testicular cancer and perceived benefits and barriers to performing testicular self-exam. The other scales asked questions concerning
general awareness of testicular cancer and testicular self-exam as well as general health questions. All 343 questionnaires were filled out, and only three were discarded because they were improperly completed. The final sample was 340.

McMaster et al. (1994) determined that knowledge of testicular cancer and testicular self-exam was higher among the British men (63%) as proposed to 12% of the Zimbabwean men. Neither group was found to be knowledgeable about performing testicular self-exam. British students (4%) claimed to know how to perform the procedure. Only 2% of them actually discussed the procedure, and the other 2% of them could actually discuss the procedure in detail. Five percent of the Zimbabwean men claimed to know how to do the testicular self-exam and all of them failed to explain the procedure. Only 7% of the British men and 2% of the Zimbabwean men reported practicing the procedure regularly. An alarming 62% of the British men and 77% of the Zimbabwean men never practiced the procedure.

Questionnaire data were analyzed using the t test to compare groups. Significant differences emerged: 

"Perceived benefit [t(299) = 6.16, p < .0001],
susceptibility \[t(301) = 6.60, \ p < .001\], and exposure to testicular cancer \[t(300) = 9.80, \ p < .0001\]” (p. 156). In all cases the British men scored higher than the Zimbabwean men.

Interrelations of the subscale scores were correlated for both groups. McMaster et al. (1994) determined that British group scores were significantly correlated between susceptibility and benefits (\(p < .001\)), exposure and benefits (\(p < .001\)), barriers and benefits (\(p < .001\)), benefits and general health (\(p < .05\)), exposure and susceptibility (\(p < .001\)), barriers and susceptibility (\(p < .001\)), barriers and exposure (\(p < .05\)), and knowledge and exposure (\(p < .001\)). Among the Zimbabwean sample, significant correlation for subscale scores were benefits and susceptibility (\(p < .001\)), benefits and exposure (\(p < .01\)), benefits and barriers (\(p < .05\)), susceptibility and barriers (\(p < .05\)), susceptibility and knowledge (\(p < .05\)), exposure and barriers (\(p < .01\)), and exposure and general health (\(p < .05\)).

McMaster et al. (1994) listed seven possible causes of testicular cancer and asked the students to check the ones that would be more likely to cause testicular cancer. The choice of heredity was ranked as the first choice for
both groups. However, other choices differed. "A blow to the testicles" was chosen 41 times by the British men and 35 times by the Zimbabwean men. "A past history of an undescended testicle" was chosen 34 times by the British men and 31 times by the Zimbabwean men. An overactive sex life was chosen 19 times by the British men and 51 times by the Zimbabwean men. A past history of mumps was chosen 17 times by the British men and 21 times by the Zimbabwean men. Lack of exercise was chosen 15 times by the British men and 21 times by the Zimbabwean men. Exposure to excessive heat was chosen 12 times by the British men and 21 times by the Zimbabwean men.

McMaster et al. (1994) concluded that misconceptions about the causes of testicular cancer were high between both groups. Although there was a lack of knowledge about testicular cancer and testicular self-exam found in both groups, perceived benefit of performing testicular self-exam was found to be high cross-culturally. The British group was found to have a high level of perceived susceptibility. The two samples differed culturally by their degree of health awareness, accessibility to health care, and beliefs about health and illness. Another cultural influence cited by the researchers was the
increase in mass media attention of testicular cancer received in Britain as a result of the diagnosis of testicular cancer in a couple of famous individuals.

McMaster et al. (1994) recommended that men should describe the testicular self-exam procedure in detail since there was a discrepancy between perceived knowledge of testicular self-exam and the descriptions of the procedure based on that knowledge. They also recommended that testicular self-exam be a part of both countries’ health programs since both groups had high general health awareness and they believed there were benefits to testicular self-exam. McMaster et al.’s (1994) study is germane to the current researcher’s endeavor because the results suggest that motivators and barriers to testicular self-exam exist despite the perceived benefits of testicular self-exam.

Two warning signs were developed 78 years ago by the American Cancer Society to alert health care providers and laypersons to the signs of cancer according to Nichols, Misra, and Alexy (1996). Today, seven warning signs of cancer are acknowledged by the American Cancer society. Despite the fact that these seven warning signs exist in the literature, the public and their health care providers
are still failing to accurately identify them. Nichols et al. (1996) conducted a nonexperimental study to define the knowledge level of cancer prevention and detection among laypersons. Additionally, they wanted "to evaluate the utility of the Fishbein and Ajzen's Model for Reasoned Action using operational definitions of its constructs related to compliance behavior and to test the sufficiency of attitudes, perceived beliefs, and motivation practices" (Nichols et al., 1996, p. 99).

Nichols et al. (1996) used a convenience sample of laypersons between the ages of 18 and 80 years. The sample (N = 172) consisted of 83 male and 89 female subjects. The average age was 38 years with the majority of the subjects being white, married, and college educated with an average income between $20,000 and $40,000. Only 6% of the subjects did not have health insurance.

