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A Description of the Health Beliefs and Skin Cancer Prevention Practices of Michigan Farmers

Denise Ann Coats
Grand Valley State University

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A DESCRIPTION OF THE HEALTH BELIEFS AND SKIN CANCER

PREVENTION PRACTICES OF MICHIGAN FARMERS

By

Denise Ann Coats

A THESIS

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Thesis Committee Members

Cindy Coviak, R.N., M.S.N. Ph. D. Candidate

Leann Burger, R.N., M.S.N.

Theresa Bacon-Baguley, R.N., Ph.D.

ABSTRACT

A DESCRIPTION OF THE HEALTH BELIEFS AND SKIN CANCER

PREVENTION PRACTICES OF MICHIGAN FARMERS

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The purpose of this study was to examine the skin cancer knowledge, health

beliefs, prevention practices and cues to action of a sample of Michigan farmers. A sample

of 106 randomly selected male farmers responded to a mailed questionnaire comprised of

40 items measuring variables of the Health Belief Model and demographic information.

The farmers spent an average of 4.05 hours in the sun each day between 10 a.m.

and 3 p.m., and an average of 45.13 years living and/or working on a farm. They were

quite knowledgeable about skin cancer (M = 77% correct), but most did not know that (a)

skin cancer is the most common form of cancer, (b) melanoma is the most serious form of

skin cancer, or (c) skin cancer can cause death.

It is recommended that skin cancer screening and education be incorporated into

routine health examinations and be available at major farm events.

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CHAPTER ONE

INTRODUCTION

Skin cancer will affect 40-50% of people who live to age 65. In the United States 800,000 new cases are diagnosed a year (American Cancer Society [ACS], 1997). The principal cause is excessive and long-term exposure to the sun (American Academy of Dermatology [AAD], 1990; ACS, 1988). Farmers, by nature of their occupation, are exposed to excessive amounts of sun and are at high risk for developing skin cancer (ACS, 1992). Knowledge and health beliefs about skin cancer can influence what actions' farmers will take to protect themselves from the harmful effects of the sun. Through health education and health communication programs, nurses play an important role in the primary prevention of skin cancer.

Skin cancer accounts for nearly 40% of all new cases of cancer diagnosed each year in the United States. The incidence of melanoma, the most aggressive form of skin cancer, is increasing faster than any other cancer in humans at a rate of 4% per year (AAD, 1994; ACS, 1992). As the ozone layer depletes, the incidence of skin cancer will continue to accelerate. Scientists predict that for every 10% decrease in stratospheric ozone, there will be an additional 20% increase per year in the incidence rate of skin cancer (Fraser, Hartge, & Tucker, 1991). The problem of ozone depletion does not appear to be easily reversible. Therefore the reduction in skin cancer incidence must come almost solely from the limitation of sun exposure at any age.

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Skin cancer yields high individual health care costs for treatment, as well as high social costs because of potential disfigurement, and high economic impact due to sheer number of cases (Keesling & Friedman, 1987). Office visits for nonmelanoma skin cancer have increased more than 50% since 1975, contributing to excess of $125 million per year to the cost of health care (Kraemer, 1989).

Skin cancer is related to overexposure to sunlight and in four out of five cases, skin cancer is a preventable disease (ACS, 1996). A four point approach to minimizing skin damage for the sun is advised: (1) avoid the noonday sun, especially between 10:00 A.M. and 3:00 P.M., (2) seek natural shade, (3) wear protective clothing, hats, and sunglasses, (4) and use a broad spectrum sunscreen with a sun protection factor of 15 or above (AAD, 1994). Exposures sufficient to cause sunburn have been associated with increased risks of skin cancer (Marks & Whiteman, 1994).

It is well recognized that farmers are by nature a healthy group, although their occupation puts them at significant risk for sun exposure and subsequently skin cancer related to chronic, cumulative exposure over time or intense, intermittent exposure to ultra violet radiation (Blair & Zahm, 1991). Farmers spend most of their work time outdoors and are exposed to ultraviolet radiation during peak recommended times of avoidance of 10:00 A.M. and 3:00 P.M. because of optimal farming conditions. According to Mathias (1988) recommended protective, tightly woven clothing against skin cancer is not tolerated because it absorbs heat. In Lee, Marlenga, and Miech's 1992 study of 1372 farmers participating in a skin cancer screening program, less than 25% stated they used sunscreen preparation.

The U.S. Department of Health and Human Services (DHHS) (1991) has

recognized skin cancer prevention as a political and social concern. Little is known about skin cancer prevention behaviors in the general population and even less information is available on the high risk group of farmers. A disease prevention goal for the year 2000 is to increase the proportion of people who protect their skin from the harmful effects of the sun to at least 60% (DHHS, 1991). Education about the hazards of sun exposure and the value of protective action has been suggested as an intervention to facilitate this objective.

Communication of health information is an essential component in disease prevention strategies. The Health Communication Process as suggested by the National Cancer Institute assessment of the target populations' perceptions as a critical first step in program development (DHHS, 1992). In order for health education programs to be successful in changing behavior, the program must match the needs of the population. An assessment that includes demographic variables, health beliefs, knowledge, current practices, and sources of health information in the target population provides the foundation for program development. Therefore, preventive strategies and intervention programs to decrease the epidemic potential skin cancer in Michigan farmers are derived from a thorough assessment of the population.

The Health Belief Model (Rosenstock, 1990) was developed to provide a framework for explaining why some people take action to prevent disease, while others fail to take protective action. The model predicts that people are not likely to take preventive action unless (a) they believe they are susceptible to a disease, (b) they believe the disease could have serious effects on their lives, (c) they believe that taking preventive action would reduce the likelihood of getting the disease, (d) they see few difficulties in undertaking the recommended action, and (e) they feel themselves competent to implement

that change (Rosenstock, 1990). According to the Health Belief Model, perceived susceptibility and perceived seriousness combine to provide the force which leads to health protecting action. The perceived benefits of taking preventive action minus the perceived barriers to protective action predicts the likelihood of taking the preferred action (Rosenstock, 1974), in which they feel competent to change (Rosenstock, 1988).

Individual perceptions influenced by structural and demographic variables may indirectly alter health-related behaviors (Rosenstock, 1974). Demographic variables include age, gender, and educational level. Structural variables included knowledge about the disease and prior contact with the disease. An additional variable labeled as "cues to action" is thought to precipitate the decision-making process (Rosenstock, 1974). These cues include media articles and campaigns, advice from others, written reminders, and family illness. In this study, selected variables will be used to assess this target population in the first stage of the Health Communication Process.

Significance to Nursing

A descriptive assessment of Michigan farmers regarding skin cancer and skin cancer prevention will contribute to nursing knowledge and have the potential to impact the mortality and morbidity of skin cancer in the farming population. Only one research study was found that addressed any aspect of sun-protection behaviors in the farming population. The National Institute for Nursing Research has identified health promotion as a rural health promotion priority; specifically, psychosocial mechanisms underlying health promotion behaviors and the impact of a lifestyle on health status (Bushy, 1991). Likewise, the National Rural Health Association (1990) has targeted health promotion and disease prevention as important topics of research for vulnerable rural populations. This

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study coincides with the research priorities for rural populations and will provide a basis for developing health education and communication strategies to decrease the potential skin cancer epidemic in farmers.

The health of farmers is an important community health issue. Agriculture is the nation's largest industry and comprises greater than 16% of the Gross National Product. Consequently, agriculture is the Nation's largest employer, providing jobs for more than 21 million people in various phases of agriculture (United States Department of Agriculture [USDA], 1991). Although the actual number of farmers in the labor force has declined markedly, farmers still represent one of the largest occupational groups in the United States (Blair & Zahm, 1991). Farming itself employs approximately 2.1 million workers, as many as the automobile, steel, and transportation industries combined (USDA, 1991). Therefore, health promotion/disease prevention strategies in the farm population have national significance. The one research study found that addressed sun protection behaviors in the farming population was conducted by Marlenga (1992).

The purpose of Marlenga's (1992) research was to assess and describe the health beliefs, level of knowledge about skin cancer, current skin cancer prevention practices, and cues to preventive action of a random sample of Wisconsin dairy farmers. The goal of her study was to provide a baseline for intervention strategies to decrease the future incidence of skin cancer in this population. Her final purpose was to test the reliability of the instrument she developed.

Statement of Purpose

In an era of escalating health care costs, it was felt that the information gained in the study reported here could provide the basis for developing cost-effective health

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education and communication programs for Michigan farmers. Interventions designed to change lifestyle risk factors have not traditionally been successful, mainly because there has been a mismatch between the program and the population. Health communication programs that have been tailored to the participants' needs have been more successful in modifying behavior rather than knowledge level (Rossi, 1989). In order to develop cost-effective skin cancer prevention strategies for Michigan farmers, a baseline assessment of knowledge, beliefs, practices, and cues to action is essential and this study will provide the necessary assessment information.

The study by this researcher was a replication of Marlenga's 1992 study of the health beliefs and skin cancer prevention practices of farmers. It was a descriptive study but examined what relationships existed between the variables. The tool was further evaluated for reliability and validity. The utility of the Health Belief Model in examining the beliefs of the farming population was also explored.

The purpose of this study was to describe the health beliefs and level of knowledge about skin cancer, the current skin cancer prevention practices, and the cues to action of a random sample of Michigan farmers. A second aim was to determine if selected variables of the Health Belief Model were related to current skin cancer prevention practices.

CHAPTER TWO

REVIEW OF LITERATURE AND THEORETICAL FRAMEWORK

Theoretical Framework

This chapter focuses on the key background issues that frame the study. The review of literature is divided into three sections. The first section examines the conceptual framework of this research study. The Health Communication Process will be outlined along with selected variables of the Health Belief Model. The second section addresses skin cancer, farmers and skin cancer, and research on sun protection practices. The final section focuses on the role of nurses in skin cancer prevention.

Assessment is an organized and systematic process of collecting data for the purpose of identifying needs, problems, and concerns of a client or group of clients (Iyer, Taptich, & Bernocchi-Losey, 1986). The importance of the assessment phase in all nursing activities (i.e., individualized care, health education, program planning, etc.) has been specifically addressed in the Standards of Nursing Practice (American Nurses' Association, 1973). The first standard outlines the need for systematic and continuous data collection that is accessible to all members of the health care team. The fact that the assessment standard is the first of eight standards reinforces the importance of assessment as the foundation upon which all nursing activities are built.

The Health Communication Process is a systematic approach to health education programs. Mirroring the nursing process, this six-step approach incorporates assessment

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of the target populations' needs and perceptions as the critical first step of program development. A specific description of the audience one wants to reach and influence with health education strategies will help in the development of relevant messages, materials, and channels most likely to reach them. It is recommended that an assessment of the physical, behavioral, demographic, and psychographic characteristics of the target audience be conducted (DHHS, 1992). Selected variables described within the Health Belief Model can be used to organize assessment of these characteristics in the population of Michigan farmers.

The Health Belief Model is the most frequently cited psychosocial approach to understanding preventive behavior (Rosenstock, 1991). The Model identifies five core perceptions influencing these behaviors. These perceptions are: (1) perceived susceptibility, (2) perceived severity, (3) perceived benefits, (4) perceived barriers, and (5) self-efficacy (Rosenstock, 1974, 1988).

