A PILOT STUDY OF SELF-EFFICACY AND HOUSEHOLD ENVIRONMENTAL RISK REDUCTION

by

Leda Kathryn Werrell

A thesis submitted in partial fulfillment
of the requirements for the degree

of

Master

of

Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

April 2011

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Dr. Wade Hill

Approved for the College of Nursing

Dr. Hellen Melland

Approved for The Graduate School

Dr. Carl A. Fox

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April 2011

ACKNOWLEDGEMENTS

I would like to dedicate this thesis to the numerous people who has helped support me along my path of obtaining my masters in nursing. Thank you to my husband, Michael, for all the encouragement, partnership, and belief in me through the past two challenging years. Thank you to my father, for always pushing me to finish strong and instilling in me important lessons of humility, grace, and patience. I would like to acknowledge Jennifer Larsson for her friendship, editorial assistance, and her amazing advanced nursing practice skills that she has shared with me to help me grow.

I cannot express enough my appreciation for my thesis chair, Dr. Wade Hill for his guidance and time in creating this thesis as well as sharing his passion for environmental health. This thesis would not have been possible without the talents and time of my other thesis committee members, Dr. Laura Larsson and Laura Marx. Thank you both for helping me with this project as well as shaping me to be the best nurse practitioner I can be.

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ABSTRACT

Currently there are numerous environmental hazards that low-income and rural families are exposed to in their households. There are ways to detect and reduce or eliminate these hazards, however members of the household would have to initiate this action. Self-efficacy, defined as "an aspect of self-perception that pertains to one's belief in his or her ability to perform a given task or behavior," is a driving force in initiating this action (Vennes & Thomas, 1997, p. 1947). In this study, self-efficacy was quantified and evaluated from a sample of 33 low-income and rural family members. The participants scored their self-efficacy on a numerical scale of 1-100, 100 representing very confident. This secondary data was utilized from the ERRNIE study conducted by Dr. Wade Hill and Dr. Patricia Butterfield. Self-efficacy for five environmental hazards was evaluated: radon, environmental tobacco smoke (ETS), well water, lead and carbon monoxide. General self-efficacy for household environmental risk reduction was also evaluated.

Mean and standard deviation were calculated utilizing SPSS version 18 to create descriptive statistics. The highest mean for reported self-efficacy was for ETS (89.2). It is likely that this hazard had the highest mean due to being able to smell and see this hazard. The lowest mean for reported self-efficacy was for radon (66.2). This hazard is on odorless gas that requires special testing to detect. Interventions to decrease radon can be expensive and may be viewed as overwhelming and therefore decrease self-efficacy. The overall mean for all items evaluated was 76.5, showing that there is a need for greater attention on this topic. This could be completed by nurse practitioners and would focus on increasing awareness of these hazards, the possible health consequences of exposure to the hazards, and what interventions are available to decrease or eliminate this exposure.

CHAPTER ONE – INTRODUCTION

One of the great nursing pioneers, Florence Nightingale, stated, "the connection between health and dwelling is one of the most important that exists" (Center for Disease Control and Prevention, 2009b, "Healthy homes," para.1). Household environmental exposures pose a great threat to families throughout the United States. According to the Center for Disease Control and Prevention (CDC, 2009b), over six million households are linked to such problems as "lead poisoning, injuries, respiratory diseases such as asthma, and quality of life issues" ("Healthy homes," para. 3). Once the exposures are identified, change may then be initiated to improve the health of the household.

However, there are numerous barriers that are faced when dealing with such changes, one being self-efficacy. This research study examined the levels of self-efficacy that were reported regarding household environmental risk reduction in rural, low-income families. A combination of the author's work will be used with data collected by Dr. Wade Hill and Dr. Patricia Butterfield to create a descriptive analysis of self-efficacy regarding household environmental risk reduction (W. Hill, personal communication, November 13, 2009).

Background and Significance of the Study

Albert Bandura has studied the importance of self-efficacy and the link with behavior change. Bandura defined perceived self-efficacy as, "people's beliefs about their abilities to produce effects" (Bandura, 1994, Introduction section, para. 1). People with perceived strong self-efficacy are more likely to initiate change (Bandura, 1994).

Therefore, it is important to identify perceived self-efficacy to help predict likelihood and barriers of change.

Evaluating self-efficacy and the relationship for household environmental change is important for patients, society, and the profession of nursing. There are numerous potential environmental hazards that households are exposed to. An example of a household environmental exposure is lead. According CDC, in the United States approximately 250,000 children that are between one to five years old have had reported blood lead levels of concern (2009c). There are numerous health problems associated with lead poisoning including learning disabilities, anemia, growth problems, and behavioral problems (Gholson, 2009). The Center for Disease Control and Prevention (CDC) stated, "lead-based paint and dust may contribute to lead poisoning in children" (2009c, "Lead," para. 5).

Water quality within the home is another area where environmental hazards may be present. Improper well and public water could have contaminates such as radon, nitrates, arsenic, lead or agriculture containments (EPA, 2006). The Environmental Protection Agency (EPA) stated such exposures could have serious health consequences "including gastrointestinal illnesses, nervous system and reproductive effects, and chronic diseases such as cancer" (2008, p. 15). Testing, disinfection, and filtration are all measures that can be taken to decrease exposure to harmful environmental exposures (EPA, 2008).

There are numerous exposures in a household that can be obtained through air. Radon, environmental tobacco smoke (ETS), lead dust, and carbon monoxide are all

examples of potential air exposures in the household (EPA, 2008). Radon, a gas naturally occurring from the ground, can increase the chance of lung cancer (EPA, 2008). Testing is available to determine the presence and amount of radon in a household. Mitigation systems can be installed into homes to decrease the exposure to radon (EPA, 2008).

Carbon monoxide is another odorless gas that can be found in the household. It is found in combustion fumes, produced in the home from stoves, burning wood, gas ranges, and heating systems (CDC, 2009a, "Fact Sheet," para. 2). Proper ventilation is needed for the fumes in order to prevent accumulation in closed spaces Possible adverse effects of carbon monoxide include, "fatigue, headaches, dizziness, impaired vision and coordination, confusion, and possibly death" (Hill & Butterfield, 2010, p. 367). A carbon monoxide detector can be placed in the home to alarm when elevated rates are present in the household.

ETS is a concern for household members of all ages and can cause adverse health effects including "coughing, heart disease, and lung cancer" (EPA, 2008, p. 9). Other adverse health affects related to ETS that have been studied include hypertension and cardiovascular events associated with hypertension, increased risk of death associated to heart disease, increased risk of emphysema in early adulthood with childhood exposure, and increased incidence of periodontal disease (Seki et al., 2010; Kaur, Cohen, Dolor, Coffman, & Bastian, 2004; Lovasi et al., 2010; Arbes, Agustsdottir, & Slade, 2001).

Children are in the process of physically developing and are a population of concern with ETS exposure. Yamasakia et al. (2009) studied children with asthma and

their symptoms and medication use in homes with no ETS exposure, mild ETS exposure and heavy ETS exposure. There was no difference in non-ETS and mild ETS exposures regarding respiratory symptoms and asthma medication use. However, the heavy ETS exposure group showed their symptoms to be the most severe of all participants and reported highest use of "leukotriene receptor antagonist and long-acting b2-agonist" (Yamasakia, 2009, p. 97). The study suggested, "a smoking ban in rooms used by asthmatic children is an easy way to reduce ETS, asthmatic symptoms and the use of anti-asthmatic drugs" (Yamasakia, 2009, p. 97).