The data collection tool was researcher-developed based on the Fishbein and Ajzen's Model of Reasoned Action. "In the model, personal behavior is a function of attitude (the value to the individual, favorable and unfavorable, of performing the behavior) toward a behavior and subjective norms" (Nichols et al., 1996, p. 99). The tool was developed in a collaborative effort by the
investigators and the students in the graduate research class. The tool contained four sections. The first section included 30 questions that pertained to personal demographics and health practices. The second section included open-ended questions pertaining to the seven warning signs of cancer. In the third section the subjects were asked to appraise six cancer detection methods to evaluate their attitudes toward methods of cancer detection. The specific exams included breast self-exam, testicular self-exam, mammography, Papanicolaou’s (Pap) test, colorectal examination, and prostate exam. The last section consisted of 24 questions pertaining to the subjects’ beliefs about the importance of cancer detection using a scale similar to a Likert scale (Nichols et al., 1996).

Health practices scores using the zero-order correlational technique ranged from $r = 0.0137$ to $0.677$. Significant correlational statistics emerged: Positive economics status and positive emotional status, $r = 0.677$ ($p < .001$), positive economics and negative attitudes, $r = 0.242$ ($p < .05$), and positive economics and practices, $r = 0.260$ ($p < .05$), negative attitude and beliefs, $r = 0.396$ ($p < .001$). Hierarchical regression analysis was performed
to determine the effects of other independent variables (race, age, education, marital status, gender, and income) on the dependent variable practices. The predictive value of a person’s practice was influenced most by gender ($R^2 = 0.16$) (Nichols et al., 1996).

The second section evaluated the ability of the subjects to positively identify the seven cancer warning signs in an open-ended format. Thirty-four percent of the subjects correctly identified the change in bowel/bladder habits as a warning sign. Twenty percent of the subjects correctly identified a sore that does not heal as a warning sign. Forty-six percent of the subjects correctly identified unusual bleeding or discharge as a warning sign. Thickening or lump in the breast or elsewhere was correctly identified by 56% of the subjects. Indigestion or difficulty swallowing was correctly identified by only 9% of the subjects. An obvious change in a wart or mole was correctly identified by 45% of the subjects. Thirty percent of the subjects correctly identified a nagging cough or hoarseness as a warning sign of cancer. Weight loss/gain and skin blotches were the most frequent warning signals incorrectly chosen by the subjects. A mere 6% of the subjects used the acronym CAUTION when listing the
warning signals of cancer. More women attempted to list warning signs of cancer than did men. "The median number of warning signs attempted was five, but the mean number of correctly identified warning signs was three" (Nichols et al., 1996, p. 100). The number of warning signs identified correctly by women was 76, and men correctly identified 56 cancer warning signs. Answers to the Attitudes and Belief scales were examined in relation to selected demographic variables using correlational statistics. Scores on the Attitude Toward Cancer Detection ranged from $r = 0.2471$ to $0.7798$ with alphas of $0.8031$ to $0.8879$ and scores on the Beliefs About Cancer Detection ranged from $r = 0.0293$ to $0.6002$ with an alpha of $0.8163$ as a whole.

Although Nichols et al. (1996) found positive relationships and statistically significant results from some items scored on the Attitudes Toward Cancer Detection, no $r$ values and only one $p$ value were reported. "Race was found to be significantly related to all subscale scores on the Attitudes Toward Cancer Detection Scale" (Nichols et al., 1996, p. 100). Married women were more likely to have had a mammogram, and women in general were more likely to have had a chest x-ray in the last 5
years \( p = .005 \). "Educational level positively related to scores on attitudes toward breast self-exam, mammography, Pap smear, and rectal examination" (Nichols et al., 1996, p. 100). One important finding noted was that as negative attitudes increased, the practice of cancer detection methods decreased. Annual household income was significantly related to the Beliefs About Cancer Detection Scale excluding prostate examination and breast self-exam. Scores on breast self-exam, Pap test, and testicular self-exam were significantly related to knowing someone with cancer.

Nichols et al. (1996) found the following:

The Model of Reasoned Action did not support motivation to comply as a predictor of compliance behavior because only a weak association was found between behavior and motivation. Attitude (as well as motivation to comply) was strongly influenced by a person's belief. (p. 101)

Married women with high educational levels and economic status were more inclined to practice cancer detection examinations and pursue health care aimed to detect cancer than any other group. These findings support the conclusions of McMaster et al. (1994) that suggest there are motivators and barriers to performing testicular
self-exam, a cancer detection method used by men to detect testicular cancer.

Nichols et al. (1996) is germane to the present research endeavor because the results suggest that economics, gender, and education directly affect the effectiveness of public education on cancer detection. The sample in the current researcher study included men who are predominantly single and are not financially stable. Additionally, the researchers discovered that motivation was influenced by beliefs. This finding supports the utilization of the Health Belief Model in the current researcher’s study, Factors Which Influence College-Aged Men to Perform Testicular Self-Exam.

There has been limited research on testicular self-exam, and routine screening has not been proven beneficial according to current literature in the United States. Schaffner (1995) defined the knowledge level of testicular self-exam among men in the United States.

The independent variables in this study were men living in the United States. The dependent variable in this study was knowledge of testicular self-exam.

The design of the study by Schaffner (1995) was a survey using personal interviews. The sampling design was
randomized and prospective lasting 6 months. The sample (N = 211) consisted of men admitted to a state clinic in the northwestern metropolitan area of New York. Men 21 to 34 years of age made up 61% of the sample. Men age 35 to 49 years made up 39% of the sample. Fifty-six percent of the sample were single. Caucasian and African-American men represented the majority (80%) of the racial denominations.

Schaffner (1995) supported findings from previous research regarding knowledge of testicular self-exam. In this study 1.4% of the sample (3 of 211 men) knew what testicular self-exam was about or had a testicular exam in the past. Schaffner concluded that men who are at an increased risk for developing testicular cancer are not aware of testicular self-exam. Further, health care professionals are not teaching or performing the testicular exams on their clients.

