

TAILORED NUTRITION EDUCATION USING THE STAGES OF CHANGE MODEL TO DECREASE THE INTAKE OF DIETARY FAT

Scholarly Project for the Degree of M. S. MICHIGAN STATE UNIVERSITY AMY J. WEBSTER 1997



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# TAILORED NUTRITION EDUCATION USING THE STAGES OF CHANGE MODEL TO DECREASE THE INTAKE OF DIETARY FAT

By

Amy J. Webster

A Scholarly Project

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

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### ABSTRACT

# TAILORED NUTRITION EDUCATION USING THE STAGES OF CHANGE MODEL TO DECREASE THE INTAKE OF DIETARY FAT

By

## Amy J. Webster

Various studies have shown a causative link between diets high in fat and cardiovascular disease. There is also an association between obesity, stroke, cancer of certain types, diabetes mellitus and diets that are high in fat content. Because of the personal and financial burdens of these chronic diseases, the recommendation has been made to decrease dietary intake of fat from the current 37% to 30% or less of the total energy intake.

Recent literature has shown a lack of public awareness about the concept of dietary fat. This finding, along with studies that demonstrate that our current nutritional educational practices are deficient, is attributed to the American population's high dietary fat intake. Traditional nutrition education has centered on the individual who has already decided to make changes in his or her life. This type of material may be inappropriate for those not ready to act.

The Stages of Change Model was used to formulate a nutrition education protocol to be used by the Advanced Practice Nurse in Primary Care that focuses on individuals in the early stages of change they are unaware or underaware of a problem. This nutrition education protocol is designed to facilitate dietary behavior change from the precontemplation and contemplation stages of change to the preparation stage of dietary change for the individual over 18 years of age. This is to certify that the

scholarly project entitled

# TAILORED NUTRITION EDUCATION USING THE STAGES OF CHANGE MODEL TO DECREASE THE INTAKE OF DIETARY FAT

presented by

Amy J. Webster

has been accepted towards fulfillment of the requirements for

Master of Science degree in Nursing

Laune & Selondes Major Professor

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To my loving husband.

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#### Chapter 1

# INTRODUCTION

An important topic in research and education has been the relationship between decreasing dietary fat intake and reducing the risk of chronic disease. High fat diets have not been shown to have a causal relationship in such diseases as obesity, diabetes mellitus, heart disease, stroke, and certain types of cancer. However, evidence supports that dietary fat intake has major contributions in the development of these chronic diseases, raising the potential for increased morbidity and mortality (Bernstein, 1985; Greenwald & Sondik, 1986; Lissner, Levitsky, Strup, Kalkwarf & Roe, 1987; Rifkind, 1984; U. S. Department of Health and Human Services [U.S. DHHS], 1984, 1988, 1992 ). Despite the efforts of nationwide programs to decrease dietary fat intake to combat the known adverse effects of these chronic diseases, *Healthy People 2000* reports that dietary fat intake remains at 37% of total energy intake. The DHHS has called for more effective nutrition education to help reduce society's fat consumption from the current intake down to less than or equal to 30% of total energy intake (U. S. DHHS, 1992).

Nutrition education has traditionally centered on the individual who has already decided to make changes in his or her life and is involved in seeking out information in order to carry this out (Campbell, DeVillis, Strecher, Ammerman, DeVillis, & Sandler, 1994; Curry, Kristal & Bowen, 1992; Greene, Rossi, Reed, Willey, & Prochaska, 1994; Prochaska & DiClemente, 1992). This type of educational material may be inappropriate for those not yet ready to act. Researchers have found that traditional methods of intervention focus on the person during an action stage, or one in which the person is

already committed and involved in changing their behavior. These methods do not work with persons who are not aware of a problem or who have not yet committed to change. Prochaska attributes inappropriate education methods to the continued poor statistics related to dietary health (Prochaska et. al., 1992).

Recently, the Transtheoretical Stages of Change Model is being used in conjunction with nutrition education to facilitate more effective dietary behavior change. The model describes how people change on their own and states that the modification of various behaviors progress through six specific stages, allowing for researchers to develop educational material targeted for specific stages (Campbell et al., 1994; Curry et al., 1992; Greene et al., 1994; Prochaska et. al., 1992; Prochaska & DiClemente, 1992).

The goal of this paper is to present a three-step nutrition education protocol for the advanced practice nurse in primary care. The first and second steps involve assessing a person's eating behavior, and identifying the stage of behavior change the person is in. The final step is an early stage of change educational intervention tool, based on current nutrition education methods. This educational protocol is designed to be an integral part of the advanced practice nurse's approach to health promotion, as dietary behavior has been associated with chronic diseases causing some of the highest rates of morbidity and mortality in the United States. The expected outcome of the nutrition education module is to help prepare the client to facilitate him or herself to move from the early stages of dietary behavior change to the mid and later stages by using educational techniques specific for the stage of change the client is in.