Perceived susceptibility refers to an individual's estimated probability that they will encounter a specific health condition (Rosenstock, 1991; Pender, 1987). There is a wide variation from high to low in estimating personal degree of risk for developing a specific health problem. A person may be convinced that they will develop a health condition or they may deny any possibility of the health condition occurring. Janz and Becker (1984), and Rosenstock (1991) reviewed studies using the Health Belief Model and noted that a number have supported the importance of perceived susceptibility as a strong predictor of preventive health behaviors. Relatively high prevention measures, accompanied by low susceptibility estimates inhibit preventive behaviors (Pender, 1987). One researcher who used the Health Belief Model to study preventive behavior in cancer

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prevention measures was Champion (1985). In her study, perceived susceptibility was not related to frequency of breast examination.

Perceived seriousness is judged either by the degree of emotional arousal created by the thought of the disease or by the difficulties that an individual believes a certain health condition would create for them (Rosenstock, 1974). The degree of perceived seriousness may be judged in terms of medical consequences (death, disability, and pain) or social consequences (effect of health condition on work, family, and social relations). A few studies have shown a relationship between perceived seriousness and preventive behaviors (Janz & Becker, 1984; Rosenstock, 1991). Higher levels of perceived severity have been positively linked with the use of preventive behaviors. However, other studies have shown a negative relationship between perceived severity and use of preventive health action, and some studies have shown no relationship at all (Janz & Becker, 1984; Rosenstock, 1991; Champion, 1985; Marlenga, 1992). Overall, perceived seriousness has been the least powerful predictor of preventive health behaviors, especially related to sick-role behavior (Rosenstock, 1990).

Perceived benefit refers to an individual's belief about the effectiveness of the recommended preventive actions in reducing the threat of disease (Rosenstock, 1974). If an individual believes that preventive actions will reduce perceived susceptibility or severity of a disease, that individual is more likely to engage in preventive behaviors. Studies have shown perceived benefits of a preventive action to be important predictors of preventive behavior (Janz & Becker, 1984; Rosenstock, 1974). In Champion's (1985) study, perceived benefits evidenced a small but significant coefficient. In this study the benefit was early detection of breast cancer, not preventive behavior. Marlenga's (1992)

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study showed no evidence that perceived benefits were important predictors of preventive behavior.

Perceived barriers are the potential negative aspects of a recommended health action that inhibit preventive behavior (Rosenstock, 1974, 1988). The barriers can be perceived or real. Time, inconvenience, cost, unpleasantness, or extent of life change required are a few possible blocks to engaging in preventive behavior (Pender, 1987). When barriers are perceived as formidable, the frequency of preventive health actions is low. The construct of perceived barriers was the most powerful dimension of the Health Belief Model across all studies and behaviors in predicting preventive behavior (Jazz & Becker, 1984; Rosenstock, 1991; Champion, 1985; Kim, Horan, Gendler, & Patel, 1991; Brock & Beazley, 1995). In Marlenga's (1992) study of skin cancer prevention practices, the barriers score was the only variable that explained why farmers did not practice sun protection.

Self-efficacy is the conviction that one can successfully execute the behavior required to produce the outcome (Rosenstock, Strecher, & Becker, 1988). Self-efficacy deals directly with an individual engaging in health behaviors (Kim, et. al., 1991). The results of Kim's, et. al., study which evaluated osteoporosis and the Health Belief Model, demonstrated the importance of health motivation in influencing health related behaviors (Kim, et. al., 1991). In Champion's (1985) study, self efficacy was the second most important variable in predicting preventive behavior. Brock and Beazley's (1995) study also indicated self-efficacy as the best predictor of preventive behavior.

Studies using the Health Belief Model have not included any samples of farmers. However, the four core constructs of (a) perceived susceptibility, (b) perceived severity, (c)

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perceived benefits, and (d) perceived barriers can provide valuable information when assessing Michigan farmers. The Health Communication Process advocates assessment of psychological and demographic characteristics of the target population. These four constructs of the Health Belief Model coincide with the psychological and demographic assessment recommended as part of the Health Communication Process.

In addition to the four core perceptions, the Health Belief Model proposes modifying factors that may alter perceptions and indirectly influence health protective behaviors. These modifying factors include demographic variables, structural variables, and cues to action (Rosenstock, 1974). Although these factors have had little specific testing in research based on the Health Belief Model, they coincide with the recommended assessment components of the Health Communication Process (DHHS, 1992).

Demographic variables include age, gender, education, and occupation. The influence of these variables on health protective behavior is not clear. Gender is the demographic variable most predictive of preventive behaviors, with women having a tendency to engage in preventive behaviors more frequently than men (Pender, 1987; Rosenstock, 1991). The level of formal education has been positively correlated with participation in health protecting behaviors (Pender, 1987). Age and occupation differences have shown inconsistent relationships to preventive behaviors across studies (Pender, 1987; Rosenstock, 1991).

Structural variables presumed to influence preventive behavior include knowledge about the target disease and prior contact with the target disease (Rosenstock, 1974). Few studies have addressed these variables, but the Health Belief Model proposes that knowledge and prior contact with the disease will increase the likelihood of undertaking

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preventive actions (Rosenstock, 1991).

Cues to action are external factors that act as triggers to preventive action (Rosenstock, 1974). External cues include mass media, advice from others, newspapers, and magazines. The general assumption is made that the higher the level of readiness to begin preventive action, the lower the intensity of the cue needed to trigger behavior (Pender, 1987).

Summary

The Health Communication Process is suggested by the National Cancer Institute that reflects the nursing process. It is critical to the process and involves assessment of the target population, so that health communication can be tailored to the target audience. Assessment is the focus of this research study on Michigan farmers. The Health Belief Model variables of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, demographics, structure, and cues to action were used to describe Michigan farmers. Additionally, relationships among the variables were explored. The Health Belief Model variable, self efficacy, was not studied because it was not included in Marlenga's (1992) Skin Cancer Survey that was used for this study.

Epidemiology of Skin Cancer

It is estimated that the average person in the United States has a one in four chance of developing some form of skin cancer (Fraser, et. al., 1991). The increased incidence of skin cancer has been linked to the current outdoor-oriented lifestyles and the popularity of suntanning (Siegel, 1990; Truhan, 1991). In recent years, serious concerns have been raised about the depletion of the ozone layer and experts predict that this environmental change will augment the epidemic potential of skin cancer (Fraser, et. al., 1991).

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There are three primary types of skin cancer (a) basal cell carcinoma, (b) squamous cell carcinoma, and (c) melanoma (AAD, 1990; ACS, 1996). Basal cell carcinoma is the most common form of skin cancer and accounts for greater than 90% of all skin cancers in the northern United States. Basal cell carcinoma rarely metastasizes or causes death. Squamous cell carcinoma is the second most common form of skin cancer (Fraser, et. al., 1991). This type of skin cancer occasionally metastasizes and causes death because it is more invasive (Siegel, 1990). The rarest and most lethal of the skin cancers is melanoma. Melanoma represents about 3% of all skin cancers, but accounts for greater than 75% of all deaths from skin cancer (Fraser, et. al., 1991).

Skin cancer is rare in children, but the incidence increases with each decade of life. Males develop basal cell and squamous cell cancer two to three times more frequently than females, a finding believed to be related to occupational exposure (Fraser, et. al., 1991; Mathias, 1988; Siegel, 1990). Seventy to 80 percent of all basal cell and squamous cell cancers occur on areas of the body chronically exposed to sunlight, namely the head, neck, hands, and forearms (ACS, 1996). If detected and treated early, the cure rate for these types of cancer is nearly 100%.

Melanoma occurs more commonly in young adults. Males have a slightly higher incidence of melanoma than females. Melanomas occur most commonly on the trunk in men and on the lower extremities in women (Fraser, et al., 1991). The cure rate for melanoma approaches 76% to 86% if diagnosed and treated early (ACS, 1996).

Epidemiologic studies indicate that greater than 90% of all skin cancers are caused by ultraviolet radiation from sun exposure (AAD, 1990; ACS, 1996; Fraser et al., 1991). People who fall into one or more of the following risk categories have the highest

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incidence of skin cancer:

1. Persons who have fair skin and sunburn easily.

2. Persons who live relatively near the equator (in the United States, persons living in the south or southwest regions).

3. Persons who live at high altitudes.

4. Persons who experience prolonged exposure to the sun (farmers, construction workers, professional athletes, fishermen, and sun-worshipers).

5. Persons with a family history of skin cancer.

6. Persons who have had severe sunburn experiences in childhood.

7. Persons who have a large number of moles.

(The Cancer Foundation, 1988).

As an occupational group, farmers experience prolonged exposure to the sun, placing them at high risk to develop skin cancer. Individually, farmers may fall into one or more additional risk categories which can further augment their already high risk of skin cancer.

Skin Cancer in Farmers

Although farmers are known to have a high risk of skin cancer because of occupational exposure to the sun, there is a paucity of information available about this vulnerable group. Epidemiologic studies have found excesses of skin cancer in farmers as compared to the general population (Blair & Zahm, 1991). These studies have used death certificates as the data base to estimate the proportionate mortality ratio (PMR) for skin cancer (Burmeister, 1981; Higginson, Lee, & Downes, 1979; Milham, 1983; Petersen & Milham, 1980). Because basal cell cancer comprises nearly 90% of all skin cancers and

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rarely causes death, the PMR for skin cancer is examining only 10% of all skin cancer cases that occur (Fraser et al., 1991).

The incidence of skin cancer in farmers has not been studied on a national level. In general, basal and squamous cell skin cancers are not reported to tumor registries and most skin cancers are treated on an outpatient basis, so there are no data bases available to study the incidence of nonmelanoma skin cancers (Fraser, et al., 1991). Melanomas are routinely reported to tumor registries, but the incidence of melanoma in farmers has not been extrapolated (A. Blair, personal communication, March 11, 1996).

Farmers are known to be at high risk for skin cancer, yet skin cancer in farmers has not been definitively studied. However, farm health experts have cited skin cancer as one of the common occupational heath problems facing farmers (Cordes & Rea, 1988; Emanuel, 1990; Emanuel, Draves, & Nycz, 1990; Lee, Marlenga, & Meich, 1992).

Sun Protection

Most skin cancer can be prevented. The principal ways to protect the skin from the harmful effects of the sun are (a) to avoid outdoor activities between the hours of 10:00 A.M. and 3:00 P.M., (b) to wear protective clothing, and (c) to use sunscreen with a sun protection factor (SPF) of 15 or greater (AAD, 1990; ACS, 1996). Several studies have examined skin cancer prevention in the general population. Hill, Rassaby, and Gardner (1984) designed a study to discover which personal beliefs related most strongly to intentions to take precautions against skin cancer. Questionnaires were answered by 150 volunteers who were contacted through places of employment in Australia. The questionnaire was oriented toward three specified behaviors relevant to skin cancer prevention: (a) wearing a hat regularly, (b) wearing a shirt regularly, and (c) using

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sunscreen regularly.

Wearing a hat, wearing a shirt, and using sunscreen were strongly correlated with the belief that a hat "makes me go bald," "spoil my hairstyle," and "is an uncomfortable nuisance." There was a strong negative correlation between intention to wear a shirt and the belief that wearing a shirt makes me too hot. Additionally, there was a negative correlation between intention to use sunscreen and the belief that sunscreen was a nuisance and a positive correlation between sunscreen use and the belief that sunscreen helps promote a suntan. Strong correlations were found between beliefs and intentions for all three skin cancer prevention behaviors (Hill, Rassaby, & Gardner, 1984).