Statement of the Problem with Research Question

Illness and disease due to household environmental exposures are a concern to public health and to primary care providers. However, there are personal barriers to change that need to be addressed in order for this problem to be corrected. Self-efficacy is a potential barrier in making changes needed and is an area that needs further evaluation to fully understand what limitations it can create regarding household environmental risk reduction. If self-efficacy is not studied, families could continue to live with these exposures and have consequential health effects. The research question for this study is: What is the reported level of self-efficacy for household environmental risk reduction among rural, low-income families

CHAPTER TWO - LITERATURE REVIEW

A literature review was completed regarding the following research question: What is the level of self-efficacy for household environmental risk reduction among rural low-income families? Self-efficacy and household environmental risk reduction were the two main themes examined. The literature review was completed on a home computer using Montana State University's electronic library. A greater understanding of the current literature available regarding the research topic was the main goal for completion of this literature review.

The Cumulative Index to Nursing and Allied Health Literature (CINAHL) was the primary search engine used for the review of literature. The database was chosen because of the comprehensive nursing information provided and the incorporation of four online databases (Ebsco Publishing, 2009). The site used the search title of CINAHL and only searched for full text articles. The database, Illumina (2010), was also utilized due to its focus on psychological nature.

The literature review was broken into two sections. First, the theme of behavioral change regarding household environmental risk reduction was reviewed by breaking it into smaller concepts. Secondly, the theme of self-efficacy was reviewed in the literature as well as the theoretical framework of the Social Cognitive Theory.

Behavioral Change Regarding Household Environmental Risk Reduction

The first part of the literature review focused on household environmental risk reduction. The umbrella concept was broken down to first investigate the search term

behavior change, then environmental behavioral change, and lastly the entire concept of household environmental risk reduction was examined.

Behavioral Change

The search term behavioral change yielded 1,498 results for articles in CINAHL. Behavior change was noted to be studied in combination with the following common themes relating to health: wellness, physical activity, dietary changes and nutrition, sexual risk behavior related to HIV, social, depression, and counseling (Turner, Thomas, Wagner, & Moseley, 2008; Ory, Lee Smith, Mier, Wernicke, 2010; Spahn et al., 2010; McCoy, Kangwende, & Padian, 2010; Wilson & McNeill, 2010; Pfister-Minogue & Salveson, 2010). The National Health Lung and Blood Institute (NHLBI, n.d.) recognized the concept and need for certain behavioral changes in order to obtain goals of weight loss and optimal health. Overall, behavioral change was discussed in the literature review as an intervention to improve health outcomes.

Spahn et al. (2010) discussed a literature review that examined behavioral change theories related to the dietetics' field and nutrition related behavioral change. The review established that cognitive behavioral therapy was most successful "in facilitating modification of targeted dietary habits, weight, and cardiovascular and diabetes risk factors" (Spahn et al., 2010, p. 879). The Social Cognitive Theory was one of the many behavioral theories examined by Spahn et al. (2010). In regards to nutrition, the following counseling strategies could be utilized based on the Social Cognitive Theory: "Demonstration and modeling, skill development and coaching, social support, reinforcement, goal setting, stimulus control, and motivational interviewing" (Spahn et

al., 2010, p. 880).

Environmental Behavioral Change

The concept of environmental behavior change resulted in a limited amount of studies. The majority of the results were excluded, as the behavior changes were not environmental in nature. Carruth, Duthu, Levin, and Lavigne (2008) conducted a study analyzing behavior change, environmental hazards and respiratory protection in 123 farmer owners and agricultural employees. This article was the only one that pertained to the original focus for this part of the literature review.

The participants worked on southern farms and were recruited in certain areas of Louisiana. There is an increased risk of developing health conditions related to exposures on farms such as, "organic dusts, gases, welding fumes, animals, and various chemicals" (Carruth et al., 2008, p. 50). The study viewed respiratory risk factors on a farm as modifiable, therefore behavior can change to improve health and decrease risk of exposures. The Transtheoretical Model of Change was utilized as theoretical framework to help determine what stage of change each participant was in. Data was obtained through three questionnaires: "(a) Health Risk and Environmental Assessment; (b) Identification of Respiratory Mask Use; (c) Stage of Awareness and Preventive Respiratory Health; and demographic information" (Carruth et al., 2008, p. 49). Respiratory status was also measured with readings from three forced vital capacity tests. Carruth et al. (2008) found the majority of the participants felt they were in the action stage of change, yet reported, "using respiratory protective devices less than 10% of the time" (p. 49).

Household Environmental Risk Reduction

Forster-Cox, Mangadu, Jacquez, and Fullerton (2010) studied rural communities along the United States – Mexico border regarding environmental and household safety and knowledge. Two specific concerns were explored: home fire and food safety. Rural communities can face different challenges that urban settings. For example, rural areas are twice as likely to experience death by fires than urban areas (Forster-Cox et al., 2010). Personal hygiene, storage, handling, and preparation are all areas that when done properly can decrease the chance of food-borne illness or death. Isolation, distance to urban areas, poverty, as well as lack of services and supplies are all issues that rural residents may face (Forster-Cox et al., 2010).

Home visits were completed by "Promotoras," defined as: "community members who work primarily in community settings and represent the community's linguistic, cultural, educational, and economic characteristics" (Forster-Cox et al., 2010, p. 328). The goal of the Promotoras was to, "increase the participants' knowledge and behaviors related to environmental safety" (Forster-Cox et al., 2010). The Promotoras would provide education regarding home safety and how to decrease household environmental exposures. Equipment, such as smoke detectors, was also provided. The project was shown to be successful in increasing the awareness and knowledge of the participants as well as initiating change with fire prevention and safety, food safety, and decreasing environmental hazards (Forster-Cox et al., 2010).

Self-Efficacy

The concept of self-efficacy was developed after the evolution and creation of social learning theories that were originated and modified by numerous psychologists including Albert Bandura. Miller and Doland first introduced a social learning theory in 1941 that Bandura would modify into his own (Pajares, 2002). The goal of the theory was to explain and predict behavior. Bandura's Social Learning Theory stated, "The influence of environmental events on the acquisition and regulation of behavior is largely determined by cognitive processes. These cognitive processes are based on the prior experience and determine: how they are perceived, whether they will be remembered, and how they might affect future action" (Price & Archbold, 1995, p. 1266).

Bandura later evolved the Social Learning Theory into the Social Cognitive Theory, which was the theoretical framework utilized for this study. According to this theory, "human motivation and action are extensively regulated by forethought" (Luszczynska, Schwarzer, 2005, p. 128). There are two core concepts to the Social Cognitive Theory, self-efficacy and outcome expectations. Outcome expectations focus on personal "beliefs about the possible consequences of their actions" (Luszczynska, Schwarzer, 2005, p. 128). Social, physical, and self-evaluation are all influences that can effect the outcome expectations.

