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**ASSESSING HEALTH BELIEFS ABOUT COLONOSCOPY**

**A Research Proposal**

**Presented to**

**The Faculty of the Division of Health Professions**

**San Jose State University**

**In Partial Fulfillment**

**of the Requirements for the Degree**

**Master of Science**

**By**

**Katherine Gipsh**

**May, 2004**

### **Abstract**

The purpose of this study was to assess by questionnaire health beliefs related to colorectal cancer screening (colonoscopy) in a population 50 years of age and older. The Health Belief Model provided the theoretical framework for data collection. This study was a non-experimental exploratory survey. A total of 42 subjects (31% male and 69% female) completed a 14-item questionnaire that covered psychological factors including health beliefs. Descriptive statistics were used for data analysis.

Results of this study shows there is a need for appropriate health education to trigger people to take preventive action (colonoscopy). Community based health education programs should be designed to induce behavioral change, by teaching the client the benefits of prevention and early detection of colorectal cancer, to which the client is susceptible. Future health education programs guided by this research will greatly contribute to the reduction of highly preventable deaths from colorectal cancer while lowering the enormous cost of treating this condition.

### **Research Problem**

Colorectal cancer is the only major malignancy affecting both men and women equally, with 90% of onset occurring after the age of 50 (American Cancer Society [ACS], 2000). Though colorectal cancer is the third most common cause of cancer among both sexes, it ranks second as the most common cause of cancer-related deaths, making it a high priority in public health (Bond, 1997).

More specifically, the ACS estimates that 56,000 Americans, out of the predicted 130,200 new cases, died from this malignancy in 2000. If this tumor is found early at a localized stage, the mortality rate within the first 5 years from the time of its diagnosis is as low as 10% and survival at even 15 years can approach 90 % (Molgaard et al., 1990). However, once malignant cells start involving a larger region of the abdomen, rates increase to 35%, and reach the maximum rate of 92% when cancer has metastasized to distant sites. Moreover, surgery to remove a localized tumor does not guarantee a cure, as colorectal cancer has a relatively high recurrence rate, between 30-40% (Bond, 1997).

Yet, colorectal cancer does not have to be such a deadly killer because it grows slowly from benign polyps, highly detectable with available screening tests (ACS, 2000). In fact, "no other tumor gives clinician so much time to act," confirm Bhattacharya and Sack (1996, p. 1744). Screening for colorectal cancer holds great promise for its early diagnosis (Schoen, Weissfeld, Bowen, Switzer, & Baum, 2000).

According to Bhattacharya and Sack (1996), screening sigmoidoscopy reduces the likelihood of death from distal colorectal cancers by 75%. However, "50% of adenomas and cancers are proximal to the splenic flexure, " where sigmoidoscopy cannot reach (Bhattacharya & Sack, 1996, p. 1745). Bond (1997) confirms that because of its limited

reach, flexible sigmoidoscopy detects only about half of all polyps and cancers.

Bhattacharya and Sack (1996) compare flexible sigmoidoscopy to mammography on only one breast. Furthermore, researchers adamantly advocate for colonoscopy as the best available screening procedure and the only sensible way to examine the entire colon and thereby preventing colorectal cancer. Therefore, colonoscopy is a very important lifesaver (Bhattacharya & Sack, 1996).

Periodic colorectal cancer screening such as colonoscopy has proven to be effective in reducing mortality rate by 60-80% (Bond, 1997). However, less than 25% of people 50 years old and older have undergone this screening procedure. This lack of screening has resulted in billions of dollars spent to treat a tumor that is highly curable when found at its earliest stage (Bhattacharya & Sack, 1996). Consequently, colorectal cancer detection is important, costly, and demands attention and further research and investigation.

“As we enter the new millennium, we must adopt a global approach when it comes to [public] health” (Lee & Estes, 2001, p. 499). Health promotion and prevention programs need to be developed and implemented. Health programs, guided and supported by research, needs assessment, and clinical investigations, will help to reduce both the incidence and the mortality rates of colorectal cancer in a population 50 years old and older. Clearly, assessing unique education needs of this population and educating them about the importance of regular screening, as advocated by the ACS, must be a nursing priority.