Johnson and Lookingbill (1984) examined sun exposure and sunscreen use in 489 white patients in a dermatology and internal medicine clinic in central Pennsylvania. During the waiting period of their office visit, subjects were asked to complete a questionnaire about their sun exposure habits and beliefs, and their use of sunscreen. Results revealed that 71% of the patients had one or more hours of sun exposure each week. Men had greater sun exposure than women and subjects less than 30 years of age had more sun exposure than subjects more than 30 years old. Seventy two percent of the subjects believed that a suntan looks "attractive" and 78% believed that it looks "healthy." Sunscreen was used by 41% of the subjects, one third of whom used the sunscreen with the belief that tanning would be promoted. Overall, 7% of the subjects had a previous history of skin cancer and this group reported less sun exposure and more use of sunscreen.

Keesling and Friedman (1987) examined psychosocial factors related to sunbathing and sunscreen use. Health practices, knowledge about skin cancer, moods, and social

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rewards of sunbathing were assessed during an interview of 120 white beach goers in California who were randomly selected based on their degree of tan. The findings suggested that sunbathing was related to a positive attitude toward risk-taking, having little knowledge about skin cancer, having a relaxed mood, and maintaining a positive physical appearance. Sunscreen use was related to being female, having knowledge about skin cancer, having previous contact with persons with skin cancer, and having high levels of anxiety.

Cody and Lee (1990) evaluated the effects of videotaped presentations on skin cancer knowledge, behaviors, and health beliefs of 312 first-year psychology students at the University of Newcastle, Australia. Eight percent of the students had a history of skin cancer and 56% reported a friend or family member with skin cancer. After an initial assessment questionnaire was administered, students were randomly assigned to view either an informational video, or a control video. The information video addressed causes, consequences, and incidence rates of skin cancer and suggested skin protection, skin examination, and treatment-seeking behaviors. The emotional video included two interviews with local people diagnosed with melanoma; one person was dying and one had fully recovered. The video ended with an overview of topics covered in the informational video. The control video addressed the issue of dietary recommendations for prevention of heart disease. Knowledge and beliefs were assessed immediately after the video and again 10 weeks later.

The skin cancer intervention videos were found to be effective in increasing skin protection intentions when compared to the control video. Knowledge scores increased significantly in the student group that viewed the informational video. Both the

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informational and emotional video groups reported increased perceptions of severity and benefits. The emotional video was found to be more effective than the informational video for long-term maintenance (10 week follow-ups) of skin protection intention. Overall, females reported more skin protection behaviors, higher skin protection intentions, and higher levels of knowledge about skin cancer at all stages of assessment (Cody & Lee, 1990).

Robinson (1990) investigated behavior modifications that were achieved by sun protection education linked with removal of a skin cancer. A total of 1042 European-Americans patients who had nonmelanoma skin cancer removed received repetitive and interactive oral and written education about sun protection. One year later, the subjects responded to a mailed questionnaire that measured their compliance with sun protection recommendations. Sixty-two percent of the population modified their behavior to protect themselves from the sun. The behavior change most frequently adopted was cessation of deliberate tanning, followed by use of sunscreen, and then limiting the hours spent outdoors. The behavior change that was least frequently adopted was wearing protective clothing. The noncompliance to sun protection recommendations in this group was 38%. Women comprised the majority of subjects in the noncompliant group and their attitude was that skin cancer was not enough to give up the good feelings they obtained from having a tan.

Lee, Marlenga, and Miech (1992) explored sun exposure and sun protection behaviors in farmers. At a statewide farm event in Wisconsin, 1372 persons (906 were farmers) who participated in free skin cancer screening completed a survey asking about their sun exposure and their sun protection practices. Greater than 75% of the participants

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spent four hours or more in the sun each day during peak sun time (10:00 A.M. to 3:00 P.M.). Forty two percent stated that they wore a hat with a wide brim and 22% used sunscreen preparations. Results revealed that 12% of the sample had a history of skin cancer. It was concluded that farmers have excessive sun exposure and are not adequately protecting themselves from the harmful effects of the sun.

Marlenga (1992) examined the health beliefs and skin cancer prevention practices of 535 male, Wisconsin dairy farmers using the HBM. They were mailed a 39-item questionnaire, that covered health beliefs, knowledge, protective practices, cues to action, and demographic variables. Results revealed that farmers perceived themselves as susceptible to skin cancer, perceived skin cancer as serious, perceived skin cancer prevention practices as beneficial, were knowledgeable about skin cancer, and still did not practice sun protection. Barriers were shown to be the strongest predictor of health-protecting behavior. Perceived barriers was the only variable that explained why dairy farmers did not practice sun protection. Marlenga's (1992) study was limited in that it did not survey self-efficacy in farmers and determine if there was a relationship between the variables of the Health Belief Model and skin cancer prevention practices. This may present a limitation in the findings of this study in that self-efficacy has been found to be predictive of many health behaviors such as breast self-exam, and exercise (Champion, 1985; Kim et. al., 1991; Brock & Beazley, 1995) and its omission here presents an incomplete application of the Health Belief Model variables in this study. Marlenga (1992) did not attempt to identify correlations between variables which is a limitation of the study. She concluded that further research was needed to refine and standardize instruments used to assess the skin cancer prevention parameters of farmers using the HBM.

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Summary

Skin cancer is approaching epidemic proportions in the United States. Farmers are considered a high risk group because they experience prolonged exposure to the sun, yet little is documented on the incidence of skin cancer in farmers. Additionally, the majority of studies reported in the literature examined skin cancer prevention practices in the general population, but not in the high risk population of farmers.

Roles of Nursing in Skin Cancer Prevention

"Prevention is unequivocally the most fundamental and effective health care intervention" (Cox, Sullivan, & Roghmann, 1984, p. 168). One of the primary health goals for the year 2000 is to provide all Americans with access to preventive services (DHHS, 1991). Incorporation of prevention into clinical practice continues to be one of the greatest challenges in health care. Typically, interventions aimed at prevention are neglected by health care professionals due to a continuing focus on illness and cure (Bigbee & Jansa, 1991). Since health promotion and disease prevention are fundamental concepts in nursing practice, nurses are in a unique position to make contributions to the prevention of skin cancer (Berwick, Bolognia, Heer, & Fine, 1991).

Nurses have a prominent role in skin cancer prevention in rural areas. The Midwest has one of the highest proportion of its population living in rural areas (U.S. Congress, 1990). In general, rural residents use preventive services less often than urban residents and this difference have been attributed to lack of available preventive services in rural areas. (U.S. Congress, 1990). Therefore, nurses have a significant role to play in providing preventive services to rural populations. Through assessment, advocacy, and health education, nurses can impact skin cancer prevention efforts in high risk rural populations

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such as farmers.

Assessment

Assessment is a key role in nursing practice and skin cancer prevention. Assessing the potential risks of individuals, families, and communities is the first step in health protection (Edelman & Mandle, 1986). The assessment enables the nurse to gather comprehensive data about specific factors that may contribute to skin cancer such as age, gender, occupation, and history of skin cancer. In addition, knowledge, beliefs, and behaviors related to skin cancer and prevention are essential components of a risk assessment. The assessment by the nurse provides a solid foundation for program planning that will match the needs of a client or group of clients.

Advocacy

The nurse with a special commitment to populations at greatest risk for skin cancer brings a unique and important perspective to health care planning. The role of the nurse as advocate in skin cancer prevention involves taking action to insure that groups at risk receive the resources and services they need. Advocacy may involve actions which: (a) increase funds available for assessment and program planning, (b) increase professional time available to high risk clients or groups of clients, (c) change the health care focus from treatment to prevention, or (d) change policies about health service delivery (Logan & Dawkins, 1986).

Education

A major role for nursing in skin cancer prevention involves health education. The goal of health education is to help individuals, families, and communities to achieve optimum states of health by their own actions and initiatives. Through health education,

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nurses encourage the practice of healthy lifestyle behaviors found to prevent skin cancer. Health education is not merely information distribution to increase awareness. Rather, it includes guiding persons through stages of problem-solving and decision-making (Edelman & Mandle, 1986). The end result of health education should be voluntary behavior change based on the analysis of knowledge about skin cancer, attitudes toward skin cancer prevention, personal skills needed to practice prevention, and environmental conditions that influence prevention practices.

Summary

Goals for the year 2000 (Williams & Wilkins, 1996) emphasize a prevention approach to health care. Nurses have a unique role in skin cancer prevention. Through roles of assessment, advocacy, and education, nurses can decrease the epidemic potential of skin cancer in high risk groups and undeserved rural populations.

Definition of Terms

In this study, selected constructs of Rosenstock's (1974) Health Belief Model will be used to assess a sample of Michigan farmers. The following definitions are provided for clarity:

Perceived Susceptibility: An estimated personal degree of risk for developing skin cancer.

Perceived Seriousness: The degree of emotional arousal created by the thought of skin cancer or the difficulties that individuals believe skin cancer would create for them.

Perceived Benefits: The beliefs about the effectiveness of recommended actions to prevent skin cancer.

Perceived Barriers: The potential negative aspects of undertaking recommended action to prevent skin cancer.

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Knowledge: Recognition and awareness of facts about skin cancer.

Skin Cancer Prevention Practices: Measures taken to reduce the risk of skin cancer.

Cues to Action: External factors that serve as a trigger to appropriate skin cancer preventive action such as magazines, newspapers, health professionals, etc.

Self-Efficacy: a person's estimate that a given behavior will lead to certain outcomes. This variable will not be explored in this study as it was not addressed in the instrument being used by the researcher. This may present a limitation in the findings of this study in that self-efficacy has been found to be predictive of many health behaviors (Champion, 1985; Kim, et. al., 1991; Brock & Beazley, 1995) and its omission here presents an incomplete application of the HBM variables in the study.

The purpose of this study is to describe the health beliefs and level of knowledge about skin cancer, the current skin cancer prevention practices, and the cues to action of a random sample of Michigan farmers. The following research questions will guide the study of Michigan farmers.

1. What are the health beliefs about skin cancer and skin cancer prevention practices?

      (a) Perceived susceptibility to skin cancer

      (b) Perceived seriousness of skin cancer

      (c) Perceived benefits of preventive action

      (d) Perceived barriers to a preventive action

      (e) Assessment of ability to execute the behavior required for change

2. What is the knowledge level about skin cancer?

3. What are the current skin cancer prevention practices?

4. What are the most frequently used cues to action?

5. What are the relationships of the Health Belief Model variables to current skin cancer prevention practices?

Chapter Summary

Farmers are known to have a high risk of skin cancer because of occupational exposure to the sun, yet the incidence of skin cancer in farmers is not well documented. Research studies reported in the literature on skin cancer prevention practices have focused on the general population, but not on the high risk group of farmers. In this study of Michigan farmers, the Health Communication Process is considered a useful framework. Selected variables described within the Health Belief Model will be used to assess the physical, behavioral, demographic, and psychographic characteristics of the farmers. The assessment will play a key role in program development for skin cancer prevention. Additionally, nurses can contribute to prevention through advocacy, education, and provision of health care services to rural populations.

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CHAPTER THREE

METHODS

The purpose of this study was to describe a sample of Michigan farmers, in Eaton county, in terms of their knowledge and health beliefs about skin cancer, their skin cancer prevention practices, and their cues to action. Additionally, relationships among the variables were explored using a Pearson correlation coefficient and regression analysis. A descriptive-correlation design was the most appropriate to answer the research question (Talbot, 1995). This chapter will focus on the key research design issues of sample, data collection, data analysis, and protection of human subjects.