Self-efficacy is defined as, "an aspect of self-perception that pertains to one's belief in his or her ability to perform a given task or behavior" (Vennes & Thomas, 1997, p. 1947). Bandura believed, for a person to complete a behavioral action, they need to have the knowledge as well as the confidence to complete that action. The two core

concepts of the Social Cognitive Theory, self-efficacy and outcome expectations, effect goals and behavior. Today, the Social Cognitive Theory continues to be utilized to help predict and explain behavior in various professions including psychology and nursing.

Self-Efficacy Related to Behavioral Change

Bandura theorized that "behavior, personal factors (cognitive, affective, and biological events) and environmental factors" are interconnected and dependent on each other (Pajares, 2002, para. 2). Reported self-efficacy can help determine behavioral outcomes. Personal confidences in one's abilities are essential to initiate action or change; otherwise if confidence is low there is minimal motivation or incentive to act (Pajares, 2002). Self-efficacy is personally subjective based on one's own concept of their capabilities and may not reflect their actual skills and knowledge. It "can enhance human accomplishment and well being; determine how much effort people will expend on an activity, how long they will persevere when confronting obstacles, and how resilient they will be in the face of adverse situations; and influence an individual's thought patterns and emotional reactions" (Pajares, 2002, para. 21-23).

The concept of self-efficacy has been widely utilized and studied in numerous avenues of research. Health, both mental and physical, is a common topic that incorporates self-efficacy into numerous aspects of research and literature. Disease management has focused on self-efficacy to help determine its effectiveness with education and quality of life. Chronic lower back pain (Adegoke, & Ezeukwu, 2010), asthma (Kaul, 2011), and diabetes types one and two (Nouwen et al, 2009, Atak, Gurkan, & Kose, 2008) are examples of numerous diseases that have been studied in

regards to self-efficacy. The article authors cited suggested that lower reported self-efficacy was associated with decreased perceived physical health and management. Therefore, further attention and education may be warranted in patients with lower reported self-efficacy to help improve outcomes.

It is recognized that there are various attributes that influence self-efficacy. The attributes that may effect self-efficacy were examined by Salonen et al., (2009) in a study that evaluated parenting after childbirth. They concluded that there was an overall gender difference in reported self-efficacy. Male's self-efficacy were more affected and influenced by environmental attributes, for example: advice and support by hospital personnel, family health and functioning, delivery type, and feeding practices. However, female's self-efficacy was more affected by birthing experience and parent attributes, for example: age, education, marital status, depressive symptoms, and experience of childbirth (Salonen et al., 2009).

Self-Efficacy and Household Environmental Risk Reduction

Overall, two articles were found to be relevant to the entire research question. Other articles were listed as relevant in this part of the literature search, but were excluded for various reasons. The general themes that excluded these articles included their focus on the following: the prevention of physical injury in a family setting with people who have a physical disability or cognitive impairment; dietary allergens; well-being in the workplace; and specific diseases such HIV, Malaria, and trachoma**.**

Yeoh, Woolfenden, Wheeler, Alperstein, and Lanphear (2006) examined multiple

interventions done within the household to prevent or reduce lead exposure in children. However, this article specifically looked at interventions and did not examine the correlation of self-efficacy with the risk reduction of lead.

The second article of relevance was a review of interventions for preventing exposure to tobacco smoke in children that live in the United Kingdom (Priest et al., 2006). The conclusion of this article was that there was not one intervention, of those analyzed, more effective than the other (Priest et al., 2006). Again, only interventions were discussed and did not incorporate self-efficacy as a factor for effectiveness.

The articles that applied to the topic, while relevant, were not beneficial to the research question of self-efficacy for household environmental change. The articles were both intervention reviews that may be beneficial in future phases of this research, however they are not applicable at this stage. Intervention is not the focus of this thesis. There was no information reported in these articles about self-efficacy or if it was evaluated in the interventions.

Overall, the data and research currently available specific to the research topic of self-efficacy and household environmental risk reduction is limited. Separately, the two main concepts of the research question, self-efficacy and household environmental risk reduction, were examined. Self-efficacy was a well-utilized concept by various health professions and was found to be key in analyzing and predicting behavior. CINAHL and Illumina were rich and varied for the concept of self-efficacy.

Household environmental risk reduction had to be divided into smaller concepts in order to obtain a better understanding of what information was available on the

subject. Environmental risk reduction was noted in the literature, but there was only one quality article available for household environmental risk reduction. Due to the lack of information present regarding the research question, little is known currently in regards to self-efficacy and household environmental risk reduction.

CHAPTER THREE – METHODS

A descriptive study, using quantitative data, was completed to evaluate the level of self-efficacy for household environmental change in rural, low-income families. The secondary data for this study was obtained from a parent study, The Environmental Risk Reduction through Nursing Intervention and Education (ERRNIE), conducted by Hill & Butterfield (W. Hill, personal communication, November 13, 2009). The goal of ERRNIE was to "(a) determine the prevalence of multiple environmental exposures among rural children, and (b) deliver and evaluate environmental risk reduction education to rural households by public health nurses through a randomized controlled trial" (Hill & Butterfield, 2010, p. 361).

The data was based on the results of 33 participants that utilized the Self-efficacy for Environmental Risk Reduction (SEERR, see Appendix A) instrument (W. Hill, personal communication, November 13, 2009). Self-efficacy for change was examined in general and independently with five household environmental hazards: radon, ETS, well-water quality, lead and carbon monoxide (Hill & Butterfield, 2010). Human subjects protection and IRB oversight was provided by Montana State University (MSU) Central Review Board. The Statistical Package for the Social Sciences software version 18 was utilized for analysis of the.

Definitions

The population studied was classified as rural and low income. The U.S. Census Bureau defined rural as "territory, population, and housing units not classified as 'urban'"

(1995, para. 2). Urban was defined as "census designated places of 2,500 or more" (U.S. Census Bureau, 1995, para. 1). The sample was limited to families in one county in a North Western state. This county had a population of approximately 70,000 with a land area of approximately 2,600 square miles (W. Hill, personal communication, November 13, 2009). Hill and Butterfield defined low-income for the second version of the SEERR questionnaire as households receiving public health services (W. Hill, personal communication, November 13, 2009). Income requirements for the parent study ERRNIE as household income level less than or equal to 200% of the federal poverty level (W. Hill, personal communication, November 13, 2009).

Population and Sample

A convenience sample of 33 participants was used to collect the data needed for this study. This type of sampling allows for use of the "most conveniently available people" though the resulting sample "might be atypical of the population" (Polit & Beck, 2008, p. 341). The participants of this study came to their local public health department to seek medical care. A registered nurse screened the participants to see if they met the following eligibility criteria: the participants had to be living in a rural area, low-income and have a child living in the house under six years of age, and use private or community well-water (Hill & Butterfield, 2010, p. 363). To be considered they also had to be able to read or speak English fluently (Hill & Butterfield, 2010, p. 363).

Design

The single variable measured in this descriptive study was self-efficacy. Self-efficacy was measured under six topics: general for household environmental change, radon, tobacco smoke, unsafe well-water, lead and carbon monoxide. The goal of this descriptive study was to evaluate reported levels of self-efficacy using a questionnaire. Participant's self-efficacy was measured with the SEERR instrument (see appendix A).