Schaffner (1995) recommended that research be done in areas of public awareness and to define successful teaching strategies that can be employed by health care providers. Schaffner’s (1995) study was germane to the present research because it identifies that barriers to teaching testicular self-exam among health care
professionals and performance of testicular self-exam by those at increased risk exist.

In addition to the review of literature on testicular cancer and testicular self-exam, the researcher reviewed a study that evaluated the effectiveness of a social support on the practice of breast self-examination. The researcher reviewed this research to examine the effects of social support on a self-care practice in an effort to determine if social support improved practice of breast self-exam, and if social support is a motivational factor that needed to be considered among men performing testicular self-exam. Breast self-examination is a procedure known by almost all women. Breast self-exam can be employed by women on a monthly basis to detect abnormalities such as cancer in its early stages which increases the survival rate of women affected by this disease. However, it has been estimated that only 25% of the women who are aware of the self-examination can practice it correctly. "Breast cancer is the second leading cause of death in women in the United States" (Schaffner, 1995, p. 42). It was estimated in 1996 that breast cancer would claim the lives of over 40,000 women and approximately 75% of those women would be over the age of 55 years.
Wagle, Komorita, and Lu (1997) used a correlational design "to determine whether social support is positively related to the frequency and accuracy of breast self-exam in women 55 years of age or older" (p. 45). The sampling design was one of nonprobability and convenience. The target population was women who were at least 55 years of age, could read English, and were seeking care at a midwestern gynecological clinic where the data collection took place. The sample (N = 45) included a majority of the subjects (99%) with a high school education, white (99%), and married (68%).

The instrument used for data collection was the Norbeck Social Support Questionnaire. The Norbeck Social Support Questionnaire has been used in multiple research studies, and its ability to test a social support network has been validated. The instrument has multiple pages that are set up like a Likert scale. Questions have been devised to elicit personal information about the subjects' social support system. "The responses were totaled to yield a score on each functional subscale of affection, affirmation, and aid" (Wagle et al., 1997, p. 45). Additionally, social support losses also were evaluated and results were factored into the scoring.
Wagle et al. (1997) found that the correlation between social support and accuracy was not statistically significant (p = .106). However, the correlation between social support and the frequency of breast self-exam was found to be statistically significant (p = .017). The researchers concluded that the frequency of breast self-exam in women 55 years of age or older increased in relation to their social support scores. These conclusions are consistent with conclusions found in previous studies conducted on young samples.

Wagle et al. (1997) recommended replication of the study with a more diverse sample. In addition, the researchers recommended that breast self-exam instruction should be simplified for older women in an effort to increase the accuracy of the exam. Wagle et al.'s study is germane to the current researcher's endeavor because the involvement of a social support system, including the health care provider, may be a motivational factor causing college-aged men to increase the frequency of another self-care examination.

In conclusion, researchers have supported the premise that education of testicular cancer and testicular self-exam improves the practice of testicular self-exam (Klein
et al., 1990). However, health care providers are not teaching men at risk about testicular cancer or testicular self-exam (Schaffner, 1995). In a related study conducted on women concerning breast self-exam and the effectiveness of a social support system, Wagle et al. (1997) concluded that women also were lacking the support of their health care provider. Another factor found to influence the practice of testicular self-exam was cultural diversity (McMaster et al., 1994). Public health education, prevalence of a particular disease among members in a cultural group, and the increased media coverage attributed to certain diseases positively influencing self-care practices. Additionally, to define the effectiveness of public education in cancer detection, Nichols et al. (1996) concluded that married women with high educational levels and above average income levels were more inclined to practice self-examinations and seek health care aimed at early cancer detection than any other subgroup.

The current research was conducted to define other factors that affect the practice of testicular self-exam. However, teaching and education also were variables
considered since significant research points to these variables as the most common factors influencing the practice of testicular self-exam.
Chapter III
The Method

Testicular cancer is the most common malignancy found in men between the ages of 15 and 34 years. Evidence suggests the incidence of testicular cancer is on the rise in North America, especially in Caucasian men. Current researchers support the premise that there is a lack of awareness of the disease even among men at increased risk. However, there has been no comprehensive research to determine what factors motivate or what barriers prevent men from performing testicular self-examinations. Before teaching strategies to increase the practice of this lifesaving self-examination procedure can be developed, influential factors must be identified. The purpose of this descriptive study was to define the factors that motivate men to perform testicular self-exam and the barriers that prevent men from performing testicular self-exam.
Design of the Study

A descriptive design was used in this study to define factors which influence college-aged males to practice testicular self-examination. The design was chosen because the researcher was interested in exploring the most common reasons men chose to practice or not practice testicular self-exam. No variables were manipulated because inherent characteristics such as health beliefs cannot be studied experimentally (Polit & Hungler, 1999).

Setting, Population, and Sample

The setting for this study was the student union at a land grant university located in north Mississippi. According to Coy Farley, employee at the university (personal communication, June 10, 2000), the number of students enrolled at the university is 16,076, and 8,715 are male students. Seventy-eight percent of the male population are Caucasian, 17% are African American, and the remaining 5% consists of Pacific Islanders and Hispanics. The curricula offered by the university lead to associate, bachelor, masters, and doctoral degrees.