Sample

The research population for this study was Michigan farmers, in Eaton county, because they are a large occupational group who are at greater risk for skin cancer. Farmers have more sun exposure throughout the summer season than do other individuals in other types of occupations. This extensive sun exposure places Michigan farmers at an increased risk for skin cancer. In 1995 the average hours a farmer worked outside was 39.2 per week. (Michigan Agricultural Statistics, 1995).

The sample was drawn from the Michigan Department of Agriculture, Michigan State University Cooperative Extension Service mailing list of farmers in Eaton county, in the state of Michigan. This mailing list was compiled from a statewide agricultural census that is conducted every five years and updated on an annual basis from farm production

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surveys (Michigan Agricultural Statistics, 1995) This mailing list was chosen because it provided access to a pool of Michigan farmers from which a representative sample could be drawn.

As of April 1995 there were 70,000 farmers in Michigan (Michigan Agricultural Statistics, 1995). A total of 200 farmers in Eaton county, Michigan, were randomly selected for this study. The sample size was determined by taking into account the predicted response rate of mailed questionnaires (approximately 30%) and the cost factor of printing and mailing the questionnaires.

There was one criterion for eligibility in this study of Michigan farmers. Only male subjects were included in the sample. This criterion was selected because males develop skin cancer two to three times more often than females (American Cancer Society, 1994) and because 97% of Michigan farmers are male (Michigan Statistics Survey, 1995).

Description of the Sample

The sample consisted of 106 Eaton county male farmers with an age range of 23 to 84 years with an education range from eight years to twenty-two years of schooling. The subjects reported living/working on a farm from 10 to 84 years and spend one to five hours outdoors each day between 10 AM and 3 PM. A further description of the demographics is available in Table 1. Additionally, 12.5% (n = 13) of the subjects reported a history of skin cancer and 32.4% (n = 33) had family members with a history of skin cancer. Ninety-six percent of the sample was white (n = 102) and one American Indian.

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Table 1

Demographics of Michigan Farmers

Descriptor	M	SD
Age (years)	53.57	14.85
Education (years)	12.98	2.43
Living/Working on Farm (years)	45.13	16.41
Sun Exposure 10 am-3 pm (hours)	4.05	.99

Note: n = 106 for all variables

Methods

Instrument

The instrument used was the Skin Cancer Survey. It was developed at the National Farm Medicine Center by Barbara Marlenga. The tool was developed based on literature, selected Health Belief Model variables, and personal experience working with the Wisconsin farm population (B. Marlenga, personal communication, September 1996). A panel of farm health experts (two farm safety specialists, one rural health physician, and two rural nurse specialists) reviewed the instrument for content validity and suggested changes be made (B. Marlenga, personal communication, September 1996). A SMOG readability test was done and the instrument was revised to be readable at the 7th grade level. The instrument was pilot tested by five farmers for clarity and reading ease. Internal consistency, estimated by Cronbach's alpha, was 0.87. A Kuder-Richardson 20 coefficient of 0.76 was obtained for the knowledge items. Test-retest reliability was not determined in Marlenga's 1992 study.

The Skin Cancer Survey included a total of 40 items about health beliefs,

knowledge, protective practices, cues to action, and demographic descriptors. There were 11 questions about health beliefs that were answered on a 5-point Likert scale. An answer of 1 corresponded to a response of strongly disagree, whereas an answer of 5 indicates strong agreement. One health belief question required rank ordering, with one corresponding to "more serious," and five indicating less serious. There were also five health belief questions that require ordinal responses, with one meaning never, to five meaning always. Five questions about current sun-protection practices required ordinal level responses. The participant was to mark the box of the reason he is most likely not to always practice sun-protection practices. Cues to action required a rank order response in a single question. Finally there were seven demographic questions.

Internal consistency of the responses to the 11 health belief questions was assessed by Cronbach's alpha and a coefficient of 0.78 was obtained. There were two questions about perceived susceptibility, 2 questions about perceived seriousness, 6 questions about perceived benefits, and 1 question about perceived barriers. The reliability of the 10 knowledge questions was assessed by the Kuder-Richardson formula 20, which measures internal consistency for dichotomous variables. Answers were identified as either correct or incorrect; responses of "don't know" were scored as incorrect. The Kuder-Richardson 20 reliability coefficient was 0.76.

Procedure

The questionnaires were mailed out in early May of 1997, at a time of year when Michigan farmers are beginning their planting season. A mailing at this time allowed for the probability of a greater response rate when farmers were accessible for longer periods of time. A cover letter explaining the study, along with a copy of the questionnaire was

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mailed out to each farmer that was randomly selected using random number assignment. This sampling method allowed an independent chance for each farmer to be selected into the study, and a one-stage selection process (Talbot, 1995). There were no respondent codes assigned to the surveys in any way, thus ensuring anonymity. The subjects were instructed to complete the questionnaire and mail it back to the researcher in the self-addressed, stamped envelope provided. A postcard was also included for farmers to return if they wanted results of the survey. Duplicates were discarded and another random number was selected. Two weeks after the initial mailing, a reminder postcard was sent to all the farmers in the study asking them to complete and return the questionnaire, if they had not already done so. Two weeks after the reminder postcards were sent, the survey was statistically analyzed.

Protection of Human Subjects

Prior to data collection, the research proposal was approved by Grand Valley State University Human Research Review Committee. A cover letter was attached to each questionnaire explaining the nature of the study, a promise of anonymity, and a person to contact in the event that questions or complaints arose. A statement that completion of the questionnaire constituted informed consent was included in the cover letter along with a statement that participation was voluntary and that there would be no penalty for nonparticipation. All subjects were offered a copy of the results of the study and were given a postage paid postcard to return to the researcher if they desired a copy of the results.

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Summary

A descriptive design was considered most appropriate to answer the research questions in this study. A sample of 150-200 Michigan farmers in Eaton county were randomly selected for this study from a mailing list on file at the Michigan Department of Agriculture. The instrument was developed by B. Marlenga and assessed for content validity by a panel of experts, piloted for clarity and readability by farmers, and adjusted upon the advice of the farmers and experts. Questionnaires were mailed out by the researcher in May 1997, and reminder postcards were sent two weeks after the initial mailing. Data was analyzed using descriptive statistics, Pearson correlation coefficients, and multiple regression. The research study was approved by the Committee for the Protection of Human Subjects of Grand Valley State University prior to data collection.

CHAPTER FOUR

RESULTS

Data Analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows. Frequencies and percentages were calculated for belief variables, skin cancer prevention practices, and cues to action. The percentage of correct responses to the knowledge component of the instrument was calculated and the proportion of farmers with a history of skin cancer was determined. Means and standard deviations were calculated for the demographic variables of age, education, hours of sun exposure during peak sun ultra violet rays, and years living on a farm. Internal consistency of the responses to the 11 health belief questions was assessed by Cronbach's alpha and the reliability of the 10 knowledge questions were assessed by the Kuder-Richardson 20 formula. The analysis of the data was performed on a total of 106 Skin Cancer Surveys returned, yielding a 53% return rate. This chapter includes a description of the sample and a summary of the findings in terms of the four research questions. Additionally it was determined that multiple regression be explored.

<u>Description of the Findings</u>

The research questions guided the following report of the findings.

<u>Research Question One</u>

What are the health beliefs regarding skin cancer and skin cancer prevention

practices?

(a) Perceived susceptibility to skin cancer

(b) Perceived seriousness to skin cancer

(c) Perceived benefits of preventive action

(d) Perceived barriers to preventive action

<u>Perceived Susceptibility to Skin Cancer.</u> The subjects were asked to answer 2

questions regarding their perceived susceptibility to skin cancer. The possible responses

were: strongly disagree, disagree, neutral, agree, or strongly agree. The response to these

questions are shown in Table 2.

Ten percent of the sample strongly agreed and 44.3% agreed they were likely to get

skin cancer during their lifetime. Thirty-two percent of the sample was neutral (neither

likely nor unlikely to get skin cancer during their lifetime). As farmers, 9.4 percent

strongly agreed and 59 percent agreed they were more likely to get skin cancer than the

average person.

Table 2

Michigan Farmers' Perceived Susceptibility to Skin Cancer

	Frequency and percentage of responses				
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am likely to get skin cancer sometime during my lifetime.	1 (.9%)	13 (12.3%)	34 (32.1%)	47 (44.3%)	11 (10.4 %)
As a farmer, I am more likely than the average person to get skin cancer.	3 (2.9%)	12 (11.4%)	18 (17.1%)	62 (59.0%)	10 (9.5%)

Note: n = 105 responses for these items

Perceived Seriousness of Skin Cancer. The farmers were asked 2 questions

concerning their perceptions of the seriousness of skin cancer. The responses to these

questions are displayed in Table 3. Twenty-six percent of farmers strongly agreed and 65%

agreed that skin cancer was a serious disease, while 1% strongly agreed and 2% agreed

that skin cancer would not affect their ability to continue farming.

Table 3.

Michigan Farmers' Perceived Seriousness of Skin Cancer

		Frequency and percentage of responses				
Statement	n	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I think skin cancer is a serious disease.	106	1 (.9%)	1 (.9%)	11 (10.4%)	69 (65.1%)	24 (22.6%)
If I get skin cancer, I will not be able to continue farming.	105	18 (17.1%)	67 (63.8%)	17 (16.2%)	2 (1.9%)	1 (1.0%)

In addition, the subjects were asked to choose the 5 most serious health problems of farmers from a list of 10 common health problems. They were instructed to rank the health problems 1 through 5 in the order of seriousness to them (1 = more serious, 5 = less serious). The top 5 health problems identified by farmers were (a) farm accidents/injuries, (b) hearing loss, (c) farmers lung disease, (d) skin cancer, and (e) other cancers (see Table 4).

Table 4

Rank Ordered Top Five Health Problems Perceived as Most Serious by Michigan Farmers

Health problem	Frequency	%
Farm accidents/Injuries	42	42
Hearing loss	12	12
Farmer's lung disease	11	11
Skin cancer	9	9.1
Other cancers	7	7.1
Arthritis	6	6.1
Chemicals	6	6.1
Stress/Depression	4	4
Ground water contamination	3	3
Lyme disease	1	1

Note: n = 100 for this question

Perceived Benefits of Preventive Action. The farmers were asked to answer 6

questions about perceived benefits of skin cancer prevention actions. The responses are

presented in Table 5. Wearing a sunscreen with a SPF of 15 or greater was ranked as the

most beneficial preventative action to avoid skin cancer. Daily protection from the sun was

the second most frequently cited preventative action against skin cancer. Long-sleeved

shirt and pants were viewed as the third most important preventative actions. A wide-

brimmed hat was the fourth most important preventative action of skin cancer. Avoiding

the sun between 10 AM and 3 PM and wearing gloves were viewed as the least beneficial

preventative actions to prevent skin cancer.

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Perceived Barriers to Preventive Action. The farmers were asked to answer 1 question about the desirability of a tan; did they think most people looked better with a tan. Three percent strongly agreed and 49% agreed that people look better with a tan and 37% were neutral.

In addition, the farmers were asked how frequently they used 5 different skin cancer prevention practices. The practices were: wearing a wide-brimmed hat, wearing a long-sleeved shirt, wearing long pants, wearing work gloves, and using a sunscreen (see Question three, p. 39 for report of frequency of skin cancer prevention practices). If the subjects did not always use a skin cancer prevention practice, they were asked to select any of 6 commonly cited barriers to the use of that practice. The 6 choices were (a) it takes too much time, (b) it gets in the way of my work, (c) it costs too much, (d) it is too hot to wear, (e) I forget to wear it, or (f) other (explain). The frequency at which each barrier was selected is reported in Table 6 (p. 36).