Procedures for Data Collection

Hill and Butterfield collected the initial data in 2006 as part of the ERRNIE study. A total of 33 SEERR questionnaires were completed. The participants were recruited at their local public health department where they were clients. Health department nurses screened patients to see if they would qualify for the study and assessed their interest in participating. If so, then the nurse would discuss the study with the patients and inquire if they would be interested in participating. If the patients were interested, then the nurse at the health department would distribute a questionnaire that would be filled out anonymously (Hill & Butterfield, 2010). Accompanying the SEERR, survey instructions were also given that were created by Hill and Butterfield in 2006 (see Appendix B). Written consent was not required to participate in this study as the data was collected anonymously (Polit & Beck, 2008, p. 177). Upon completion of the questionnaire the participants were compensated for their time with a five-dollar Wal-Mart gift card (W. Hill, personal communication, November 13, 2009). The main goal of compensation was

to offset any potential inconvenience and offer a small incentive to the participants (Purdue University, 2007).

Instrumentation

The SEERR instrument utilized for this study was the second version created by Hill and Butterfield (see Appendix A). The original version was piloted on 32 participants and had an adequate reliability. Due to substandard results of certain questions with the original version, Hill and Butterfield developed a second version (W. Hill, personal communication, November 13, 2009). Bandura's Guide for Constructing Self-Efficacy Scales was used to evaluate validity in the second SEERR version (W. Hill, personal communication, November 13, 2009). "Environmental health experts" (W. Hill, personal communication, November 13, 2009) evaluated the SEERR to assure content validity and had a reported reliability to be $\alpha \geq 0.80$ (W. Hill, personal communication, November 13, 2009).

The second SEERR version, which was utilized for this study, (see Appendix A) used a scale of zero -100 to quantify self-efficacy with each question. In the scale, zero represents "cannot do at all" and 100 represented "certain can do" (W. Hill, personal communication, November 13, 2009). Sections Q1 through Q6 of the SEERR were used as data for this study as self-efficacy for change was evaluated. Section Q1 had general statements regarding self-efficacy and household environmental change. Sections Q2 - Q6 each addressed one of the five exposures evaluated for this study (W. Hill, personal communication, November 13, 2009).

Sections Q7 through Q9 in the SEERR (see Appendix A) were excluded for analysis, as they did not evaluate self-efficacy. The last sections, Q10 through Q18, were for the purpose of collecting demographic information and, therefore, no identifying information was obtained. The demographic information was analyzed to create a better understanding of the sample (W. Hill, personal communication, November 13, 2009).

Discussion of Rights of Human Subjects and Consent Process

In October of 2009, the author, through the National Institute of Health (NIH) Office of Extramural Research, completed training and certification for "Protecting Human Research Participants" (NIH, 2008). The procedures complied with the policies written by the Department of Health and Human Services (DHHS) regarding protection of human subjects (2007). Human subjects protection and IRB oversight was provided by MSU Central Review Board. Confidentiality of the participants was maintained, anonymity was guaranteed and the participant's "privacy was maintained at all times" (Polit & Beck, 2008, p. 174). The survey instructions distributed with the questionnaire offered information to inform the participant of the rationale for completing the questionnaire and the purpose of the study (see Appendix B).

Statistical Analysis

Based on the quantitative data collected from the 33 SEERR items, a statistical analysis was performed. The mean and standard deviation for level of self-efficacy for the six sections were calculated using SPSS version 18. According to Steinberg (2008),

for descriptive statistics, mean and standard deviation are appropriate tests as they represent central tendency and dispersion. The mean utilizes every reported score and "is the most widely used measure of central tendency" (Polit & Beck, 2008a, p. 563). The standard deviation indicates "the average amount of deviation of values from the mean" (Polit & Beck, 2008a, p. 565). Together, the mean and standard deviation helped describe the variable of self-efficacy for household environmental change. The results also described the variability in the reported data among participants (Polit & Beck, 2008a).

Summary

The procedures for the data that were collected by Hill & Butterfield (2010) were outlined in this chapter. This study involved rural, low-income recruited at their local health department. The MSU Central Review Board approved the study for human subjects protection. Levels of self-efficacy were evaluated utilizing the SEERR instrument (see Appendix A). This information was analyzed using the software SPSS version 18 to determine mean and standard deviation of the various subgroups. The results of the data collection and analysis are reported in chapter four.

CHAPTER FOUR – RESULTS

Self-efficacy for five separate potential environmental exposures as well as overall general self-efficacy regarding environmental health within the home was evaluated. This was completed using survey results completed by 33 participants. The goal with this survey was to obtain a more comprehensive understanding of perceived self-efficacy for household environmental risk reduction in low-income and rural families. The reliability of this data was determined utilizing Cronbach's alpha. General descriptive statistics including means and standard deviation were used to answer the research question. This data was calculated by SPSS version 18. A sample description table and a sample means with self-efficacy risk reduction scale reliability table were created to present the statistics.

Table 1 provided a description of the sample utilizing frequency and percentage of total participants. The majority of participants were female (66.7%). Age ranged from 18 years old to over 60 with the greatest number of participants, 39.4%, being 25-44 years old. Participants that were married or single were equal and totaled 78.7% of the overall sample. Two ethnicities were represented, white (75.8) and American Indian (24.2%). The number of people in their current household ranged from one to seven or more with equal representation of 24.2% in the category of one, two, and three people in the household. Gross annual income varied from under $10,000 to $60,000 or more. The greatest number of participants per category (n=8) reported less than $10,000 of gross income annually. Four participant (12.1%) reported a gross annual income $60,000. The participants that were currently employed for wages were 60.6%, compared to 39.4%

that were not. At the time of completing the survey, majority of participants were currently residing in a place they rent (75.8%), the remainder (24.2%) owned where they were living.

Table 1 *Sample Description*

Variable	N	%
Sex		
Male	11	33.3
Female	22	66.7
Age in Years		
Under 18	0	0
18 to 24	7	21.2
25 to 44	13	39.4
45 to 60	10	30.3
Over 60	3	9.1
Marital Status		
Single	13	39.4
Married	13	39.4
Widowed	2	6.1
Divorced	4	12.1
Separated	1	3
Ethnicity		
White	25	75.8
Black	0	0
American Indian	8	24.2
Asian	0	0
Hispanic	0	0
Number of People in Household		
1	8	24.2
2	8	24.2
3	8	24.2
4	4	12.1
5	3	9.1
6	0	0

Table 1 Continued

7 or more	2	6.1
Gross Annual Income		
Under $10,000	8	24.2
$10,000 to $14,999	4	12.1
$15,000 to $19,999	5	15.2
$20,000 to $24,999	0	0
$25,000 to $29,999	6	18.2
$30,000 to $34,999	1	3
$35,000 to $39,999	3	9.1
$40,000 to $44,999	1	3
$45,000 to $49,999	1	3
$50,000 to $59,999	0	0
$60,000 or more	4	12.1
Currently Employed for Wages		
Yes	20	60.6
No	13	39.4
Currently Rent or Own Place of Residence		
Rent	25	75.8
Own	8	24.2

A total of 26 itemized questions were asked of the participants to provide a reported level of self-efficacy. The sample means and Self-Efficacy Environmental Risk Reduction (SEERR) scale reliability were reported in Table 2. General household environmental health questions were asked as well as questions that were specific to five potential household environmental hazards. The five specific hazards explored were radon, ETS, well water, lead, and carbon monoxide. The topic of general environmental health had a total of 11 questions with a mean of 76.5. The five specific hazards each utilized 3 questions each. The highest mean self-efficacy score of the five specific hazards was ETS with a mean of 89.2. The lowest mean score of 72.8 was from well

water. Lead had a similar mean value at 73.4. Of all questions asked, the average numerical response was 76.5 for all 26 items evaluated.