The target population was all men at least 18 years old and enrolled in the university. The sample included male students who met the criteria, consented, and were
present in the student union on the day the research was conducted. The sampling design was one of convenience. All male students who were eligible were included. The final sample consisted of 74 male students.

**Instrumentation**

Data were gathered using a modified version of the Piller-Durham Questionnaire (see Appendix A). This tool was designed to explore motivating factors and barriers to testicular self-exam in college-aged males. The questionnaire contained 14 questions which required fill-in-the-blank or multiple-choice responses. Questions 1 to 3 involved demographic information. Questions 4 to 11 defined the general knowledge of testicular cancer and testicular self-exam among men from past experience. Questions 12-14 defined the frequency that testicular self-exam was practiced and who taught the procedure to the participant. Additionally, Questions 12-14 elicited specific reasons why the men did or did not practice the procedure. The original questionnaire was altered by adding the seventh question. The seventh question (Have you ever had testicular cancer?) was added to the questionnaire to determine the incidence of testicular cancer among this sample. This researcher obtained consent
to revise the tool via personal communication with the author. Since the tool was altered, reliability analysis was performed using items number 4 through 12 of the Modified Piller-Durham Questionnaire for the 72 subjects who responded to all items. Coefficient alpha for the 9-item scale was 0.57.

Data Collection Procedure

Approval was obtained from the Committee on the Use of Human Subjects in Experimentation from Mississippi University for Women and from the Institutional Review Board for the Protection of Human Subjects in Research at the university where the study was conducted (see Appendices B and C). The researcher contacted the administrator of the Student Health Center at Mississippi State University to obtain verbal support for the study. A formal letter of consent also was obtained (see Appendix D).

The data collection took place on May 5, 2000, from 10:00 a.m. to 5:00 p.m. Each man entering the student union was approached by the researcher and asked if he would like to participate in a research study on testicular cancer and testicular self-exam. If he agreed, he was given a consent form to read and sign. If he chose
to continue, he had to sign the consent to receive a pre-coded questionnaire and that code was placed on his consent form and placed in an envelope by the researcher to maintain confidentiality. The completed questionnaire was placed in a separate envelope in care of the researcher by the subject. Lastly, each subject was given an educational pamphlet on testicular cancer and testicular self-exam. The researcher was available to answer any questions addressed by the subjects after reading the educational material (see Appendix E).

Method of Data Analysis

Data from the 75 Modified Piller-Durham Questionnaires were coded and entered into the data base for subsequent analysis using SPSS 10.0. One subject failed to meet the sample criteria of being at least 18, leaving a total of 74. Data were analyzed using descriptive statistics including frequencies and percentages to describe the sample on the Modified Piller-Durham Questionnaire. The Fisher’s Exact Test was employed to determine if there is an association between responses for items 4 through 11 on the Modified Piller-Durham Questionnaire and the practice of testicular self-exam. Fisher’s exact probability test is a non-parametric
technique for analyzing discrete data nominal or ordinal when two independent samples are small in size and can be represented in a 2 x 2 contingency table (Siegel, 1956). A similar analysis using the demographic variables also was performed.
Chapter IV
The Findings

The purpose of this descriptive study was to define the factors that motivate men to perform testicular self-examinations (TSE) and the barriers that prevent men from performing TSE. Data were collected using the Modified Piller-Durham Questionnaire. Becker’s (1974) Health Belief Model provided the theoretical framework for this study. This chapter describes the sample and the results of data analysis.

Description of the Sample

The demographic variables of age, year in college, and race were used to describe the sample. One subject did not report his age. The responding 73 subjects ranged in age from 18 to 29 years ($M = 20.95$, $Mdn = 20.0$, $SD = 2.50$). The mode was 19 years, representing 18 (24.3%) subjects. Fifty (68.5%) of the 73 responding subjects were between the ages of 18 and 21 years. An additional 12 (16.4%) were aged 21 or 22 years. When asked what year in
college, 35 (47.3%) subjects classified themselves as either a freshman or sophomore, and an equal number classified themselves as a junior or senior. Four (5.3%) of the subjects were graduate students. When asked about race, one subject was listed as Asian or Pacific Islander. African Americans represented 48.6% (n = 36) of the sample, and the remaining 37 (50%) subjects were Caucasian.

Results of Data Analysis

The first research question was as follows: What are the motivators to performing TSE among college-aged men? Items 4 through 11 of the Piller-Durham Questionnaire defined the general knowledge of testicular cancer and TSE. Item 12 sought to determine the frequency of TSE among the sample. Over two thirds (n = 49, 67.1%) of the sample had heard of testicular cancer. While 48 (64.9%) of the sample had been examined by a health care provider (item 10), only 12 (16.2%) had been taught TSE (item 11). Twelve (16.2%) of the sample reported performing TSE (item 12) (see Table 1).
Table 1

Frequency and Percentage of "Yes" Responses to Modified Piller-Durham Questionnaire by Total Sample (N = 74)

<table>
<thead>
<tr>
<th>Item</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Blood relative with cancer?</td>
<td>33</td>
<td>44.6</td>
</tr>
<tr>
<td>5 Heard of testicular cancer?</td>
<td>49</td>
<td>67.1</td>
</tr>
<tr>
<td>6 Know someone with testicular cancer?</td>
<td>6</td>
<td>8.1</td>
</tr>
<tr>
<td>7 Have you ever had testicular cancer?</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>8 Did both testicles descend as a child?</td>
<td>64</td>
<td>87.7</td>
</tr>
<tr>
<td>9 Heard of TSE?</td>
<td>40</td>
<td>54.1</td>
</tr>
<tr>
<td>10 Health care provider examine your testicles?</td>
<td>48</td>
<td>64.9</td>
</tr>
<tr>
<td>11 Health care provider teach you TSE?</td>
<td>12</td>
<td>16.2</td>
</tr>
<tr>
<td>12 Practice TSE?</td>
<td>12</td>
<td>16.2</td>
</tr>
</tbody>
</table>