A variety of "other" reasons were given for not wearing a wide-brimmed hat including "I wear a baseball cap" (n = 6) , "wind blows it off"(n=1), and "I don't like it" (n = 1). Overall the most common reasons for not using sunscreen include "messy, greasy, gets dirty" (n = 5), "never have, just don't, none available, don't burn, don't think of it, don't like chemicals, and only with shorts and a t-shirt" (n =10). The most common reasons for not wearing gloves were "don't need, not convenient" (n = 2). Farmers cited that they "always wear short sleeves in the summer" (n = 4) and "I like a tan" (n = 2) as the most frequent reason for not wearing a long sleeved shirt. Two other reasons were also give including "not necessary" and "gets caught in machinery" (n = 2). The most frequent cited reasons for not wearing pants were "like a tan" and "like shorts" (n = 2).

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Table 5

Michigan Farmers' Perceived Benefits of Skin Cancer Preventive Action

	Frequency and percentage of responses				
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
If I protect myself from the sun each day, I am less likely to get skin cancer.	1 (1%)	2 (2%)	4 (4%)	76 (72%)	23 (22%)
If I avoid outdoor work between 10 a.m. and 3 p.m., I am less likely to get skin cancer.	1 (1%)	10 (10%)	24 (23%)	61 (58%)	10 (9%)
If I wear a wide-brimmed hat (like a straw hat), I am less likely to get skin cancer.	1 (1%)	4 (4%)	13 (12%)	76 (72%)	12 (11%)
If I wear a long-sleeved shirt and long pants, I am less likely to get skin cancer.	1 (1%)	4 (4%)	10 (9%)	75 (71%)	16 (15%)
If I wear work gloves, I am less likely to get skin cancer.	2 (2%)	16 (15%)	22 (21%)	56 (53%)	10 (9%)
If I wear sunscreen with a sun protection factor (SPF) of 15 or greater, I am less likely to get skin cancer.	2 (2%)	1 (1%)	12 (11%)	74 (70%)	17 (16%)

Note: n = 106 responses for these items

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Table 6

Michigan Farmers' Perceived Barriers to the Use of Skin Cancer Preventive Actions

Barriers	(Reported In Frequencies)				
	Wide-Brimmed Hat	Long-Sleeved Shirt	Long Pants	Work Gloves	Sunscreen
Takes too much time	3	1	0	5	35
Inconvenient	67*	13	0	64*	19
Cost too much	2	0	0	2	5
Too hot to wear	17	81*	21*	55	4
Forget to wear	25	6	1	4	51*
Other	12	8	4	9	23

*Indicates most commonly cited barrier

Research Question Two

What is the knowledge about skin cancer? Ten questions on the survey assessed knowledge of skin cancer and skin cancer prevention. The subjects were asked to choose one response to each of 10 statements about skin cancer. The possible responses were: "true," "false," "or don't know" (see Table 7, p. 38). The farmers had a mean score of 77% correct on the knowledge questions. Two questions triggered the majority of incorrect responses from the farmers. Forty-five percent of the sample didn't know that skin cancer is the most common form of cancer. Ninety-five percent of the sample answered incorrectly or didn't know that melanoma was the most serious form of skin cancer. Additionally, 23% of the farmers didn't know that skin cancer can be prevented.

Table 7

Michigan Farmers' Knowledge About Skin Cancer

		Frequency and percentage of responses		
Statement	n	Correct	Incorrect	Do Not Know
Skin cancer is the most common form of cancer (true)	104	54 (51%)	4 (4%)	47 (45%)
Melanoma is the least serious form of skin cancer (false)	106	5 (5%)	55 (52%)	46 (43%)
Sun exposure causes most skin cancers (true)	106	87 (82%)	1 (1%)	18 (17%)
The sun's rays are the strongest at mid-day (true)	106	93 (88%)	6 (6%)	7 (6%)
When skin cancer is detected early, the cure rate is very high (true)	106	97 (92%)	1 (1%)	8 (8%)
Sunburn causes lasting damage to the skin (true)	106	82 (77%)	7 (7%)	17 (16%)
Experts suggest using sunscreen with a sun protection factor SPF) of 15 or higher (true)	106	91 (87%)	---	14 (13%)
Skin cancer can cause death (true)	106	78 (74%)	6 (6%)	22 (21%)
A person with fair skin color needs the most protection from the sun (true)	106	95 (90%)	4 (4%)	7 (7%)
Skin cancer can be prevented	106	80 (76%)	2 (2%)	24 (23%)

Research Question Three

What are the current skin cancer prevention practices? Farmers were asked how often they used 5 different sun protection practices when they were out in the sun for 15 minutes or more. The skin cancer prevention practices were (a) wearing a wide-brimmed hat, (b) wearing a long-sleeved shirt, (c) wearing long pants, (d) wearing work gloves, and (e) using sunscreen. The possible responses were: never, rarely, sometimes, frequently, or always. Long-pants were most frequently used and gloves were the least frequently used. The full range of responses are presented in Table 8.

Table 8

Michigan Farmers' Current Skin Cancer Prevention Practices

Practice	n	Frequency and percentage of responses				
		Never	Rarely	Sometimes	Frequently	Always
Wears wide-brimmed hat	106	44 (42%)	33 (31%)	12 (11%)	2 (11%)	5 (5%)
Wears long-sleeved shirt	104	16 (15%)	33 (32%)	33 (32%)	13 (13%)	9 (9%)
Wears long pants	105	0 (0%)	3 (3%)	7 (7%)	15 (14%)	80 (76%)
Wears work gloves	105	22 (21%)	31 (30%)	32 (31%)	15 (14%)	5 (5%)
Uses sunscreen	106	30 (28%)	30 (28%)	27 (26%)	14 (13%)	5 (5%)

Research Question Four

What are the most frequently used cues to action? Subjects were asked to choose the 5 most frequently used sources of health information from a list of 10 sources available to farmers. They were instructed to rank the sources of health information 1 through 5 in

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the order of frequency of use (1 = most often used, 5 = least often used). The top 5 source of health information were (a) health professionals, (b) television, (c) farm magazines/newspapers, (d) agricultural extension service, and (e) radio (see Table 9).

Table 9

Rank Ordered Top Five Sources of Health Information (Cues to Action Reported by Michigan Farmers)

Source	Frequency	%
Health professionals	41	41
Television	20	20
Farm magazines/newspapers	18	18
Agricultural extension service	16	16
Radio	5	5
Farm organizations	1	1
Other farmers	1	1
Veterinarians	1	1
Local feed dealer	1	1
Local equipment dealer	1	1

Note: $n = 99$ responses for these questions

Research Question Five

What are the relationships of the Health Belief Model and current skin cancer prevention practices? Two-tailed Pearson's correlation coefficients were used to test the significance of the relationship between the Health Belief Model variables, current skin

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cancer prevention practices, knowledge about skin cancer, age of the farmer, education of the farmer, average hours a farmer spends in the sun, and personal and family history of skin cancer. The results are shown in Table 10. Knowledge (M = 7.73, SD = 2.27) and beliefs of benefits, barriers, seriousness and susceptibility of skin cancer (M = 39.80, SD = 4.71) were moderately correlated (r = .48, n = 102, p <.00). There was a strong correlation between beliefs of benefits, barriers, seriousness, and susceptibility of skin cancer and practices (M = 14.30, SD = 3.35) (r = .28, n = 101, p < .00). There was no correlation between the farmer's level of education and practices of skin cancer and was not statistically significant (r = .18, n = 99, p <.08).

Table 10

Correlation of Knowledge and Belief, and Practices

	Knowledge n = 102	Belief n = 103
Belief	.48*	—
Practice	.28*	.18

*p<.05

A multiple regression analysis was performed in order to determine the variables of the Health Belief Model most predictive of skin cancer prevention practices. The variables of knowledge and belief, in conjunction with personal history of skin cancer and family history of skin cancer were entered simultaneously into a multiple regression analysis. Ten percent of variance in skin cancer prevention practices were explained by these variables (adjusted R^2= .07). Knowledge of skin cancer was identified as a significant predictor of

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skin cancer practices (t=2.33; p = .02), accounting for 8% of the variance. However, the demographic variables were not statistically significant and only explained an additional 2% of the variation in skin cancer prevention practice. The results of the multiple regression are depicted in Table 11.

Table 11

Multiple Regression of Intent to Practice Skin Protection Practices on Health Belief Model Constructs

Variable	B	SE B	Beta	t	p
Knowledge	.42	.18	.26	2.33	.02*
Belief	.04	.08	.07	.61	.54
Family History of Skin Cancer	.13	.72	.02	.18	.86
Personal History of Skin Cancer	1.32	.99	.13	1.33	.18

*p < .05.

Summary

A total of 200 questionnaires were mailed to randomly selected Michigan farmers and 106 were returned. The mean age of Michigan farmers in this study was 54 with 13 years of education. They had been living/working on a farm for an average of 45 years and were exposed to the sun between 10 AM and 3 PM for an average of four hours. They believed they were at an increased risk for skin cancer but practiced only one skin cancer protective practice. Barriers proved to be the strongest variable of the Health Belief Model in describing skin cancer protection practice behaviors, in the sample. The mean knowledge score about skin cancer was 77%. There was a significant correlation between

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beliefs and practices. The results are discussed in the following chapter.

CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

The purpose of this study was to describe a sample of Michigan farmers, in Eaton county, in terms of their knowledge and health beliefs about skin cancer, their skin cancer prevention practices and their cues to action. Additionally, relationships among the variables were explored using a Pearson correlation coefficient and multiple regression analysis. This chapter includes a discussion of the demographics of the sample, a discussion of the findings in terms of the five research questions, and recommendations for research, education, and practice.

Demographics of the Sample

Based on the demographics of the study, the farmers surveyed were at a high risk for developing skin cancer or already having skin cancer. Farmers have experienced intense and prolonged exposure to the sun on an average of 20 years or more, and most had lived on a farm most of their lives emphasizing prolonged occupational sun exposure. Farmers had also completed several years of school but did not receive skin cancer prevention education during those years as it was not known at that time. The average person received their education in the 1950's. Only in recent years has the public been educated in the risks of sun exposure but, many farmers have already received large amounts of sun exposure over many years placing them at high risk for skin cancer from previous exposure.

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A personal history of skin cancer was reported by 13% of the Michigan farmers and 32% reported a family history of skin cancer. This is comparable to a state-wide farm event in Wisconsin. Twelve of the 1372 persons (906 were farmers) who participated in the free skin cancer screening revealed a personal history of skin cancer and 17% had a family history of skin cancer (Lee, Marlenga, & Miech, 1992). It can be postulated that persons seeking skin cancer screening are more likely to have a personal and/or family history of skin cancer, so that may artificially inflate the results reported at this screening event.

Discussion of the Findings

The research questions guided the following discussion of the findings.

Research Question One

What are the health beliefs about skin cancer and skin cancer prevention?

    (a) Perceived susceptibility to skin cancer

    (b) Perceived seriousness of skin cancer

    (c) Perceived benefits of preventive action

    (d) Perceived barriers to preventive action

Perceived Susceptibility to Skin Cancer. The majority of farmers clearly recognized that they were more susceptible to skin cancer than the average person. This perception was translated into a strong belief that they were likely to develop skin cancer during their lifetime (54% strongly agreed and agreed, 32% were neutral).