### **Purpose and Significance of the Study**

The purpose of this study is to assess by questionnaire the health beliefs related to colorectal cancer screening (colonoscopy) in a population 50 years of age and older. Results of this study (the participants' health beliefs including barriers to colonoscopy) will be useful for health education needs (designing the programs, classes, video) as well as for colorectal cancer screening. Moreover, this approach will emphasize the usefulness and the cost-effectiveness of colonoscopy screening for early detection of colorectal cancer (Donohoe, 2001, p. 407).

Guided by this research, health care providers will be able to induce behavioral change by teaching the client the benefits of early detection of colorectal cancer. Future health education, guided by this research will greatly contribute to the reduction of highly preventable deaths from colorectal cancer while lowering the enormous cost of treatment.

### **Research Question**

The research question asks what are the health beliefs: health motivation (interest and concern), perceived severity, perceived susceptibility, efficacy (benefits) of treatment, and barriers (embarrassment, distastefulness, worry, discomfort, inconvenience, and objection to the special diet) related to colorectal screening (colonoscopy) in a population 50 years of age and older?

### **Conceptual and Operational Definitions**

The following study variables are conceptually defined according to the Health Belief Model (Becker & Maiman, 1975, Maiman & Becker, 1974, Rosenstock, 1974a). Perceived susceptibility is how vulnerable the person believes himself/herself to be to a given threat. Perceived severity is the person's interpretation of the degree of intensity of

a disease that may make great demands or affect an individual's endurance, energy, or ability. Perceived barriers refer to an individual's interpretation of obstacles preventing or controlling advance, access, or progress. Perceived benefit is an individual's interpretation that there is something helpful or favorable, promoting or enhancing well being. All study variables will be measured (operationally defined) by a questionnaire related to psychological factors including health beliefs, using a 5-point Likert-like scale (Macrae et al., 1984).

### **Background/Literature Review**

The literature indicates that there has been limited success with education about colorectal cancer screening. For example, Molgaard et al. (1990) evaluated by a telephone questionnaire the effectiveness of colorectal cancer education and screening program in San Diego County, California. Results of this study showed that public education needs to clarify misconceptions about colorectal cancer and reinforce information about colorectal cancer screening and prevention "at an individual level" (Molgaard et al., 1990, p. 49). Furthermore, the researchers stated that future education programs using a "specific incentive-behavior change techniques" approach would significantly improve screening practices among population.

Research does not support the idea that education alone is the complete answer for increasing colorectal cancer screening among the people 50 years of age and older. "The success of a cancer screening program can be traced to the amount of effort taken at the beginning to understand the unique needs of the community and population being served" (Mahon, 2000, p. 19). Mahon describes the role that nurses can play in developing and planning cancer screening program. For example, nurses can conduct a

needs assessment using focus groups and individual interviews with the elderly population (Mahon, 2000). Nurses and other healthcare providers often have the wrong perceptions of these needs. Moreover, assessing patients' needs and designing educational strategies accordingly may lead to more effective cancer screening programs.

Changes are needed in the attitudes of all healthcare providers toward patients and their unique needs. Schoen et al. (2000) also stressed that physicians and patients often have very different attitudes and perceptions about screening by flexible sigmoidoscopy. "Physicians often cite patient discomfort as a reason for not requesting sigmoidoscopy" (Schoen et al., 2000, p. 1790). However, as measured by a questionnaire, 70% of the patients in this study were satisfied and reported a positive experience with this screening procedure. Consequently, an understanding of the specific needs and considering the population being served may lead to more successful cancer screening educational programs.

Awareness of the predicament and vulnerability of a patient is essential at all levels of care and should be considered a high priority by all members of the healthcare team. Much of the discomfort of colorectal screening lies in the preparation. However, a clear bowel is essential in screening procedures. Atkin et al. (2000) compared the acceptability and efficacy of two different methods in bowel preparation for colorectal screening. This experimental single blind, randomized study found that compliance with a single self-administered phosphate enema was higher than with Picolax (an oral laxative). There were more adverse effects (incontinence and sleep disturbances) in the Picolax group than in the enema group. Results of this study are very important because "bowel preparation for screening flexible sigmoidoscopy needs to be quick and easy and



to cause a minimum of discomfort in order to increase compliance” with colorectal screening procedures (Atkin et al., 2000, p. 1507).