Table 2 *Sample Means and Self-Efficacy Environmental Risk Reduction Scale Reliability*

Label for Subscale	N	# of Items	Chronbach's α	Mean	Standard Deviation
Total	33	26	0.93	76.49	8.38
General	33	11	0.90	76.56	5.17
Radon	33	3	0.81	66.23	12.79
ETS	33	3	0.83	89.24	3.15
Well Water	33	3	0.89	72.82	8.16
Lead	33	3	0.80	73.43	2.88
Carbon Monoxide	33	3	0.87	80.46	6.08

Results of the data were presented to gain an understanding of household environmental risk reduction. A frequency chart was created and reviewed to describe the sample for this study. The discussion of the results and statistics obtained in this chapter are presented in the next and final chapter of this thesis.

CHAPTER FIVE – DISCUSSION

This study examined reported levels of self-efficacy regarding household environmental change in rural, low-income families. Self-efficacy levels were examined in general and five separate household environmental hazards: radon, ETS, well-water quality, lead, and carbon monoxide (Hill & Butterfield, 2010). Bandura stated that self-efficacy is one's confidence to complete a task and would help to predict the probability of actual completion (Vennes & Thomas, 1997).

The overall general reported level of self-efficacy regarding household environmental had a mean of 76.6 with a standard deviation of 5.2. The highest mean for self-efficacy of a single household exposure was for ETS at 89.2 with a standard deviation of 3.2. The lowest mean for self-efficacy of a single household exposure was for radon at 66.2 and also had the highest standard deviation of 12.8.

The scoring for reported self-efficacy for general household environmental risk reduction was 76.6 out of a potential score of 100. This value was very similar for the overall total mean of all aspects of each subscale with a value of 76.5. This consistency suggests that the five chosen specific hazards combined sufficiently represent all potential household environmental hazards. The total mean reported self-efficacy score in the mid-seventies showed an overall well perceived knowledge regarding this topic with awareness that they have deficits in this knowledge base.

Of the five environmental hazards, the mean scoring for self-efficacy ranged from 66.2 to 89.2. This 23-point range highlights that there are different levels of self-efficacy regarding specific household environmental risks and the reduction of those risks.

Therefore, there is a wide spectrum of confidence and perceived knowledge with this topic. There are numerous factors that influence the self-efficacy for specific household environmental risk that would justify the range noted.

The highest mean reported self-efficacy was for ETS with a score of 89.2. ETS has had national attention and there is a greater familiarity regarding this exposure. ETS is easily noticeable as there is a distinct odor and smoke associated with it. The high self-efficacy mean could also be explained due to the simplicity of banning smoking in one's household to decrease the exposure. This is a cost free intervention that only requires behavior change for people to smoke outside the home. The Task Force on Community Preventative Services (2000) strongly recommends smoking bans and restrictions to help decrease ETS exposure. This intervention "bans or limits tobacco smoking in workplaces and public areas (policies, regulations, and laws)" (The Task Force on Community Preventative Services, 2000, table 2).

The second highest mean self-efficacy of the five household environmental hazards was carbon monoxide with a score of 80.5 with a standard deviation of six. Though this was a higher mean self-efficacy, there was an approximately ten point separation from ETS. Yet, this household environmental hazard was only four points from the overall self-efficacy average. Therefore, carbon monoxide is similar the perceived self-confidence of general household environmental risk reduction.

The lowest mean reported self-efficacy was for radon, with a mean score of 66.2. It is hypothesized that this low scoring is due to radon being a radioactive odorless gas, therefore unable to obviously detect. Detecting this gas can be overwhelming due to the

variety of products and services available for testing. The concept of testing for radon in the home may create apprehension, as radon mitigations systems are costly. Over 69% of the participants in this sample reported a gross annual income of or under $29,999. According to the United States Department of Commerce (2011), in 2010 it is estimated a family of six would be considered in poverty with an annual family income of $29,887. Therefore, a family that earns less that $30,000 a year and is classified as in poverty may not have the financial resources to afford decreasing radon exposure in their home. Greater priorities such as rent, food, and health care may take precedence over testing for radon.

Another hurdle that could decrease the self-efficacy of low-income and rural families is the decision in choosing an intervention for decreasing radon in their home. There are various grades of quality available on the market and a consumer would have to be educated to make sure the mitigation will be sufficient to decrease their exposure (EPA, 2010). Resources are available to help consumers choose a system that would be appropriate for their home, however outreach must be to completed to increase awareness of those resources.

The subscale of radon also had the greatest standard deviation of 12.8 showing that there were a wide variety of levels reported. Therefore, there was a significant spectrum of confidence regarding the hazard of radon, how to detect it in the home, as well as to reduce the levels in the household. The wide spread of reported self-efficacy levels validates there is little consistency in standard self-efficacy levels for this topic.

The mean and standard deviation determined regarding self-efficacy for radon shows that greater education needs to be provided to low-income and rural families to increase awareness of potential health consequences of exposure. The high standard deviation results for radon shows that self-efficacy varies and each patient would have to be individually assessed to obtain a greater understanding of their knowledge and safety. Greater availability to mitigations services are also needed that would be affordable, yet still high quality, to decrease radon exposure in the home. The identification of the low self-efficacy for radon is a critical finding for this study and warrants further exploration to correct this issue.

Well water was the second lowest mean self-efficacy with a score of 72.8, which was below the overall average of all the items evaluated. This illustrates that perceived confidence on ones ability to act about well water is inferior to general household environmental risk reduction.

The reported mean of self-efficacy for lead was 73.4, which was slightly below the general mean. This statistic showed that there was an overall low confidence with this environmental hazard. Majority of the sample that participated in this study rent their home (75.8%) that they currently reside in. These participants may be unaware of their rights as renters and feel that they have less control over their home environment since they do not own the property.

Application to Nurse Practitioner Practice

The results from this study verified that overall greater education is required to increase the self-efficacy of household environmental hazards as well as change to decrease exposures. The nurse practitioner can assist in providing such education. An office visit would offer a realistic setting to screen for potential exposures of patients in their home. Patients that are at risk for household environmental hazards can be given education, resources, as well as guidance in first identifying the exposures and then intervening if necessary. Wellness appointments may be the most appropriate visit to explore this topic with patients and should be incorporated with other routine screening.

Family nurse practitioners may have greater exposure to a wide variety of age groups as well as families. Screening may be completed with one member of the family, however identifying environmental hazards and then decreasing the hazard would create health benefits for all members of the family. Decreasing the exposures may have health benefits on existing diseases as well as prevention of new diseases.