According to the Health Belief Model, people are less likely to engage in preventive behaviors if they have a low perceived susceptibility to a health problem (Rosenstock, 1974). Perceived susceptibility is at least partly dependent on knowledge and

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half of the farmers did not know that skin cancer is the most common form of cancer in the United States. Therefore, augmenting perceived susceptibility through education may increase the incidence of preventive behavior (Rosenstock, 1974).

Perceived Seriousness of Skin Cancer. The majority of subjects (88%) believed that skin cancer was a serious disease, but they did not think skin cancer would affect their ability to continue farming. Though researchers have not shown perceived seriousness to be a strong predictor of preventive action, it is believed that very high or very low levels of perceived seriousness inhibit preventive behavior (Janz & Becker, 1984; Pender, 1987; Rosenstock, 1990). Perceived seriousness has a strong cognitive component that is partly dependent on knowledge (Rosenstock, 1974). Nearly one fourth of the farmers did not know that skin cancer can cause death; therefore, education may change the perception of seriousness of skin cancer.

Additionally, skin cancer was ranked among the 10 common health problems affecting farmers. Researchers have found that rural dwellers define health as "the ability to work and be productive" (Long & Weinert, 1989, p. 121). Based on this definition of health, farm accidents/injuries, stress/depression, arthritis, and farmers' lung disease are more likely to affect a farmers' ability to work; therefore, these conditions are viewed as more serious than skin cancer. Though farm health experts have not ranked health problems of farmers in order of seriousness, farming is the most hazardous occupation in the United States in terms of deaths and disabling injuries (National Safety Council, 1987). Because melanoma is the leading cause of skin cancer in the US, it can be debilitating and lead to a loss of work and productivity, therefore stress and depression could possibly be associated with skin cancer.

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Perceived Benefits of Preventive Action. Clearly, the farmers viewed the recommended skin cancer prevention practices as beneficial. Seventy-five percent or more agreed or strongly agreed on four out of five questions. They believed that daily protection from the sun would decrease their chances of developing skin cancer. According to the Health Belief Model, if an individual believes that a given action will be effective in reducing the threat of disease, the individual is more likely to engage in preventive behavior (Rosenstock, 1974). Education should be done through health professionals, media, and magazines about the low incidence of skin cancer in individuals who participate in skin cancer prevention practices in comparison to individuals who do not participate in skin cancer prevention practices and have a high incidence of skin cancer. This information could possibly encourage farmers to engage in preventive behavior against skin cancer.

Perceived Barriers to Preventive Action. Greater than half of the farmers believed that a tan looked attractive. Researchers have reported that despite warnings about skin cancer, possession of a suntan is still regarded in a positive light in many segments of the population and this decreases the likelihood that people will engage in sun protection behaviors (Cody & Lee, 1990; Hill, Rassaby, & Gardner, 1984; Johnson & Lookingbill, 1984; Keesling & Friedman, 1987; Robinson, 1990).

The most frequently cited barrier to skin cancer prevention practices in this sample of Michigan farmers was the belief that protective clothing (hat, long-sleeved shirt, long pants, and gloves) "was too hot to wear". Therefore, Michigan farmers were not likely to engage in these preventive skin cancer protection practices to avoid skin cancer. The construct of perceived barriers has been the strongest predictor of health protecting

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behaviors in studies using the Health Belief Model (Janz & Becker, 1984; Rosenstock, 1990). When barriers were perceived as formidable, the frequency of preventive behaviors was low.

The most frequently mentioned barrier to sunscreen was "I forget to wear it". The barrier to sunscreen use may be more amendable to change strategies than the barrier to the use of protective clothing. Mathias (1988) found that outdoor workers could not tolerate protective clothing in warm seasons and that sunscreen was the most practical and efficient method for protecting outdoor workers from sun exposure. The barrier of forgetfulness was the reason Michigan farmers gave for not participating in the preventive skin cancer protection practice of wearing a sunscreen. This could be changed through the use of the television and radio media during peak season and daylight hours to remind farmers to apply sunscreen. Reminder stickers available in farm magazines at dealers, and from health professionals could be made available for farmers to place on the doors or frequently visible places of their equipment to remind them to apply sunscreen.

Summary. Just over half of the farmers agreed that they were likely to get skin cancer during their lifetime but only 3% agreed that skin cancer would affect their ability to continue farming. Educational efforts may augment perceived susceptibility and perceived seriousness. Skin cancer prevention practices are viewed as beneficial, but the barriers to preventive practices are quite strong. Addressing the barriers to sunscreen use may be the most practical strategy to encourage skin cancer prevention in farmers. One strategy could involve working with sunscreen manufacturers to develop and market products that farmers could apply easily while doing fieldwork such as a pump-spray or a "roll-on" applicator. Another strategy could include the use of magnets that could be

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placed on the refrigerator, on the doors of the machine shed, and on the tractors reminding farmers to apply sunscreen.

Research Question Two

What is the knowledge level about skin cancer? The farmers appeared quite knowledgeable about skin cancer. However, three questions proved to be difficult for most of the subjects. Half of the farmers did not know that skin cancer was the most common form of cancer. This knowledge deficit may explain the farmers low perceived susceptibility to skin cancer. Though the subjects recognized that their occupation placed them at risk for developing skin cancer, they did not realize that the average person has a one in four chance of developing skin cancer in their lifetime.

More than 47% of the subjects did not know that melanoma was the most serious form of skin cancer and greater than 27% did not know that skin cancer can cause death. The subjects' belief that skin cancer would not affect their ability to continue farming may be traced to the fact that they did not know that skin cancer, particularly melanoma, can be fatal.

In summary, educational efforts may be useful in addressing the knowledge gaps identified in this survey. As a consequence of education, the farmers' perceptions of susceptibility and seriousness may change.

Research Question Three

What are the current skin cancer prevention practices? It was found that this group of farmers did not generally practice prevention measures on a routine basis. The farmers do not avoid the sun between 10 AM and 3 PM. More than half of the subjects rarely/never wear a wide-brimmed hat, a long-sleeved shirt, or work gloves, nor do they

use sunscreen. However, long pants were worn frequently or always by 90% of the farmers, and this may actually reflect social norm rather than a deliberate skin cancer prevention practice. Because farmers are in the sun for longer periods of time and during peak hours and do not participate in skin cancer protection practices they are at high risk for developing skin cancer and need to be educated regarding skin cancer, prevention of skin cancer, and detection of skin cancer at an early stage to increase their chance for survival..

In summary, the use of protection practices were viewed as beneficial by the farmers in preventing skin cancer. However, the majority of farmers did not protect themselves from the sun. Clearly, strategies to minimize the barriers to skin cancer prevention practices need to be identified and a beginning effort could involve working with hat manufacturers and sunscreen companies to market products with farmers in mind.

Research Question Four

What are the most frequently used cues to action? Identifying the channels most likely to reach the target audience is important in health education program planning (DHHS, 1992). The majority of farmers ranked health professionals as most frequently used sources of health information and television ranked second. Farm magazines/newspapers were third. Other researchers have found that farm magazines/newspapers were the most frequently used source of health information for farmers and that health professionals were not frequently utilized (Thu et al., 1990; Steiner & Radosevich, 1986). It is somewhat surprising that health professionals ranked first in this study, since farmers, as a group, are reluctant to seek health care except in emergency situations (Cordes & Rea, 1988). It is possible that health professionals were ranked first

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in this study because the researcher is also a nurse and is well known to some of the participants in the study. This may have biased the participants in this study.

Television and radio were ranked the top 5 sources of health information and this is consistent with other studies (Steiner & Radosevich, 1986). Clearly, media channels are the most frequently used sources of health information for farmers and these channels should be utilized by health professionals in health education programming. For example, a regular feature in farm magazines/newspapers could be called "Nurses Notes" and a nurse writer could discuss health topics specific to farmers. In addition, public service health announcements could be aired on radio during the times that the farmers are most likely to be listening to the radio (i.e. during mid-day or at meal times).

Research Question Five

What are the relationships of the Health Belief Model and current skin cancer prevention practices? Identifying that a strong correlation exists between the level of knowledge one has about skin cancer and their beliefs about skin cancer is significant and allows health professionals to target the farming population about the risks of skin cancer and prevention practices. Being aware that the more knowledge a farmer has regarding skin cancer the more likely they are to practice skin cancer prevention practices, allows health professionals to concentrate on an area that is the most likely to change current skin cancer prevention behaviors. A health professional is able to predict that the less knowledge a farmer has regarding skin cancer the less likely he is to practice skin cancer prevention practices. Knowing this significantly impacts practice, health care issues, and targeting where emphasis is needed during the Health Communication process.

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Limitations of the study

A higher response rate may have been obtained if the Skin Cancer Survey had been mailed out in early Fall. May is the beginning of planting season in the Eaton county area of Michigan. An ideal time would have been in late October or early November when the peak season is over but skin cancer prevention practices of farmers are still fresh in their memory. This time of year is slower than Spring time and the days are also shorter providing more leisure time when they could fill out the survey.

The only available mailing list included mostly white males who lived in Eaton county. This population is not diversified ethnically, as a result, there were no migrant workers surveyed for this research. As a result of a limited mailing list to one county in Michigan, the results cannot be generalized to the United States as a whole until further research is done nationally that also includes a culturally diversified population.

The research was also done in a northern state with a short growing season and where the sun only shines for one third of the year. The health beliefs and skin cancer prevention practices need to be researched in states with several growing seasons to identify if there is a large variance of beliefs and practices in people who are exposed to the sun year round.

Contributions of the study

Only one other study was found that investigated the health beliefs and skin cancer prevention practices of farmers. However, that study did not determine correlations and the relative importance of various Health Belief Model variables in predicting skin cancer prevention practices through the use of multiple regression. These are unique contributions of the study reported

Recommendations

Based on information gathered in this study, recommendations are offered for research, education, and practice.

Research

Several recommendations are offered for nursing research. Though the reliability coefficients of the instrument used in this study are encouraging (reliability coefficients about .70 are considered acceptable) (Polit & Hungler, 1991), research is needed to refine and standardize instruments used to assess skin cancer prevention parameters of farmers. A major problem that needs to be examined is how well the proposed scale generates reproducible data (McLaughlin & Marascuilo, 1990). Second, research is needed to evaluate the efficacy of different interventions in modifying health beliefs and skin cancer prevention practices. Following the steps of the Health Communication Process, communication strategies need to be selected, media channels accessed, materials developed, and programs implemented (DHHS, 1992). Then, the results of the program should be evaluated to assess the effectiveness of the intervention in terms of changing beliefs and skin cancer prevention practices.

Research of farmers in other states to include ethnic diversification and migrant workers should be done. This would also include a national study to include many states with different growing seasons and varied lengths of exposure to the sun. Educating farmers in early Spring about skin cancer and skin cancer prevention prior to surveying them in late fall, to identify any changes in skin cancer prevention, would possibly prove useful in identifying correlations and education needed to reduce the chances of skin cancer in farmers in the future.

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Further research of farmers in general is needed to identify if they are at increased risk of certain illnesses and injuries because of their occupational exposure. Farmers of different age groups should also be studied to identify if their knowledge level and health beliefs are different regarding skin cancer, illness, and injuries related to the farm, and how to prevent these illnesses and injuries in different age groups.

Education

Lack of knowledge about skin cancer was identified in several key areas and a variety of methods can be used to address this knowledge gap. First, nurses and health educators need to be more aware of the health needs of rural populations. At the present time, undergraduate and graduate nursing and health education programs offer minimal content on rural health issues. An increasing emphasis on rural health in colleges of nursing and education would help augment the awareness of the health needs of rural populations. Additionally, continuing education programs for community health nurses and health educators should address the unique health problems of rural populations, particularly farmers.