Two items, questions 4 and 5, asked for additional information. For item 4, 33 (44.6%) of the subjects reported having a relative with cancer and were asked to identify the type of cancer. When asked about the type of cancer, 14 of the 33 either did not know or failed to answer the item. The types of cancer listed were colon
(n = 7), lung (n = 5), breast (n = 5), pancreatic (n = 1), and melanoma (n = 1). Item 5 asked subjects to identify the source of their knowledge of testicular cancer. Subjects were asked if and how they had heard of testicular cancer. Thirty-one of 74 (41.9%) subjects responded. Topics associated with media (e.g., TV, media, Frank Zappa, and Tom Green) were cited by 15 (48.4%) of those responding. Class projects were cited by 6 (19.4%) of the respondents. Five (16.1%) subjects listed doctor, and 5 listed friends.

Responses to item 12, Do you practice TSEs? were used to determine the number of subjects who practiced TSE and the number who did not practice TSE. Twelve (16.2%) of the subjects responded "yes," and 62 (83.8%) of the subjects responded no to the item. Subjects who responded yes completed questions 13a and 13b. Subjects who practiced TSE (n = 12) were asked to identify where they learned TSE (item 13a). Four of the 12 (33.3%) subjects responded "Doctor," 4 listed "Health educator class," and the remaining 4 cited a combination of class with doctor and or nurse. These 12 subjects also reported the frequency of TSE in the last 6 months. Five (41.6%) subjects responded once, 2 (16.61%) responded twice, 3 (25%) subjects
responded 3 times, and 2 (16.6%) responded more than 3 times.

Subjects were placed in the performance or nonperformance group based on their response to determine the impact of the general knowledge of TSE on performance. Two items, 9 and 11, were found to be significantly associated with performance of TSE. On item 9 (Have you heard of TSE?), 11 (91.7%) of 12 subjects who practiced TSE responded they had heard of TSE. In comparison, less than half (n = 29, 46.8%) of 62 subjects who did not practice TSE had never heard of TSE (p < .05). On item 11 (Did a health care provider ever teach you how to do TSE?), 9 (75%) of the 12 subjects who practice TSE were taught by a health care provider compared to 3 (4.8%) of the 62 men who do not practice TSE (p < .000). The other items related to family history of cancer, knowing about testicular cancer, knowing someone with testicular cancer, having testicles descend as a child, and having a testicular exam by a health professional were not associated with performance of TSE. On item 5, subjects were asked to identify where they had heard of testicular cancer. Topics associated with the media (TV, media, Frank Zappa, and Tom Green) were cited by 15 (48.4%) of the 31
subjects who had heard of testicular cancer. Thus, the factors that motivated the young men in this sample to perform TSE are knowledge of TSE, being taught how to do a TSE by health professional, and the media (see Table 2).

Table 2

Cross-Tabulation of Responses to the Modified Piller-Durham Questionnaire Items by Practice of TSE

<table>
<thead>
<tr>
<th>Item</th>
<th>Practice TSE</th>
<th></th>
<th></th>
<th></th>
<th>χ²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4  Blood relative with cancer?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>36 58.1</td>
<td>5 41.7</td>
<td>41 55.4</td>
<td>.352</td>
<td>.233</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>26 41.9</td>
<td>7 58.3</td>
<td>33 44.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5  Heard of TC?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>22 35.5</td>
<td>3 25.0</td>
<td>24 32.9</td>
<td>1.267</td>
<td>.233</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>40 64.5</td>
<td>9 75.0</td>
<td>49 67.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6  Know someone with TC?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>57 91.9</td>
<td>11 91.7</td>
<td>68 91.9</td>
<td>.001</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5 8.1</td>
<td>1 8.3</td>
<td>6 8.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7  Have you ever had TC?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>62 83.0</td>
<td>12 16.2</td>
<td>74 100.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0 0.0</td>
<td>0 0.0</td>
<td>0 0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8  Did both testicles descend as a child?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8 13.1</td>
<td>1 8.3</td>
<td>9 12.3</td>
<td>.212</td>
<td>.645</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>53 86.9</td>
<td>11 91.7</td>
<td>64 87.7</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(table continues)
Table 2 (continued)

<table>
<thead>
<tr>
<th>Practice TSE</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
<th>( \chi^2 )</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>9 Heard of TSE?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>33</td>
<td>53.2</td>
<td>1</td>
<td>8.3</td>
<td>34</td>
</tr>
<tr>
<td>Yes</td>
<td>29</td>
<td>46.8</td>
<td>11</td>
<td>91.7</td>
<td>40</td>
</tr>
<tr>
<td>10 Health care provider examined testicles?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>22</td>
<td>35.5</td>
<td>4</td>
<td>33.3</td>
<td>26</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
<td>64.5</td>
<td>8</td>
<td>66.7</td>
<td>48</td>
</tr>
<tr>
<td>11 Health care provider teach TSE?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>95.2</td>
<td>3</td>
<td>25.0</td>
<td>62</td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>4.8</td>
<td>9</td>
<td>75.0</td>
<td>12</td>
</tr>
</tbody>
</table>

Note. TS = Testicular cancer. Chi-square p values are exact significance levels (Fisher’s Exact Test).