Healthcare providers need to make an effort to understand the motivating and inhibiting factors that influence screening. Macrae et al. (1984) evaluated and reported on how strongly people’s health beliefs and perceptions affected their colorectal cancer screening behaviors (a fecal occult blood test). In this article, the researchers explicitly stated that they used the Health Belief Model as their theoretical framework in order to investigate and predict people’s acceptance of the test and their further compliance with this test. After completing questionnaires, all patients were offered a fecal occult blood test (Hemoccult) free of charge. Patients’ compliance was measured by the number of patients who took the Hemoccult kit home and then returned specimens for laboratory testing. The researchers found that two components of the Health Belief Model (perceived barriers to taking the test and perceived susceptibility to colorectal cancer) were important as judged by beta weight in a multiple regression analysis and predicted people’s initial acceptance of the test and their further compliance with this test.

For a cancer screening program to be effective, barriers to services must be removed (Mandelson & Thompson, 1998). Assessing people’s attitudes and health beliefs (including barriers to colonoscopy) is extremely important in order to improve compliance with screening. A better understanding of people’s beliefs “will improve our insight and assist us in developing ways to increase use...” of colorectal cancer screening procedure (Schoen et al., 2000, p. 1791). However, people’s beliefs and attitudes toward colonoscopy screening have not been well studied.

## **Theoretical Framework**

The Health Belief Model (Becker & Maiman, 1975, Maiman & Becker, 1974, Rosenstock, 1974a) provided the theoretical framework for data collection in this study. The questionnaire was based on concepts of this model as well. Study variables are conceptually defined in this paper according to the Health Belief Model.

The Health Belief Model was developed by public health professionals (originally trained as social psychologists) between the 1950s and 1960s to explain and predict compliance with healthcare recommendations. Becker, Drachman, and Kirscht (1974) stated that this model was originally formulated to explain preventive health behavior such as annual checkups, tuberculosis screening, Pap smear test, and prophylactic dental visits. Rosenstock (1974a) emphasized that during the early 1950s, public health services in the United States were mostly oriented toward the prevention of disease. For example, in those days, mobile vans frequently visited public sites (libraries and other places) and provided free screening for tuberculosis, cervical cancer, dental disease, rheumatic fever, polio, and influenza. Unfortunately, many people did not take advantage of this convenient and free service. According to Rosenstock (1974a), it was “ the widespread failure of people to accept disease preventives or screening tests” that led to the failure of this program (p. 328). There was an obvious need to develop a theory that would explain preventive health behavior and the barriers to accepting health services.

Formulated by Hochbaum, Leventhal, Kegeles, and Rosenstock, the Health Belief Model originated from six psychological theories (models) that describe a decision-making process ascribed to clients' individual decision about an alternative/preventive health behavior. According to Maiman and Becker (1974), these theories are Lewin's

theory of goal setting and behavior in choice situation, Tolman's theory of behavioral analysis, Rotter's theory concepts of reinforcement or social learning, Edward's decision theory, Atkinson's theory of achievement motivation, and Feather's analysis theory of decision making under uncertainty.

According to Becker and Maiman (1975), the first component of this model involves the individual's perception of susceptibility to a disease. People were believed to vary widely in their acceptance of personal susceptibility to contracting a condition (disease or illness). For example, a client will recognize a family history of colorectal cancer and, therefore, personal susceptibility to this disease. The next component is the individual's perception of the seriousness of the disease. Rosenstock (1974a) defines this component as the client's "degree of emotional arousal" created by the client's thoughts and beliefs of what kind of difficulties (disease, illness, and other) a given condition will create for the client. For example, the client may not believe that tuberculosis is medically serious, but may believe that its (tuberculosis) occurrence would be psychologically and economically serious to the family.

According to the model, these perceptions are influenced and modified by demographic and sociopsychological variables, perceived threat of the disease/illness, and cues to action (mass media, advice from others, and so on). This component of the model (often called a triggering mechanism) is necessary for initiating appropriate action. The final component is the likelihood that a person will take preventive actions; for example, make lifestyle changes. This is determined by the person's perception of the benefits and costs of taking actions as well as perceived barriers to preventive actions.