Health professionals can develop public awareness programs about the risks of skin cancer and cancer prevention utilizing health professionals, television, and farm magazines/newspapers, and radio to get the messages to farmers. Skin cancer education and prevention should be included in health education programs in rural grade school and high school curriculums with the goal of motivating youth to take action to protect themselves from skin cancer. Seed and equipment dealers should be educated about skin cancer prevention and encouraged to distribute free wide-brimmed hats, rather than the traditional baseball caps currently being distributed.

<u>Practice</u>

Education about skin cancer risks as well as prevention strategies should be incorporated as part of the health assessment by nurses and physicians. From infants to elders, primary care professionals need to incorporate skin cancer assessment into the routine health exams in schools, worksites, outpatient clinics, and hospitals. The assessment should include skin type, health beliefs about skin cancer, knowledge about skin cancer, and current skin cancer prevention practices.

Prevention strategies should be utilized at the community level to access individuals who do not routinely seek health care or do not have the opportunity for school or worksite health exams. First, skin cancer screening and education programs should be provided and supported at major farm events. Second, sunscreen samples and information brochures can be provided at outdoor community events where health care or first aid is available. Third, public places frequented by farmers (feed/seed stores, equipment dealers, etc.) can be utilized for educational efforts.

<div align="center">Summary</div>

Through the use of a thorough assessment in the first stage of the Health Communication Process, critical information has been gathered on the target population of Michigan farmers. The findings were discussed in terms of the five research questions. The major findings about Michigan farmers were: (a) they have intense and prolonged exposure to the sun, (b) less than half agreed that they were likely to get skin cancer in their lifetime, (c) only 10% agreed that skin cancer would affect their ability to continue farming, (d) they do not use sun protection practices consistently, (e) the most frequently cited barrier to the use of protective clothing was the belief that it was "too hot to wear"

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and the barrier to sunscreen use was "I forget to wear it", (f) they lack some essential knowledge about skin cancer which predicts their belief about skin cancer protection practices, (g) they use media channels and health professionals as sources of health information. Recommendations for research, education, and practice were addressed.

APPENDICES

APPENDIX A

National
FarmMedicine
Center

January 23, 1996

Denise Coats
6244 Wilcox Road
Eaton Rapids, MI 48827

Dear Ms. Coats:

Thank you for your inquiry about my research on the health beliefs and skin cancer prevention practices of farmers. You have my permission to reproduce and use the Skin Cancer Survey for research purposes. I would ask that you provide me with some basic information at the completion of your study, in terms of how the instrument worked with your sample.

I must caution you that the Survey has not undergone rigorous testing. The tool was developed based on the literature, selected health belief model variables, and personal experience working with the Wisconsin farm populations. A panel of farm health experts (2 farm safety specialists, 1 rural health physician, and 2 rural nurse specialists) reviewed the instrument for content validity. A SMOG readability test was done and the instrument was revised to be readable at a 7th grade level. The instrument was pilot tested by 5 farmers for clarity and reading ease. The reliability coefficient was 0.87 for the health belief items using Cronbach's alpha. The reliability coefficient was 0.76 for the knowledge items using the Kuder-Richardson formula 20.

Thank you for your interest in my work and I hope that your proposed research goes well. If you have any questions, please feel free to call me.

Sincerely,

Barbara Marlenga, MS, RN
Research Specialist

APPENDIX B

**GRAND
VALLEY
STATE
UNIVERSITY**

1 CAMPUS DRIVE • ALLENDALE MICHIGAN 49401-9403 • 616/895-6611

April 29, 1997

Denise Coats
6244 Wilcox Road
Eaton Rapids, MI   48827

Dear Denise:

Your proposed project entitled "*A Description of the Health Beliefs and Skin Cancer Prevention Practices of Farmers*" has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,

Paul Huizenga, Chair
Human Research Review Committee

APPENDIX C

APPENDIX C

Dear Eaton county farmer:

I am a student at Grand Valley State University in Allendale Michigan and I am currently completing a thesis that is part of the requirements for a Master of Science degree in nursing. As a member of a farm family and as a health care provider of the community, I have a personal interest in what farmers believe about and do to protect themselves from skin cancer. Because of this interest I am doing research for my thesis that will look at these issues.

In this packet I have mailed to you a survey adapted from the National Farm Medicine Center. Your name was randomly selected from a mailing list obtained from the Michigan Department of Agriculture that includes farmers in Eaton county, but the Eaton County Cooperative Extension office is not paying for this study or for your answers to this survey. I am doing this survey to learn more about what farmers in Eaton county believe and do to prevent skin cancer. Could you please take the time to answer these questions and return them in the postage paid envelope **as soon as possible?**

It is expected that it will take about 20-25 minutes for you to complete the survey. I know that this is a busy time for farmers, but I hope you will take the time to answer because the information you provide will be useful in teaching farmers about prevention of skin cancer. Your answers will be completely anonymous, and the questionnaire is not coded in any way to identify you. Names will never be part of the published research findings. Your decision to return the questionnaire will be considered informed consent to participate in the study and have your answers reported along with other participants.

A self-addressed, stamped envelope for returning the survey is included for your convenience. If you would like results of the study sent to you, return the enclosed postage paid postcard separately from the survey with your name and address. Please do not include your name on the questionnaire. If you have questions and would like to contact me by phone, I can be reached at the number below.

Monday through Sunday 6:00 p.m. to 9:00 p.m. at 517-663-6364. You will not need to tell me your name if you call me with questions. Please just identify yourself as a farmer when you contact me. The chairperson of Grand Valley State Universities Human Research Review Committe is Paul Huizenga (616-895-2472).

If you have received this letter in error, and you are not a farmer please disregard it. Thank you for taking time to support this research during your busy planting season.

Sincerely,

Denise Coats, RN, BSN
6244 Wilcox Rd.
Eaton Rapids, MI 48827

APPENDIX D

Skin Cancer Survey

For each statement below, CIRCLE one response:
1. I am likely to get skin cancer sometime during my lifetime.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

2. As a farmer, I am more likely than the average person to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

3. I think skin cancer is a serious disease.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

4. If I get skin cancer, I will not be able to continue farming.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

5. If I protect myself from the sun each day, I am less likely to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

6. If I avoid outdoor work between 10 a.m. and 3 p.m., I am less likely to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

7. If I wear a wide-brimmed hat (like a straw hat), I am less likely to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

8. If I wear a long-sleeved shirt and long pants, I am less likely to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

9. If I wear work gloves, I am less likely to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

10. If I wear sunscreen with a sun protection factor (SPF) of 15 or greater, I am less likely to get skin cancer.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

11. Most people look better with a tan.
   1 Strongly disagree   2 Disagree   3 Neutral   4 Agree   5 Strongly agree

12. When you are out in the sun for 15 minutes or more, do you wear a wide-brimmed hat (like a straw hat)?
   1 Never   2 Rarely   3 Sometimes   4 Frequently   5 Always

13. If you do not ALWAYS wear a wide-brimmed hat (like a straw hat). Check (X) the reason(s) why you do not:

___It takes too much time

___It gets in the way of my work (inconventient)

___It costs too much

___It is too hot to wear

___I forgot to wear it

14. When you are out in the sun for 15 minutes or more, do you wear a long-sleeved shirt? CIRCLE your response.

1 Never   2 Rarely   3 Sometimes   4 Frequently   5 Always

15. If you do not ALWAYS wear a long sleeved shirt, CHECK (X) the reason(s) why you do not:

___It takes too much time

___It gets in the way of my work (inconvenient)

___It costs too much

___It is too hot to wear

___I forgot to wear it

___Other (explain)_____

_____

16. When you are out in the sun for 15 minutes or more, do you wear long pants? CIRCLE you response.

1 Never   2 Rarely   3 Sometimes   4 Frequently   5 Always

17. If you do not ALWAYS wear long pants, CHECK (X) the reason(s) why you do not:

___It takes too much time

___It gets in the way of my work (inconvenient)

___It cost too much

___It is too hot to wear

___I forgot to wear it

___Other (explain)_____

_____

18. When you are out in the sun for 15 minutes or more, do you wear work gloves? CIRCLE your response.

1 Never   2 Rarely   3 Sometimes   4 Frequently   5 Always

19. If you do not ALWAYS wear work gloves, CHECK (X) the reason(s) why you do not:

___It takes too much time

___It gets in the way of my work (inconvenient)

___It costs too much

___It is too hot to wear

___I forgot to wear it

___Other (explain)_____

_____

20. When you are out in the sun for 15 minutes or more, do you wear sunscreen with a sun protection factor (SPF) of 15 or greater? CIRCLE your response.

1 Never   2 Rarely   3 Sometimes   4 Frequently   5 Always

21. If you do not ALWAYS wear sunscreen with a sun protection factor (SPF) of 15 or higher, CHECK (X) the reason(s) why you do not:

___It takes too much time

___It gets in the way of my work (inconvenient)

___It costs too much

___It is too hot to wear

___I forgot to wear it

___Other (explain)

For each statement below, CIRCLE one response:

22. Skin cancer is the most common form of cancer.
   1 True   2 False   3 Don't know

23. Melanoma is the least serious form of skin cancer.
   1 True   2 False   3 Don't know

24. Sun exposure causes most skin cancers.
   1 True   2 False   3 Don't know

25. The sun's rays are the strongest at mid-day.
   1 True   2 False   3 Don't know

26. Most skin cancers can be prevented.
   1 True   2 False   3 Don't know

27. When skin cancer is detected early, the cure rate is very high.
   1 True   2 False   3 Don't know

28. Sunburn causes lasting damage to the skin.
   1 True   2 False   3 Don't know

29. Experts suggest using sunscreen with a sun protection factor (SPF) of 15 or higher.
   1 True   2 False   3 Don't know

30. Skin cancer can cause death.
   1 True   2 False   3 Don't know

31. A person with fair skin color needs the most protection from the sun.
   1 True   2 False   3 Don't know

32. RANK the following health problems 1 thru 5 in the order of **seriousness to you** (1 = more serious; 5 = less serious). Leave the five least serious problems blank.

_____Farmer's lung disease
_____Hearing loss
_____Lyme disease
_____Skin cancer
_____Farm accidents/injuries
_____Herbicide/pesticide exposure
_____Groundwater contamination
_____Arthritis (milker's knee)
_____Stress/depression
_____Other cancers

33. Where do you get most of your health information? (RANK the following sources of health information 1 thru 5 (1 = more often used; 5 = less often used). Leave the five least often used options blank.

_____Agriculture extension service
_____Veterinarians
_____Farm magazines/newspapers
_____Local feed dealer
_____Television
_____Health professionals
_____Radio
_____Other farmers
_____Farm organizations
_____Local equipment dealer

For each of the questions below, WRITE your response:

34. How many years have you been living and/or working on a farm_____

35. What is the average number of hours you spend outdoors EACH day between 10 a.m. and 3 p.m. (May - October)_____

36. What is your age_____

37. How many years of schooling do you have (e.g. completed grade school = 8; completed high school = 12) _____

38. Have you ever had skin cancer: _____Yes _____No

39. Has any member of your immediate family (e.g. parents, grandparents) had skin cancer?
_____Yes _____No

40. What is your ethnic background
_____White/NonHispanic _____Hispanic _____African American/Asian _____American Indian
_____Other (please explain)_____ Thank you for your time. I appreciate your participation.