Assumptions

An assumption for this study researcher is that, in the presence of adverse conditions, household environmental change is needed in order to improve one's overall health. Though there is overwhelming evidence that certain exposures are related to various health concerns, exposure is not absolute in obtaining such conditions.

In addition, the assumption is made that household environmental changes are positive changes without adverse side effects. It is assumed that the optimal goal with negative environmental exposure is to minimize or eliminate that exposure.

The last assumption is that low-income and rural families have less means to initiate environmental change. The population is assumed to have certain barriers inherent to the demographic such as limited financial resources to fund household alterations and a lack of discretionary income to apply to proactive change.

Limitations

There are two main limitations noted for this research. First, the population studied is limited to one county in a rural Western state. This focuses on one specific geographic region. Therefore, broad conclusions cannot be made that could be applied globally. No changes can be made to control this limitation, as a specific population has been designated for the purpose of this study.

Secondly, only five environmental exposures were examined in this study. The researchers of the ERRNIE study, Hill and Butterfield (2006), chose the exposures. The data for this thesis was from the parent study, therefore there was no control over designating which environmental hazards were examined related to self-efficacy.

There were no financial limitations for this thesis as secondary data was utilized to answer the research question regarding self-efficacy and household environmental risk reduction. Nor was time a limitation as that data had already been collected.

Suggestions for Further Research

The information that was created from this study offers quantitative data that represents self-efficacy levels of household environmental change. General self-efficacy as well as self-efficacy for five specific environmental hazards was determined in participants that were rurally located as well as low-income. This study was able to show that radon, well water, and lead were all specific hazards that scored below 80/100 for self-efficacy. Therefore, further research is needed to explore what would increase reported self-efficacy levels for all hazards researched.

Education and interventions would have to be analyzed and studied to see what would be most effective in increasing self-efficacy as well as improving household health and safety. To verify effectiveness of the interventions, self-efficacy could be compared to this study versus reported self-efficacy after and educational intervention.

Another topic worth exploring would be reported self-efficacy levels for household environmental change with a different socioeconomic status. A difference in reporting may be due to education level, income level, and geographic location. Until further research is completed, it is unclear what factors determine self-efficacy levels for household environmental risk reduction.

Lastly, further exploration could compare reported self-efficacy scores to the knowledge that the participants obtain regarding the environmental health hazards. Though participants may report high levels of self-efficacy, the knowledge they have regarding that topic may be incorrect. Conversely, participants with reported low self-efficacy may have greater correct knowledge and understanding of environmental risk. It

would be very interesting to see how reported self-efficacy correlates with actual understanding and correct knowledge of environmental risk reduction.

Conclusion

Self-efficacy for household environmental risk reduction was evaluated in rural, low-income families. It was determined that self-efficacy varied based on the specific hazards. Overall, there was a general reported self-efficacy in the mid-seventies, which illustrates the need for greater education and services to help increase self-efficacy. Greater self-efficacy could potentially decrease environmental exposures and the adverse health consequences associated with them. Nurse practitioners can offer the screening and education to improve self-efficacy related to environmental hazards.

REFERENCES CITED

REFERENCES

Adegoke, B. O. A., & Ezeukwu, A. O. (2010). Pain intensity, self-efficacy and physical performance in patients with chronic low back pain. *International Journal of Therapy and Rehabilitation, 17*(10), 524-534.

Arbes, S. J. Jr., Agustsdottir, H., Slade, G. D. (2001). Environmental tobacco smoke and periodontal disease in the United States. *American Journal of Public Health, 91*(2), 253-7.

Atak, N., Gurkan, T., Kose, K. (2008). The effect of education on knowledge, self management behaviours and self efficacy of patients with type 2 diabetes. *Australian Journal of Advanced Nursing, 26*(2), 66-74.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). San Diego: Academic Press. Retrieved from http://des.emory.edu/mfp/BanEncy.html

Bannon, W. M. (2009). *Research pathways, 2*(1), 1-10. Retrieved from www.williambannonassociates.org

Carruth, A. K., Duthu, S. G., Levin, J., & Lavigne, T. (2008). Behavior change, environmental hazards and respiratory protection among a southern farm community. *Journal of Agromedicine, 13*, 37-41. doi:10.1080/10599240802055879

Center for Disease Control and Prevention. (2009a). Carbon monoxide poisoning. Retrieved from http://www.cdc.gov/co/faqs.htm

Center for Disease Control and Prevention. (2009b). Healthy homes. Retrieved from http://www.cdc.gov/healthyplaces/newhealthyhomes.htm

Center for Disease Control and Prevention. (2009c). Lead. Retrieved from http://www.cdc.gov/nceh/lead/

Department of Health and Human Services. (2007). Protection of human subjects. Retrieved from http://www.hhs.gov

Ebsco Publishing. (2009). CINAHL database. Retrieved from http://www.ebscohost.com/cinahl/

Environmental Protection Agency. (2006). Private drinking water: Human health. Retrieved http://water.epa.gov/drink/info/well/index.cfm

Environmental Protection Agency. (2008). EPA's report on the environment highlights of national trends. Retrieved from http://www.epa.gov/roehd/pdf/roe_hd_layout_508.pdf

Forster-Cox, S. C., Mangadu, T., Jacquez, B., Fullerton, L. (2010). The environmental health/home safety education project: A successful and practical U.S.–Mexico border initiative. *Health Promotion Practice, 11*, 325-331. doi: 10.1177/1524839909341026

Gholson, G. (2009). Nursing you way to a "healthy home." *Nevada RNformation, 18*(3), 15.

Hill, W. G., & Butterfield, P. (2010). Environmental risk reduction for rural children. In C. A. Winters, & H. J. Lee (Eds.), *Rural nursing Concepts, theory, and practice* (3rd ed., pp. 359-371). New York: Springer.

Lovasi, G. S., Roux, A. V. D., Hoffman, E. A., Kawut, S. M., Jacobs, D. R. Jr., & Barr, R. G. (2010). Association of environmental tobacco smoke exposure in childhood with early emphysema in adulthood among nonsmokers: the MESA-Lung Study. *American Journal of Epidemiology, 171*, 54-62 doi:10.1093/aje/kwp358

Low-income. (n.d.). *The American Heritage Dictionary of the English Language* (4th Edition). Retrieved from http://dictionary.reference.com/browse/low-income

Luszczynska, A., & Schwarzer, R. (2005). Social cognitive theory. In M. Conner & P. Norman (Eds.), *Predicting health behavior* (pp. 127-69). Retrieved from http://www.ihepsa.com/files/predicting%20Health%20beh%20avior.pdf#page=144

Kaul, T. (2011). Helping African American children self-manage asthma: the importance of self-efficacy. *Journal of School Health, 81*, 29-23. doi:10.1111/j.1746-1561.2010.00554.x

Kaur, S., Cohen, A., Dolor, R., Coffman, C. J., & Bastian, L. A. (2004). The impact of environmental tobacco smoke on women's risk of dying from heart disease: a meta-analysis. *Journal of Women's Health, 13*(8), 888-97.