Maiman and Becker (1974) and Rosenstock (1974a) conclude that in order for the person to take preventive actions, this person needs to believe that he/she is personally susceptible to the disease and the occurrence of the disease will have “at least moderate severity” on this person’s life. In addition, in order for the person to take preventive action, the benefits of taking actions have to outweigh the barriers such as cost, convenience, pain, and embarrassment. To summarize, the combined levels of susceptibility and severity provided “the energy or necessary force” to take preventive action. Moreover, cues to action are also necessary triggers for appropriate preventive action to occur. Finally, perceived benefits, which are overcoming perceived barriers to action, provided “a preferred path of action” (Rosenstock, 1974a, p. 332).

The Health Belief Model can serve as the framework and successfully guide research studies as well as educational practice in health programs on an individual, group, and societal level. According to Rosenstock (1974b), the Health Belief Model can be useful to assess people’s health beliefs and to guide health education programs, which are designed to induce behavioral change, by teaching the client the benefits of prevention and early detection of serious condition (for example, colorectal cancer) for which the client is at risk.

## **Methodology**

### **Research Design**

This study was a non-experimental exploratory survey with a convenience sample using a questionnaire. This research design is feasible because “a great deal of information can be obtained from a large population in a fairly economic manner”

(LoBiondo-Wood & Haber, 1998, p. 198). There were no interventions in this study.

### **Subjects, Sampling, and Setting**

A nonprobability, convenience sampling strategy was used in this study. A total of 42 subjects ages 47 to 83 were enrolled in the study; 31% were men, and 69% were women. The setting for this study was a waiting room in a private general practitioner's office in San Jose, California.

### **Research Procedures and Statistical Analysis**

After the Institutional Review Board (IRB) and agency approval, the participants were asked to complete a 14-item questionnaire in the waiting area before seeing the doctor. Typed questionnaires with a cover letter and a consent form, pencils, and clipboards were provided. Signed consent forms were collected. This research was confidential and no personal data was collected, except that the participants were asked to identify their age. In addition, the participants were given \$5.00 gift certificates for a food store (Safeway).

A tool developed by Macrae et al. (1984) was used in this study (Appendix). A 14-item questionnaire with previously established test-retest reliability coefficient of 0.87 and high face validity covered psychological factors including health beliefs (Macrae et al., 1984). The section about psychological factors included a question designed to measure study participants' subjective stress related to the perceived personal risk of bowel cancer. The subjects were asked to choose one word from the list, which was nearest to the way that the subjects felt about their own chance of getting bowel cancer: wonderful, fine, comfortable, steady, does not bother me, indifferent, timid, unsteady,

nervous, worried, unsafe, frightened, panicky, and scared off. Descriptive statistics were used for data analysis.

There were 11 questions on the following Health Belief Model indices: health motivation (interest and concern about general health), perceived severity of and perceived susceptibility to colorectal cancer, efficacy (benefits) of treatment, and barriers to taking colonoscopy (embarrassment, distastefulness, worry, discomfort, inconvenience, and objection to the special diet). Responses to all Health Belief Model measures were made on a 5-point Likert-like scale; consequently, all responses were converted into the interval level and descriptive statistics were used for data analysis (LoBiondo-Wood & Haber, 1998).

Subjects were asked a question to assess their general orientation toward detection of serious illness in a forced choice between “It’s better not know for as long as possible if you have serious illness” and “It’s better to have test to find out early.” Finally, they were asked whether their spouse would like them to take colonoscopy. All these responses measures were in the ordinal level, so descriptive statistics were used for data analysis as well (LoBiondo-Wood & Haber, 1998). Quantitative research data were analyzed by the researcher, using data analysis software to complete calculation.

### **Results**

A total of 42 subjects ages 47 to 83 were enrolled in the study; 31% were men, and 69% were women. Table 1 shows the proportions by age groups.

**Table 1.****Demographic variables including age and gender.**

Age groups	Males	Females	%
40-49	2	3	9.5
50-59	3	10	31
60-69	4	7	26
70-79	4	8	28.5
80-89	0	2	5

Note. Total n= 42

Table 2 shows the proportion of positive and negative responses to subjective stress experienced in relation to the subject's perceived personal risk of getting cancer.