*p < .01. **p < .001.

Research Question 2 was as follows: What are the barriers to performing TSE among college-aged men? Question 14 related to performance of TSE. The 62 subjects who did not practice TSE were asked, If you never do TSE, what is the reason? The most frequently cited reason was “Did not know about TSE” with 28 (45.2%) respondents. This was followed by 23 (37.1%) subjects responding that they “Did not know how to do TSE?” These two options accounted for 51 (82.3%) of the 62 subjects who did not practice
TSE. The remaining 12 subjects either responded "TC will not happen to me" (n = 2, 3.2%), "No time" was given by 4 (6.5%), 4 (6.5%) cited "other," and one subject believed that TC would not happen to him. The factors identified as motivating factors can be used to identify barriers to performance of TSE. Of the 62 subjects who did not perform TSE, over half (n = 33, 53.2%) had not heard of TSE. Fifty-nine (95.2%) of the 62 subjects who did not practice TSE had never been taught how to do TSE. Subjects who had not heard of TSE or had not been taught to do TSE performed TSE at significantly lower rates than those who had heard of TSE, $\chi^2(1, N = 74) = 8.16, p = .004$. Thus, the factors identified as major barriers to performance of TSE in this sample are associated with awareness of TSE and being taught to do TSE.

Additional Findings

Based on the constructs of the Health Belief Model, modifying factors influence health-seeking behavior. Therefore, the performance or nonperformance of TSE was examined for differences related to demographic characteristics of age, race, and education level. A t test was used to determine if the groups differed on the variable of age. The mean ages of the two groups was
nearly identical, 20.95 (SD = 2.42) for the 51 subjects who did not practice TSE and 20.92 (SD = 3.03) for the 12 subjects who practiced TSE, $t(71) = .043, p = .966$. Thus, no significant relationship was identified between age and the practice of TSE in this sample.

A Fisher’s Exact test was used to examine for an association between race and performance of TSE. Only African-American and Caucasian subjects were used in the analysis. The one Asian/Pacific Islander subject was not included to increase compliance with the assumptions of chi-square analysis. This subject did not practice TSE. Thirty-two (88.9%) of the 36 African Americans did not practice TSE and 4 (11.1%) practiced TSE. Thirty (81.1%) of the Caucasian subjects did not practice TSE, and 7 (18.9%) practiced TSE. The resultant chi-square using Fisher’s Exact test was not significant, $\chi^2(1, N = 74) = .869, p = .515$. There is no significant relationship between race and the performance of TSE.

Similar analysis was used to examine the demographic variable of year in college in association with performance of TSE. Following examination of the contingency table using all years, subjects were classified into one of two educational groups,
freshman-sophomore (n = 27) or junior-senior-graduate (n = 39) to meet the assumptions of the chi-square procedure. Twenty-seven (77.1%) of the 35 freshman-sophomore group did not practice TSE, and 8 (22.9%) practiced TSE. Thirty-five (89.7%) of the junior-senior-graduate group did not practice TSE, and 4 (10.3%) practiced TSE. No significant difference emerged for year in college and performance of TSE, \( \chi^2(1, N = 74) = .208, p = .125 \). However, the researcher noted that twice as many subjects in the freshman-sophomore group (n = 8, 22.9%) practiced TSE than those in the higher group (n = 4, 10.3%).
Chapter V
The Outcomes

Testicular cancer is the most common malignancy found in men ages 15 to 43 years. Yet a review of the current literature revealed scant research in testicular cancer and testicular self-examination (TSE), a procedure used to detect testicular cancer. This researcher did find reference to social support, education, awareness, cultural diversity, and media as variables that influence the practice of TSE. To further explore the issue of TSE, the researcher conducted this study to explore motivators and barriers to performing TSE among a population at risk for testicular cancer. Data were collected using a survey questionnaire and analyzed using descriptive statistics, such as frequencies, percentages, and Fisher’s Exact test. The Health Belief Model (HBM) provided the theoretical framework. Two research questions were tested:

1. What are the motivators to performing TSE among college-aged men?
2. What are the barriers to performing TSE among college-aged men?

This chapter presents a summary of the findings, discussion, conclusions based on the results, implications to nursing, and recommendations for further study.

Summary of Findings

The sample (N = 74) consisted of men attending a north Mississippi land grant university. The participants’ ages ranged from 18 to 29 years with a mean age of 20.95. The majority (94.7%) of the sample was undergraduate students. The sample was equally divided between African Americans and Caucasians, with 36 and 37 subjects, respectively. One subject was Asian.

The two research questions answered were as follows:

1. What are the motivators to performing TSE among college-aged men?

2. What are the barriers to performing TSE among college-aged men?

To determine motivators and barriers, subjects were put into the performance (n = 12) or nonperformance (n = 62) classes. Two statistically significant motivating factors emerged. Eleven (91.7%) subjects who practiced TSE were aware of TSE (p < .004), and 9 (75%) of the subjects
were taught by a health care provider (p < .001). In comparison, 59 (95.2%) of the subjects who did not perform TSE had never been taught, and 33 (53.2%) who did not practice TSE had never heard of TSE. Thus, the two distinct motivators which emerged were also identified as barriers. On the question regarding how the subjects had heard about TSE, the most common response was by the media.