The Transtheoretical framework was applied to dietary behavior, providing research which demonstrates that individuals move through the stage of behavioral change while decreasing dietary fat intake (Prochaska et al., 1992; Prochaska & DiClemente, 1992; Prochaska et al., 1994). Only a few programs have used this research to develop interventions which are targeted toward an individual's current dietary stage of behavior change to reduce dietary fat intake (Campbell et al. 1994; Sporny & Contento, 1995). Unfortunately, there is no documentation to date on how the advanced practice nurse (APN) is using these research results and education techniques specifically to decrease dietary fat intake, promoting health in the primary care setting.

Research indicates APNs use protocols to change dietary intake for the obese, diabetic, elderly, and pediatric clients. However, these protocols are developed within a secondary prevention framework, as opposed to a primary prevention framework. Investigators strongly urge continued research to evaluate the impact of tailored education with the stage of change model to decrease dietary fat intake, lowering a persons risk for disease (Campbell et al., 1994; Curry et al., 1992; Greene et al., 1994; Prochaska & DiClemente, 1992). The Advanced Practice Nurse has the ability to extend the study of tailored dietary education by implementing tailored nutrition education to decrease dietary fat intake using the stages of change model.

### Chapter 2

## LITERATURE REVIEW

# The Impact of Dietary Fat on Health

Diet-related illnesses inflict a substantial burden, both personal and financial, on the American population. High intake of total dietary fat is associated with cardiovascular disease, an increased risk for obesity, some types of cancer, and diabetes mellitus (National Institutes of Health [NIH], 1984, 1985; U.S. DHHS, 1988). Studies have shown that reducing dietary fat intake to less than or equal to 30% of total energy delays manifestations of atherosclerosis and ischemic events by a reduction in plasma cholesterol. This dietary change reduces the risk for morbidity and mortality from cardiovascular disease, and diseases which are related to the cause of cardiovascular disease. (Institute of Medicine, 1991; Judd, Clevidence, Muesing, Wittes, Sunkin, & Podczasy, 1994; Marckmann, Sandstrom, & Jespersen, 1994; Rifkind, 1984; U. S. DHHS, 1988). These results, which impact the financial and personal burdens related to these diseases, have led experts from across many disciplines to make the recommendation nationwide to decrease dietary fat intake to less than or equal to 30% total energy. (Beynen & Katan, 1989; Fortman, Williams, Hulley, Haskell, & Farguhar, 1981; Greenwald & Sondik, 1986; Harlan & Stross, 1985; Heine & Schouten, 1989; Institute of Medicine, 1991; Judd, Clevidence, Muesing, Wittes, Sunkin, & Podczasy, 1994; Marckmann, Sandstrom, & Jespersen, 1994; NIH, 1984; Rifkind, 1984; U. S. DHHS, 1988).

# Public Knowledge, Attitudes, and Behavior of Dietary Fat Intake

It is well known that the nation's dietary fat intake remains well above the targeted less than 30% goal, despite the known health risks involved (U. S. DHHS, 1988, 1992). Although public awareness of the relationship between diet and health has increased, on average, people's knowledge and understanding of the in-depth concepts remain limited. For example, in a study assessing public understanding of cholesterol and heart disease, only one-half of the individuals knew that saturated fat comes mainly from animal sources, polyunsaturated fats from plant sources, or that cholesterol and fat are different (Schucker, Bailey, Heimbach, Mattson, Wittes, Haines, Gordon, Cutler, Keating, Goor & Rifkind, 1987). Auld, Achterberg, Durrwachter & Novak's (1991) study to assess gender differences in knowledge about fat and cholesterol found that, overall, both men and women had a very limited knowledge about fat and cholesterol, scoring only 25% of the possible points before exposure to an informational bulletin about the subject. Their study revealed that individuals did know common information easily accessed through the media, for instance, they knew that fat and cholesterol intake are related to heart disease. They also knew that there are different types of fat and cholesterol, some better and some worse for one's health. Neither the men nor women involved in this study were likely to know the specific information needed to reduce the risk of heart disease (Auld, Achterberg, Durrwachter & Novak, 1991).

Greidanus & Contento (1989) support the findings that individuals have a limited knowledge about fat and cholesterol, as they have concluded in their studies that attempting to decrease the amount of total dietary fat intake to 30% involves complex

cognitive components, besides a basic understanding about fat. Knowledge about food composition, cognitive skills to analyze food and nutrition information, proper food selection ability, and food preparation skills are all involved in attempting to consume a diet composed of less than or equal to 30% fat.

Despite the research depicting the relationship between eating diets high in fat and the risk of disease, only 14% of individuals are eating diets less than or equal to 30% of fat of their total energy intake (Murphy, Rose, Hudes, & Viter, 1991). Dietary behavior is highly complex, involving not only nutrition knowledge, but other factors, such as personal attitude toward diet, perceived control, and perceived societal norms which impact the individual in the type of diet consumed (Bowen, 1992; Kristal, Bowen, Curry, Shattuck, & Henry, 1990; Sporny & Contento, 1995). In a study to explore the domains of nutrition knowledge and attitudes about diet and perceived norms in selecting diets low in fat, investigators found general knowledge about the relationship between nutrients and cancer risk did not affect dietary behavior (Kristal, Bowen, Curry, Shattuck, & Henry, 1990). However, practical knowledge, or the 'how to' in selecting a diet low in fat, was strongly related to whether the diet was high or low in dietary fat. Researchers suggest that the "how-to" in selecting foods low in fat, or the specific food choice information is required in an environment that offers a large selection of high fat foods, in order for the individual to be successful in decreasing fat intake (Kristal, Bowen, Curry, Shattuck, & Henry, 1990.) General information on types of fats or food content becomes confusing to the consumer.