McCoy, S.I., Kangwende, R.A., & Padian, N.S. (2010). Behavior change interventions to prevent HIV infection among women living in low and middle income countries: A systematic review. *AIDS & Behavior, 14*, 469-82. doi:10.1007/s10461-009-9644-9

National Health Lung and Blood Institute. (n.d). Guide to behavior change. Retrieved from http://www.nhlbi.nih.gov/health/public/heart/obesity/lose_wt/behavior.htm

National Institute Of Health, Office Of Extramural Research. (2008). Protecting human research participants. Retrieved from http://phrp.nihtraining.com

Nouwen, A., Law, G. U., Hussain, S., McGovern, S., & Napier, H. (2009). Comparison of the role of self-efficacy and illness representations in relation to dietary self-care and diabetes distress in adolescents with type 1 diabetes. *Psychology and Health, 24*(9), 1071-84.

Ory, M.G., Lee Smith, M., Mier N., & Wernicke, M. M. (2010). The science of sustaining health behavior change: the health maintenance consortium. *American Journal of Health Behavior*, *34*(6), 647-59.

Pajares, F. (2002). Overview of social cognitive theory and self-efficacy. Retrieved from http://www.des.emory.edu/mfp/eff.html

Pfister-Minogue, K.A., & Salveson, C. (2010). Training and experience of public health nurses in using behavior change counseling. *Public Health Nursing, 27*, 544-51. doi:0.1111/j.1525-1446.2010.00884.x

Polit, D. F., & Beck, C. T. (2008a) Describing data through statistics. *Nursing Research* (pp. 557-582). Philadelphia: Lippincott Williams & Wilkins.

Polit, D. F., & Beck, C. T. (2008b) Developing a sampling plan. *Nursing Research* (pp. 337- 364). Philadelphia: Lippincott Williams & Wilkins.

Polit, D. F., & Beck, C. T. (2008c) Generating research evidence ethically. *Nursing Research* pp. 167-192). Philadelphia: Lippincott Williams & Wilkins.

Price, V., & Archbold, J. (1995). Development and application of social learning theory. *British Journal of Nursing, 4*(21), 1263-1268.

ProQuest. (2010). CSA Illumna. Retrieved from http://proxybz.lib.montana.edu/login?url=http://www.csa.com/htbin/dbrng.cgi?username=nan2&access=nan2002&adv=1&db=psycinfo-set-c

Purdue University. (2007). *Compensation for research participants.* Unpublished guideline, Purdue University, West Lafayette, IN. Retrieved from www.purdue.edu

Salonen, A. H., Kaunonen, M., Astedt-Kurki, P., Jarvenpaa., A., Isoaho., H. & Tarkka, M. (2009). Parenting self-efficacy after childbirth. *Journal of Advanced Nursing, 65*(11), 2324-2336.

Seki, M., Inoue, R., Ohkubo, T., Kikuya, M., Hara, A, Metoki, H, . . . Imai, Y. (2010). Association of environmental tobacco smoke exposure with elevated home blood pressure in Japanese women: the Ohasama study. *Journal of Hypertension, 28*(9), 1814-20.

Spahn, J., Reeves, R. S., Keim, K. S., Laquatra, I., Kellogg, M., Jortberg, B., & Clark, N. A. (2010). State of the evidence regarding behavior change theories and strategies in nutrition counseling to facilitate health and food behavior change. *Journal of the American Dietetic Association, 110*, 879-891. doi:10.1016/j.jada.2010.03.021

Steinberg, W. J. (2008). *Statistics alive!* Thousand Oaks, CA: Sage Publications, Inc.
Task Force on Community Preventive Services. (2000). Strategies for reducing exposure to environmental tobacco smoke, increasing tobacco-use cessation, and reducing initiation in communities and health-care systems. MMWR, 49(RR12) 1-11. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4912a1.htm#tab2

Turner, S.L., Thomas, A.M., Wagner, P.J., & Moseley, G.C. (2008). A collaborative approach to wellness: Diet, exercise, and education to impact behavior change. *Journal of the American Academy of Nurse Practitioners, 20*, 339-44. doi:10.1111/j.1745-7599.2008.00325.x

U. S. Census Bureau. (1995). In Urban and rural definitions. Retrieved from http://www.census.gov/

United States Department of Commerce, Bureau of the Census. (2011). Preliminary estimate of weighted average poverty thresholds for 2010. Retrieved from http://www.census.gov/hhes/www/poverty/data/threshld/10PRELIMINARY.xls

United States Environmental Protection Agency. (2006). Private drinking water: Human health. Retrieved http://water.epa.gov/drink/info/well/index.cfm

United States Environmental Protection Agency. (2008). EPA's report on the environment highlights of national trends. Retrieved from http://www.epa.gov/roehd/pdf/roe_hd_layout_508.pdf

United States Environmental Protection Agency. (2010). Consumer's guide to radon reduction. Retrieved from http://www.epa.gov/radon/pubs/consguid.html#overview

Venes, D., & Thomas, C. L. (Eds.). (1997). *Taber's cycopledic medical dictionary* (19th ed.). Philadelphia: F. A. Davis Company.

Wilson, N.L., & McNeill, A.P. (2010). Supporting Behavior Change to Address Depression: Implementation of Healthy IDEAS. *Generations, 34*(1), 94-6.

Yamasakia, A., Hanakib, K., Tomitac, K., Watanabea, M., Hasagawaa, Y., Okazakia, R., . . . San-in Asthma Research Group. (2009). Environmental tobacco smoke and its effect on the symptoms and medication in children with asthma. *International Journal of Environmental Health Research, 19,* 97-108. doi:10.1080/09603120802392884

Yeoh, B., Woolfenden, S., Wheeler, D. M., Alperstein, G., & Lanphear, B. (2006). Household interventions for prevention of domestic lead exposure in children. *Cochrane Database of Systemic Reviews,* (2). doi:10.1002/14651858.CD006047.pub2

APPENDICES

APPENDIX A

SEERR QUESTIONNAIRE

A number of aspects relating to your home environment are listed below. How confident are you that you could do each of the things right now? Do not consider what you may be able to do in the future. Please write in the % that corresponds with your confidence level.

Q1		CONFIDENCE (0-100)
	Make healthy changes to your home environment	_____
	Identify dangerous chemicals in you home that may effect your families health	_____
	Convince others in your household to make healthy changes to your home environment	_____
	Reduce the chance that your child or children will get sick from something in their environment	_____
	Recognize some health effects caused by environmental exposure to contaminants	_____
	Convince other household members to do things to help prevent environmental exposures to children in your home	_____
	Identify local resources to assist you in solving environmental problems in your home	_____
	Find an easy solution to most environmental problems in your home	_____
	Find information about an environmental problem within your home	_____
	Ensure that your child or children are safe from harm from an environmental exposure	_____
	Identify potential hazards in your home that may affect the health of your child or children	_____

Q2		CONFIDENCE (0-100)
	Identify potential health effects for children caused by exposures to radon	_____
	Find out if your home is safe or unsafe from radon	_____
	Take steps to reduce your child or children's exposure to radon if you ever needed to	_____

Q3		CONFIDENCE (0-100)
	Identify potential health effects for children caused by exposures to environmental tobacco smoke	_____

	Find out if your child is safe or unsafe from tobacco smoke	_____
	Take steps to reduce your child or children's exposure to environmental tobacco smoke if you ever needed to	_____

Q4		CONFIDENCE (0-100)
	Identify potential health effects for children caused by exposures to unsafe well-water	_____
	Find out if your home is safe or unsafe from well-water contamination	_____
	Take steps to reduce your child or children's exposure to unsafe water if you ever needed to	_____

Q5		CONFIDENCE (0-100)
	Identify potential health effects for children caused by exposures to lead	_____
	Find out if your home is safe or unsafe from lead	_____
	Take steps to reduce lead levels in your home if you ever needed to	_____

Q6		CONFIDENCE (0-100)
	Identify potential health effects for children caused by exposures to carbon monoxide	_____
	Find out if your home is safe or unsafe from carbon monoxide	_____
	Take steps to reduce your child or children's exposure to carbon monoxide if you ever needed to	_____

The following questions ask about your perceptions of your health related to the environment. When considering your environmental health, think about things in your environment such as air and water that may effect how healthy you are.