Discussion

Motivators to practicing TSE were associated with awareness of TSE and being taught to perform TSE. These results were consistent with findings that emerged from almost all the literature reviewed. Sixteen point two tenths percent of the subjects in the current study practiced TSE which is a finding similar to Durham’s (1998) study where 22% of those subjects practiced TSE. The majority of the subjects in the current study had not heard of TSE, which is consistent with the findings discovered by Schaffner (1995) in which only 1.4% of the subjects knew what TSE was about. Seventy-five percent of the subjects in this current sample were never taught how to perform TSE by a health care provider, which supports Klein et al.’s (1990) conclusions that more than 90% of
men have not been taught how to perform TSE. Further, analysis on TSE instruction conducted by Frank-Stromborg and Rohan (1992) delineates teaching about TSE as lacking among health care providers.

Post-White et al. (1993) determined that education on TSE improved practice of TSE which is consistent with the results from this study where 91.7% of the subjects who had heard of TSE practiced TSE. This finding is consistent with the findings of Klein et al. (1990) which found that teaching TSE to men by health care providers increased practice by 64%. In a parallel study conducted by Wagle et al. (1997) on breast self-exam (BSE), education of the procedure significantly (p = .017) increased the practice of the procedure citing a lack of social support by health care providers as a cause. Additionally, 75% of the subjects in this sample who had been taught TSE by a health care provider practiced the procedure.

An interesting finding, though not found to be statistically significant, was the emergence of the media, a means of becoming aware of testicular cancer and a motivator for practicing TSE. The current researcher agrees with McMaster et al. (1994), who cited a 53% difference in knowledge level of testicular cancer and TSE
between two groups. The difference was attributed to the increased media attention and health awareness among the group with the greater knowledge level of testicular cancer and TSE. Therefore, the supposition is that more media attention on TSE increases the practice of TSE by men at risk. According to the Health Belief Model, perceived susceptibility, perceived severity, and perceived benefit can be motivators to practicing health preventive measures. The results of this study supported the Health Belief Model as a tool for preventive health care. Subjects' knowledge of TSE increased their perceived susceptibility to testicular cancer and appreciation of testicular cancer as a severe disease. The sample perceived TSE to be a benefit in decreasing susceptibility to testicular cancer, thus increasing the practice of TSE. The barriers to implementation of the Health Belief Model for subjects is lack of knowledge which results in not practicing TSE as a health preventive measure.

Barriers to performing TSE identified by this sample were lack of awareness of TSE and lack of instruction on how to perform TSE by a health care provider. Awareness was cited as a barrier in similar research conducted by McMaster et al. (1992) and Schaffner (1995). These same
researchers also cited a lack of instruction as a barrier which is consistent with the findings that emerged from this study. Thus, the current author ascribes to the conviction that the identified motivators also were the barriers to practice. The motivator of being “aware of TSE” corresponds to the barrier of “lack of awareness of TSE,” and the motivator being “taught how to perform TSE” also is congruent with the barrier “lack of education about TSE.”

The results from these findings may be further explained by the small sample size (N = 75). An inadequate cross-section of those men at risk for developing testicular cancer (mean age of 20.95 years) may have influenced the results. Young men at this age usually are impulsive, and, for the most part, they believe nothing can happen to them. Men in this age group may be reluctant to have testicular exams by health care providers due to their lack of knowledge about diseases such as testicular cancer or may be modest about exposing their bodies, specifically the genitalia. They also make light of health care problems and practices.
Limitations

Two limitations emerged in this study. First and foremost, the reliability of the tool itself was low (coefficient alpha 0.57), thereby decreasing the validity of the findings. Secondly, the sampling technique, which was one of convenience, consisted of a homogenous sample and not truly representative of all those at risk.

Conclusions

Awareness of TSE and being taught how to perform TSE were the significant motivating factors to the performance of TSE by this sample. This conclusion is supported by prior research (Wagle et al., 1997; Post-White et al., 1993). Lack of knowledge of TSE and not having been taught to perform TSE by a health care provider were the identified barriers to TSE. This conclusion is supported by Frank-Stromborg and Rohan (1992), Klein et al. (1990), and Post-White et al. (1993). The researcher’s supposition is that the Health Belief Model is a useful tool for health prevention and is supported by the finding that 9 (75%) of the sample participants who heard of TSE performed TSE (perceived susceptibility and benefit).
Implications for Nursing

The following implications for nursing emerged as a result of the findings of this study:

Research. The current researcher was unable to find any qualitative studies that examined the attitudes and beliefs of health care providers concerning testicular cancer and TSE. Thus, in the study less than half of the subjects had been taught how to perform TSE by a health care provider. However, being taught to perform TSE was found to be a statistically significant motivator among those who did practice TSE. Therefore, nurse practitioners should consider these factors when further examining motivators and barriers to TSE among men at risk.

Education. Results from this study should be considered by educators of advanced practice nursing programs when developing the curricula. Educating nurse practitioners about testicular cancer, how to teach TSE, and who is at risk will increase the likelihood they will educate their clients about these issues.

Practice. Findings from previous research conducted on motivators and barriers to practicing TSE, including this study, indicate that nurse practitioners are not teaching men about testicular and TSE. Nurse practitioners
employed in a primary care setting are in an ideal setting to teach health preventive measures, such as TSE to men at risk. If nurse practitioners educated their clients on TSE and instructed them on how to perform TSE, the mortality rate associated with the disease would be almost nonexistent.