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LIST OF REFERENCES

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American Academy of Dermatology. (1990). The sun and your skin (Form No.TPAMO6 11/90). Evanston, IL:Author.

American Cancer Society. (1985). Fry now, Pay later. (85-1MM-Rev. 5/90-No. 2611-LE). Atlanta, GA: Author.

American Cancer Society. (1988). Facts on skin cancer (88-200M-Rev. 6/89-No. 2049-LE). Atlanta, GA: Author

American Cancer Society. (1991). Cancer facts & figures-1991. Atlanta, GA:Author.

American Nurses' Association. (1973). Standards of nursing practice. Kansas City, MO: Author.

Berwick, M., Bolognia, J. L., Heer, C., & Fine, J. A. (1991). The role of the nurse in skin cancer prevention, screening, and early detection. Seminars in Oncology Nursing, 7 (1), 64-71.

Bigbee, J. L., & Jansa, N. (1991). Strategies for promoting health protection. Nursing Clinics of North America, 26, 895-912.

Blair, A., & Zahm, S. H. (1991). Cancer among farmers. In D. H. Cordes & D. F. Rea (Eds), Occupational medicine: State of the art reviews - health hazards of farming. (Vol. 7 [3], pp. 335-354). Philadelphia: Hanley & Belfus.

Brock, G. C., & Beazley, R. P. (1995). Using the Health Belief Model to explain parents' participation in adolescents' at-home sexuality education activities. Journal of School Health, 65, 4, 124-126.

Butler, D. B., & Buller, M. K. (1991) Approaches to communicating preventive behavior. Seminars in Oncology Nursing, 7, 53-63.

Burmeister, L. F. (1981). Cancer mortality in Iowa farmers, 1971-1978. Journal of the National Cancer Institute, 66, 461-464.

Bushy, A. (1991). Meeting the challenges of rural nursing research. In A. Bushy

(Ed.), Rural nursing (Vol. 2, pp. 304-318). Newbury Park, CA: Sage.

Champion, V. L., (1985). Use of the Health Belief Model in determining frequency of breast self-examination. Research in Nursing & Health, 8, 373-379.

Champion, V. L., Scott, C. (1993). Effects of a procedural/belief intervention on breast self-examination performance. Research in Nursing & Health, 16, 163-170.

Cody, R., & Lee, C. (1990). Behaviors, beliefs, and intentions in skin cancer prevention. Journal of Behavioral Medicine, 13, 373-389.

Cordes, D. H., & Rea, D. F. (1988). Health hazards of farming. American Family Physician, 38, 233-244.

Cox, C. L., Sullivan, J. A., & Roghmann, L. J. (1984). A conceptual explanation of risk-reduction behavior and intervention development. Nursing Research, 33, 168-173.

Crane, L. A., Marcus, A. C., & Pike, D. K. (1993). Skin Cancer Prevention in Preschools and Daycare Center. Journal of School Health, 63, 232-234.

Dai, Y., & Catanzaro, M. (1987). Health Beliefs and Compliance with a Skin Care Regimen. Rehabilitation Medicine, 12, 94-98.

Edelman, C., & Mandle, C. L. (1986). Health promotion throughout the lifespan. St. Louis: Mosby.

Emanuel, D. A. (1990). A case for medical, environmental, and safety screening. American Journal of Industrial Medicine, 18, 149-162.

Emanuel, D. A., Draves, D. L., & Nycz, G. R. (1990). Occupational health services for farmers. American Journal of Industrial Medicine, 18, 149-162.

Foltz, A. T. (1993). Parental knowledge and practices of skin cancer prevention: A Pilot Study. Journal of Pediatric Health Care, 7, 220-225.

Fraser, M. C., Hartge, P., & Tucker, M. A. (1991). Melanoma and nonmelanoma skin cancer: Epidemiology and risk factors. Seminars in Oncology Nursing, 7, 2-12.

Freidman, L. C., Bruce, S., Weinberg, A. D., Cooper, P., Yen, A. H., & Hill, M. (1994). Early detection of skin cancer: racial/ethnic differences in behaviors and attitudes. Journal Cancer Education, 9, 105-110.

Higginson, C. J., Lee, W. R., & Downes, J. E. (1979). Squamous cell skin cancer in the northwest of England, 1967-1969, and its relation to occupation. British Journal of Industrial Medicine, 36, 43-51.

Hill, D., Rassaby, J., & Gardner, G. (1984). Determinants of intentions to take

precautions against skin cancer. Community Health Studies, 8, 33-44.

Iyer, P. W., Taptich, B. J., & Bernocchi-Losey, D. (1986). Nursing process and nursing diagnosis. Philadelphia: W. B. Saunders.

Janz N. K., & Becker, M. H. (1984). The Health Belief Model: A decade later. Health Education Quarterly, 11, 1-47.

Johnson, E., & Lookingbill, D. (1984). Sunscreen use and sun exposure: Trends in a white population. Archives of Dermatology, 120, 727-731.

Keesling, B., & Friedman, H. (1987). Psychosocial factors in sunbathing and sunscreen use. Health Psychology, 6, 477-493.

Kim, K. K., Horan, M. L., Gendler, P., & Patel, M. K. (1991). Development and evaluation of osteoporosis health belief scale. Research in Nursing & Health, 14, 155-163.

Kraemer, K. H. (1989). Prevention of ultraviolet-induced skin damage by use of systematic agents. In A. Moshell& L.W. Blankenbaker (Eds.), Sunlight, ultraviolet radiation, and the skin (pp. 87-89). Bethesda, MD: National Institutes of Health.

Lee, B., Marlenga, B., & Miech, D. (1992). Farmers and skin cancer screening: Implications for rural health care providers. Marshfield Clinic Bulletin, 27, 46-58.

Lee, Phillip. (1996). Guide to Clinical Preventive Services. Baltimore, Maryland: Williams & Wilkins.

Loescher, L. J. (1993). Skin Cancer Prevention and Detection Update. Seminars in Oncology Nursing, 9, 184-187.

Loescher, L. J., Buller, M. K., & Buller, D. B. (1994). Sunshine and skin health: A curriculum for skin cancer prevention education. Journal Cancer Education, 9, 155-162.

Logan, B. B., & Dawkins, C. E. (1986). Family-centered nursing in the community. Menlo Park, CA: Addison-Wesley.

Long, K. A., & Weinert, C. (1989). Rural nursing: Developing the theory base. Scholarly Inquiry for Nursing Practices: An International Journal, 3, 113-127.

Marks, R. (1994). Primary prevention of skin cancer. British Medical Journal, 309, 285-286.

Marlenga, B. (1992). Health beliefs and skin cancer prevention practices of Wisconsin dairy farmers. Journal Cancer Education, 3, 186-191.

Mathias, C. G. T. (1988). Occupational dermatoses. In C. Zenz (Ed.), Occupational medicine: Principles and practical applications (2nd ed., pp. 132-165).

Chicago: Year Book Medical Publishers.

McLaughlin, F. E., & Marascuilo, L. A. (1990). Advanced nursing and health care research: Quantification approaches. Philadelphia: W. B. Saunders.

Milham, S. (1983). Occupational mortality in Washington state, 1950-1979 (DHHS Publication No. [NIOSH] 83-116). Cincinnati, OH: National Institute for Occupational Safety and Health.

Miner, K. J., & Baker, J. A. (1994). Media coverage of suntanning and skin cancer: Mixed messages of health and beauty. Journal of Health Education, 25, 234-238.

National Rural Health Association. (1990). Rural Health Care Newsletter, 2, 1-2. National Safety Council. (1987). Accident facts. Chicago, IL: Author.

Pender, N. J. (1987). Health promotion in nursing practice (2nd ed.). Norwalk, CT: Appleton & Lange.

Petersen, G. R., & Milham, S. (1980). Occupational mortality in the state of California, 1959-1961 (DHEW Publication NO. [NIOSH, NIH] 80-104). Rockville, MD: National Institute for Occupational Safety and Health.

Polit, D. F., & Hungler, B. P. (1991). Nursing research: Principles and methods. Philadelphia: J. B. Lippincott Company.

Pylka, K. T., & Gunderson, P. D. (1992). An epidemiologic study of suicide among farmers and its clinical implications. Marshfield Clinic Bulletin, 26, 29-55.

Ragland, J. D., 7 Berman, A. L. (1990-1991). Farm crisis and suicide: Dying on the vine? Omega, 22 (3), 173-185.

Reding, D. J., Krauska, M. L., Lappe, K. A., & Fischer, V. V. (1994). Cancer education interventions for rural population. Cancer Practice, 2, 353-358.

Robinson, J. (1990). Behavior modification obtained by sun protection education coupled with removal of skin cancer. Archives of Dermatology, 126, 477-481.

Rosenstock, I. M. (1974). Historical origins of the Health Belief Model. Health Educations Monographs, 2, 328-355.

Rosenstock, I. M. (1990). The health belief model: Explaining health behavior through expectancies. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), Health behavior and health education: Theory, research, and practice (pp. 39-62). San Francisco: Jossey-Bass.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social Learning Theory and the Health Belief Model. Health Education Quarterly, 15, 175-183.

Rossi, J. S. (1989). Exploring behavioral approaches to UV risk reduction. In A. Moshell & L. W. Blankenbaker (Eds.), Sunlight, ultraviolet radiation, and the skin (pp. 91-93). Bethesda, MD: National Institute of Health.

Siegel, M. E. (1990). Safe in the sun. New York: Walker Publishing. Stallones, L. (1990). Suicide mortality among Kentucky farmers, 1979-1985. Suicide and Life-Threatening Behavior, 20, 156-163.

Steiner, H., & Radosevich, D. (1986). Marketing skin cancer prevention to farmers. In American Nurses' Association (Ed.), Community-based nursing services: Innovative models (pp. 28-33). Kansas City, MO: American Nurses' Association.

Talbot, L. A., (1995). Principles and Practice of Nursing Research. St. Louis: Mosby-Year Book.

The Skin Cancer Foundation. (1986). For every child under the sun: A guide to sensible sun protection. New York: Author.

Thu, K., Donham, K. J., Yoder, D., & Ogilvie, L. (1990). The farm family perception of occupational health: A multistate survey of knowledge, attitudes, behaviors, and ideas. American Journal of Industrial Medicine, 18, 427-431.

Truhan, A. P. (1991). Sun protection in childhood. Clinical Pediatrics, 30, 676-681.

U. S. Congress, Office of Technology Assessment. (1990). Health care in rural America (OTA-H-434). Washington, DC: U. S. Government Printing Office.

U. S. Department of Agriculture. (1991). Fact book of U. S. agriculture (Miscellaneous Publication No. 1063). Washington, DC: Office of Public Affairs.

U. S. Department of Commerce. (1983). 1980 Census of populations: General social and economic characteristics: Wisconsin (Vol. 1, Chap. C). Washington, DC: U. S. Government Printing Office.

U. S. Department of Commerce. (1989). 1987 Census of agriculture: Geographic area series (Vol.1, part 51). Washington, DC: U. S. Government Printing Office.

U. S. Department of Health and Human Services - Public Health Service. (1991). Healthy people 2000: National health promotion and disease prevention objectives (DHHS Publication No. [PHS] 91-50212). Washington DC: U. S. Government Printing Office.

U. S. Department of Health and Human Service. (1992). Making health communication programs work: A planner's guide. (NIH Publication No. 92-1493). Washington, DC: National Cancer Institute.