Q7	The items listed below refer to people's health. Please read each item carefully and decide to what extent it is characteristic of you.	*Not at all characteristic of me*	*Slightly*	*Somewhat*	*Moderately*	*Very characteristic of me*
	I'm very assertive when it comes to looking out for my environmental health needs.	θ	θ	θ	θ	θ
	I do not hesitate to ask for what I need for my environmental health.	θ	θ	θ	θ	θ
	The status of my environmental health is determined largely by other more powerful people.	θ	θ	θ	θ	θ
	My environmental health is largely controlled by people other than myself.	θ	θ	θ	θ	θ
	What happens to my health is my own doing.	θ	θ	θ	θ	θ
	My health is largely determined by the actions of powerful others.	θ	θ	θ	θ	θ
	In order to have good health, I have to act in a pleasing way to other more powerful individuals.	θ	θ	θ	θ	θ
	I don't believe that chance or luck play any role in the status of my health.	θ	θ	θ	θ	θ
	If I look out for my health, then I will stay healthy and avoid illness.	θ	θ	θ	θ	θ
	I'm very direct with people when it comes to my environmental health needs.	θ	θ	θ	θ	θ

Q8	The items listed below refer to people's health. Please read each item carefully and decide to what extent it is characteristic of you.					
		Not at all characteristic of me	*Slightly*	*Somewhat*	*Moderately*	*Very characteristic of me*
	I feel like the health of my home environment is something that I myself am in charge of	θ	θ	θ	θ	θ
	My health is something that I alone am responsible for	θ	θ	θ	θ	θ
	The status of the health of my home environment is determined largely by what I do (and don't do)	θ	θ	θ	θ	θ
	Being in an environmentally-sound home is a matter of my own ability and effort	θ	θ	θ	θ	θ
	I can pretty much prevent myself from becoming ill by taking good care of myself	θ	θ	θ	θ	θ
	I am somewhat passive about getting my health needs met	θ	θ	θ	θ	θ
	My environmental health has little or nothing to do with luck	θ	θ	θ	θ	θ
	I will be able to avoid any illnesses, if I just take care of myself	θ	θ	θ	θ	θ
	When it comes to my environmental health requirements, I ask for what I need	θ	θ	θ	θ	θ
	If I just pay attention to my health, I will be able to prevent myself from becoming sick	θ	θ	θ	θ	θ

Q9	The items listed below refer to people's health. Please read each item carefully and decide to what extent it is characteristic of you.					
		Not at all characteristic of me	*Slightly*	*Somewhat*	*Moderately*	*Very characteristic of me*
	The status of my environmental health is determined mostly by chance happenings	θ	θ	θ	θ	θ
	If I am careful to avoid household environmental toxins I will be healthier	θ	θ	θ	θ	θ
	The status of my environmental health is beyond my control	θ	θ	θ	θ	θ

	Whether (or not) I develop an illness from my environment is just a matter of luck	θ		θ		θ		θ		θ
	My environmental health is largely determined by people who have influence and control over me.	θ		θ		θ		θ		θ

	Please provide the following information about yourself.

Q10	Are you male or female?		
		Male	θ
		Female	θ

Q11	What is your age?		
		Under 18	θ
		18 to 24	θ
		25 to 44	θ
		45 to 60	θ
		Over 60	θ

Q12	Which of the following describes your marital status?		
		Single	θ
		Married	θ
		Widowed	θ
		Divorced	θ
		Separated	θ

Q13	What is the total number of years of school that your have completed? (Include elementary, high school, college, and graduate school. If you received a GED, you should count that as 12 years)
	_____ YEARS

Q14	Which of the following best describes your ethnic background?		
		White	θ
		Black	θ

		American Indian	θ
		Asian	θ
		Hispanic	θ
		Other	θ

Q15	**How many people are there in your household (including yourself and any children)?**		
		1	θ
		2	θ
		3	θ
		4	θ
		5	θ
		6	θ
		7 or more	θ

Q16	**What is your gross annual income?**		
		Under $10,000	θ
		$10,000 to $14,999	θ
		$15,000 to $19,999	θ
		$20,000 to $24,999	θ
		$25,000 to $29,999	θ
		$30,000 to $34,999	θ
		$35,000 to $39,999	θ
		$40,000 to $44,999	θ
		$45,000 to $49,999	θ
		$50,000 to $59,999	θ
		$60,000 or more	θ

Q17	**Are you currently employed for wages?**		
		Yes	θ
		No	θ

Q18	Do you rent or own your current place of residence?		
		Rent	θ
		Own	θ

Thank-you for taking the time to complete this survey. Please accept the gift card as
A measure of our gratitude for your time.

APPENDIX B

HANDOUT PROVIDED TO PARTICIPANTS

Environmental Risk Reduction Through Nursing Intervention and Education Study

Why is this research being done?

- The goal of this research is to develop a better understanding of how people think of environmental risks within the home

How does this relate to me?

- You are being asked to participate in a study to understand more about the environmental health of children.

If I agree to participate in this research what will happen?

- We are asking you to take 5-10 minutes and fill out a simple questionnaire.

What will be done with my responses?

- This survey is anonymous and your responses can never be linked with you in any way. The numbers from your results will be used (without your name or any of your identifying information) to compose a general picture of how residents in Gallatin County view common household environmental risks. By filling out the survey you are consenting to participate.

Do I have to take part in this study?

- No, you do not have to participate if you choose not to. Your services from the health department will not be affected in any way.

What will I get for taking part in this study?

- When you complete the questionnaire you will receive a $5 gift certificate to Wal-Mart.

What benefit will my participation provide the research team?

- The main benefit of your participation in this study is that we will gain a better understanding of how people view environmental risks within the home.

Who is paying for this project?

- This project is funded by the National Institutes of Health in Bethesda, Maryland

Who should I contact if I have questions about this project or my participation?

- Please call Megkian Penniman , Research Assistant: (406)994-5098 or Dr. Wade Hill, RN, Principal Investigator: (406)994-4011.

Who should I contact if I have questions about my rights regarding this project?

- If you have any questions about your rights call the Chairman of the Human Subjects Committee, Mark Quinn: (406)994-5721.