Theory. The Health Belief Model provides an excellent framework that nurse practitioners can use to structure practice in the primary care setting. Illness prevention is the goal for the 21st century. Therefore, the client must be educated about his own health, diseases he is at risk for, and the benefits from being involved in health prevention measures.

Recommendations

The following recommendations for search, practice, and education emerged from the results of this study:

Research

1. Implementation of a qualitative study to examine the attitudes and beliefs of health care providers about testicular cancer and TSE.

2. Replication of this study using a tool with increased reliability and validity with a larger sample.
3. Replication with a sample drawn from different geographical area and including those from more varied ethnic backgrounds.

**Practice**

2. Conduction of TSE education at primary care sites.
3. Implementation of the Health Belief Model as a framework for illness prevention.
References


APPENDIX A

MODIFIED PILLER-DURHAM QUESTIONNAIRE
Modified Piller-Durham Questionnaire

1. Age: __

2. What year in college are you?
   - a. Freshman
   - b. Sophomore
   - c. Junior
   - d. Senior
   - e. Graduate student
   - f. Postgraduate 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 a blood relative living or who died with cancer?
   - a. Yes. Type of cancer: ________________________________
   - b. No

5. Have you heard of testicular cancer? If yes, how?
   - a. Yes
   - b. No

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

7. Have you ever had testicular cancer?
   - a. Yes
   - b. No

8. Did both of your testicles descend as a child?
   - a. Yes
   - b. No
9. Have you heard of testicular self-exam?
   □ a. Yes
   □ b. No

10. Has a health care provider ever examined your testicles?
    □ a. Yes
    □ b. No

11. Did a health care provider ever teach you how to do testicular self-exam?
    □ a. Yes
    □ b. No

12. Do you practice testicular self-exams?
    □ a. Yes (go to Question 13)
    □ b. No (go to Question 14)

13. If yes, then
    a. Where did you learn to do testicular self-exam?
       □ 1. Medical doctor
       □ 2. Nurse
       □ 3. Health educator class
       □ 4. Other. Please specify:________________________________________

    b. How many times have you conducted testicular self-exam within the last 6 months?
       □ 1. Once
       □ 2. Twice
       □ 3. 3 times
       □ 4. Other. Please specify:________________________________________

14. If you never do testicular self-exam, what is the reason?
    □ a. Testicular self-exam 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

APPROVAL OF MISSISSIPPI UNIVERSITY FOR WOMEN’S COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION
April 17, 2000

Mr. Keith Odendehl  
c/o Dr. Mary Pat Curtis  
P. O. Box W-910  
Campus

Dear Mr. Odendehl:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research as submitted.

I wish you much success in your research.

Sincerely,

Sheila V. Adams, Ed.D.  
Interim Vice President  
for Academic Affairs

SK: wr

cc: Mr. Jim Davidson  
Dr. Mary Pat Curtis

Where Excellence is a Tradition
APPENDIX C

INSTITUTIONAL REVIEW BOARD FOR
THE PROTECTION OF HUMAN
SUBJECTS IN RESEARCH
OF THE UNIVERSITY
May 1, 2000

Keith Odendahl  
11255 Ida Ave.  
Baton Rouge, LA 70816

Re: IRB Docket #00-159

Dear Keith:

Please find enclosed your approval papers for the above referenced IRB application. Please return the "Statement of Principal Researcher/Investigator" to me once you and your advisor have signed it.

Please note the expiration date for approval of this project is July 15, 2000. If additional time is needed to complete the project, you will need to submit a Request for Change in IRB Approval form prior to July 15, 2000. Please refer to your docket number (#00-159) when contacting our office regarding this application.

The IRB reserves the right, at anytime during the project period, to observe you and the additional researchers on this project.

Thank you for your cooperation and good luck to you in conducting this research project. If you have questions or concerns, please contact me at 325-3994 or at tarwood@spa.msstate.edu.

Sincerely yours,

[Signature]

Tracy S. Awood  
Regulatory Compliance Administrator

TSA

Enclosures

cc: Dr. Bob Collins  
File
APPENDIX D

CONSENT FORM
Consent Form

My name is Keith Odendahl. I am a registered nurse and a graduate student at Mississippi University for Women. This research is being conducted in partial fulfillment of the requirements for a Master of Science degree.

The study will be done to determine the factors which motivate college-aged men to practice testicular self-exam, and you will only be a participant if you choose. You are a candidate because you are male and a college student who is at risk for developing testicular cancer, a disease that can possibly be cured if detected early and prompt medical diagnosis and treatments are implemented.

The time required to conduct this study will be between 15 to 20 minutes. You will be asked to respond to a 14-item questionnaire that asks basic demographic information, as well as your knowledge, attitudes, and practice regarding testicular cancer and testicular self-exam. You may leave any questions that you prefer not to answer blank. When the questionnaire has been completed, you will be asked to place it in the envelop specified as the questionnaire envelop on the researcher’s table. This will complete your participation in the study. At no time will your name and completed questionnaire be associated with each other; a code listed on your consent and questionnaire will maintain confidentiality. Confidentiality will also be maintained by reporting data collectively. The researcher will be the only person with access to the completed questionnaire.

It is your decision whether or not to participate in the study. Your signature verifies that you have read the content included above and you have agreed to participate. It is your right as a participant in this study to withdraw at any time.

Code: ________

________________________________________  ______________________
Signature                                      Date
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 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.

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.