**Table 2.****Subjective stress response related to the threat of colorectal cancer.**

Positive response	n	%	Negative response	n	%
Wonderful	0	0	Unsteady	2	5
Fine	1	2.4	Nervous	2	5
Comfortable	6	14	Worried	6	14
Steady	1	2.4	Unsafe	1	2.4
Doesn't bother me	8	19	Frightened	8	19
Indifferent	1	2.4	Panicky	5	12
Timid	1	2.4	Scared off	0	0

Note. Total n= 42

Table 3 shows subjects' general orientation toward detection of serious illness in a forced choice between "It's better not to know for as long as possible if you have serious illness" or "It's better to have test to find early" and whether their spouses would like subjects to have a colonoscopy (spouse's opinion).

**Table 3.**

**Attitude for detection of colonoscopy test and perceived attitude of spouses.**

Response	Yes	%	No	%	Maybe	%
It's better not to know	1	2	41	98		
It's better to find earlier	41	98	1	2		
Spouse would favor subjects taking colonoscopy	21	50	4	9.5	17	40.5

Note. Total n= 42

Table 4 shows mean scores (M) and standard deviations (SD) for each Health Belief Model component. Individual and cumulative mean scores for barriers were calculated and used for further comparison.



**Table 4.****Mean scores for components of Health Belief Model.**

<b>Health Belief Model Component</b>	<b>n</b>	<b>M</b>	<b>SD</b>
Motivation			
Interest	42	3.24	0.82
Concern	42	3.05	0.94
Susceptibility	42	2.31	0.68
Severity	42	4.45	0.88
Benefits of Treatment	42	3.40	0.72
Barriers			
Embarrassment	42	2.90	1.19
Distaste	42	2.81	1.04
Worry	42	2.60	1.08
Discomfort	42	3.00	1.21
Inconvenience	42	2.86	1.00
Objection to the Special diet	42	2.00	1.13
Cumulative barriers	42	2.70	1.11

Note. Total n= 42. All calculations were based on a 5-point scale, where number 5 represented extremely, 4- quite a lot, 3 – moderate amount, 2- a little, and 1- not at all.

## **Discussion**

### **Implications**

In any screening program the question of perceived susceptibility is likely to be important (Macrae et al., 1984). Perceived susceptibility most likely will affect the person's screening behavior. It is the first component of the Health Belief Model and "the first step in the behavior chain leading" to compliance in relation to colonoscopy screening. The next component is the individual's perception of the seriousness of the disease. In order for the person to take preventive actions (in this study, colonoscopy screening), this person needs to believe that he/she is personally susceptible to the disease and the occurrence of the disease will have "at least moderate severity" on this person's life (Maiman and Becker (1974) and Rosenstock (1974a)). To summarize, the combined level of susceptibility and severity provided "the energy or necessary force" to take preventive action. In this study, the mean score for susceptibility was low - 2.31; however, the mean score for severity was high - 4.45 (table 4). According to these results, subjects will not likely take preventive action and have a colonoscopy without receiving appropriate health information and education. For this purpose, implementation of the community based health education programs will be extremely important.

Cues to action are also necessary triggers for appropriate preventive action to occur. According to the model, these perceptions are influenced and modified by demographic and sociopsychological variables, perceived threat of the disease/illness, and cues to action (mass media, advice from others, health education programs, and so on). This component of the model (often called a triggering mechanism) is necessary for initiating appropriate action. Community based health education programs could be a

powerful triggering mechanism (cues to action) by teaching the client about personal risk to and the personal severity of colorectal cancer.

The final component of the Health Belief Model is the likelihood that a person will take preventive actions (have a colonoscopy). This is determined by the person's perception of the benefits and costs of taking actions as well as perceived barriers to preventive actions. In order for the person to take preventive action, the benefits of taking actions have to outweigh the barriers such as convenience, pain, and embarrassment. In this study, the benefits of colonoscopy only slightly outweigh the barriers for this screening test, so subjects will not likely to have a colonoscopy. The mean score for benefits of colonoscopy was only 3.4, and the cumulative mean score for the barriers was 2.7 (table 4). Subjects identified discomfort of colonoscopy screening as a major barrier (the mean score 3.0), and objection to the special diet as a minor barrier (the mean score 2.0). Once again, appropriate health education programs will motivate the client to maintain good health, influence test-taking behavior and increase compliance, by teaching the client the benefits of colonoscopy, particularly in reducing susceptibility or severity. These programs will provide "a preferred path of action" (Rosenstock, 1974a, p. 332).

### **Limitations of the Study**

Several limitations of this research should be noted. A convenience sample is a limitation of this study. According to LoBiondo-Wood and Haber (1998), "risk of bias is greater [in convenience sample] than any other sampling strategy" (p. 252). This also is the weakest form of sampling strategy because results of the study cannot be generalized to all populations (LoBiondo-Wood & Haber, 1998). Unfortunately, the questionnaire

with fixed-response items may miss some important information about the subject. In addition, information obtained in a survey may be superficial and, “the breadth rather than depth of the information is emphasized” (LoBiondo-Wood & Haber, 1998, p. 198).

Moreover, social desirability/honesty of participants is questionable. A high face validity of the questionnaire was established. However, it is possible that it is an intuitive type of validity, in which subjects are asked to read the instrument and evaluate the content in terms appearing to reflect the concept the researcher intends to measure (LoBiondo-Wood & Haber, 1998). In a multicultural, multiracial environment, language barriers are also a possible limitation of this study.

### **Conclusions**

According to the Health Belief Model, individuals would be most likely to take action to prevent disease if they are exposed to appropriate cues to action. Appropriate community based health education programs are the answer. There is likely to be a substantial impact from new information upon an individual possessing little prior knowledge and experience with colonoscopy screening. To summarize, there is a need for appropriate health education programs (cues to action) to trigger people to take preventive action by undergoing colonoscopy.

The results of this study should guide health education programs, which are designed to induce behavioral change, by teaching the client the benefits of prevention and early detection of colorectal cancer, to which the client is susceptible. Future health education programs guided by this research should greatly contribute to the reduction of highly preventable deaths from colorectal cancer while lowering the enormous cost of treating this condition.

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## Appendix

## Questions Related to Psychological Factors Including Health Beliefs.

1. Please, underline one word which is nearest to the way you feel about your own chance of getting bowel cancer?

wonderful	doesn't bother me	nervous	panicky
fine	indifferent	worried	scared off
comfortable	timid	unsafe	
steady	unsteady	frightened	

2. Some people are quite concerned about health, while others are not concerned.

How concerned are you about your own health?

Not at all     
  A little     
  A moderate amount     
  Quite a lot     
  Extremely

3. Some people are quite concerned about the chance of getting sick while others are not as concerned.

How concerned are you about the chance of getting sick?

Not at all     
  A little     
  A moderate amount     
  Quite a lot     
  Extremely

4. What do you think is your chance of getting bowel cancer?

None     
  A small chance     
  A moderate chance     
  High chance     
  Very high chance

**5. How do you think bowel cancer would affect your life?**

- Not at all       A little       A moderate amount       Quite a lot       Extremely

**6. What do you think is the usual success of doctors' treatment for bowel cancer?**

- Very poor       Poor       Fair       Good       Extremely good

**People have differing feelings about doing tests on their own bowel actions.**

**7. How embarrassing would testing your bowel action with colonoscopy be?**

- Not at all       A little       A moderate amount       Quite a lot       Extremely

**8. How distasteful would testing your bowel action with colonoscopy be?**

- Not at all       A little       A moderate amount       Quite a lot       Extremely

**9. How worrying would testing your bowel action with colonoscopy be?**

- Not at all       A little       A moderate amount       Quite a lot       Extremely



**10. How uncomfortable would testing your bowel colonoscopy be?**

- Not at all**       **A little**       **A moderate amount**       **Quite a lot**       **Extremely**

**11. How inconvenient would testing bowel action with colonoscopy be?**

- Not at all**       **A little**       **A moderate amount**       **Quite a lot**       **Extremely**

**12. How much does the necessity to follow a diet discourage you from performing colonoscopy test?**

- Not at all**       **A little**       **A moderate amount**       **Quite a lot**       **Extremely**

**13. Some people think that we are better off not knowing if we have any signs of serious disease. Others like to have tests to find out early so that treatment can be started. Even doctors disagree with each other about this. What do you think? Tick one box only.**

- It is better not to know for as long as possible if you have a serious disease.**
- It is better to have tests to find out early.**

**14. If you are married, do you think your spouse (husband or wife) would like you to take this test?**

- No**                       **Maybe**                       **Yes**