Perceived societal norms, positive or negative beliefs about dietary behavior, have an impact on dietary attitudes. Researchers have illustrated that perceived societal norms have the strongest impact on dietary behavior. Furthermore, studies have found that there is a very low social stigma to eating high-fat foods. These researchers hypothesize that this may be due to the fact that reductions in fat intake do not lead to immediate observable physiologic changes (Kristal, Bowen, Curry, Shattuck, & Henry, 1990; Sporny & Contento, 1995). They go on further to state that fat content is a very abstract concept for individuals to grasp, as it is not an observable concrete object. (Kristal, Bowen, Curry, Shattuck, & Henry, 1990; Sporny & Contento, 1995).

### **Issues of Health Promotion**

A 1983 study on health promotion involvement by primary care physicians found that less than half of the primary care physicians studied regularly gather information from patients about diet, exercise, or stress (Wechsler et. al., 1983). Russel & Roter (1993) looked at health promotion counseling of chronic-disease patients in primary care by reviewing audio tapes of visits. They found 43% of visits included some discussion about diet or weight control, the most frequently mentioned lifestyle discussion. However, the study included *any* mention of the patient's diet or need for change whether it was topics on weight control, sodium, fat, or cholesterol. As the investigators dissected the sessions according to intensity of counseling, they found only 6% of the time extensive counseling was performed on health promotion topics, and the majority, approximately 54% of the counseling sessions involved a brief mention, brief advice, or brief counseling.

In examining health promotion, education, and counseling activities performed by nurse practitioners, Brown & Waybrant (1988) found nearly 83% of NPs engaging in the discussion of general nutrition information in at least one client each day. The average number of patients per nurse practitioner receiving general nutrition information was between 3 and 4. Approximately 42% of the visits involved health promotion in the area of nutrition education, obesity, or weight control education. (Brown & Waybrant 1988).

# The Nurse Practitioner and Dietary Education

Nurse researchers have developed nutrition assessment and intervention protocols for the Advance Practice Nurse's use in pediatric, elderly, diabetic, and overweight and obese populations in primary care (Franz & Reader, 1991; Melkus, 1994; Mion, McDowell, & Heaney, 1994; Schreiner & Brondum, 1994). All of these protocols include a 24-hour food recall or food-frequency questionnaire, anthropometric measurements and laboratory analysis. The nutritional assessment of the elderly and the assessment of the overweight and obese clients also have psychological, economic, and family history components included in their assessments (Melkus, 1994; Mion et al., 1994; Rosenblett, 1989). Interventions follow a common theme of identified needs deficits in the realms of the individual through the assessment protocols and setting mutually agreed upon goals between the client and the APN. Interventions to increase nutritional adequacy were found to be toward deficits in the physical, physiological, psychosocial, and economic realms of the individual, based on U.S. recommended daily allowances and calorie requirements found in the assessment.

These approaches to nutrition education, assessment, and intervention demonstrate reactionary programs to reverse disease, not methods to *prevent* disease. The protocols consistently illustrated assessments such as weekly food recalls, 24-hour diet recalls, and laboratory analysis. These can be very time consuming and expensive methods to respond to disease (Kristal, Shattuck, Henry, & Fowler, 1990; Medlin & Skinner, 1988). The APN is doing very little in assessing and facilitating behavioral change for disease *prevention*, specifically for individuals at risk due to diets high in fat. Advanced Practice Nurses in primary care have the opportunity to incorporate a more preventative approach by assessing those at risk for disease and intervene to change dietary behavior. Methods and interventions already formulated in the protocols reviewed above, combined with current theories of behavior change, can be an effective way to decrease health costs at both individual and national levels.

In summary, America's dietary fat intake remains too high at 37% total energy intake as opposed to the targeted goal of 30% or less total energy intake, placing individuals at serious risk for disease. Curbing the financial, psychological, physical, and emotional costs of chronic disease affecting both the individual and society, is currently becoming a driving force in the nation's health care system. The studies reviewed above show that Americans are underaware of the impact of a high fat intake and the health risks involved in eating a diet that is composed of 37% fat. Studies also demonstrated that current methods of health promotion in regards to dietary fat intake are ineffective. All these are attributing factors to the continued dietary intake of 37% total energy. Therefore, the nurse practitioner in primary care has the opportunity to play an important

role in helping patients reduce dietary fat intake. As studies have shown, a reduction in dietary fat intake reduces the risk for certain chronic diseases. A reduction in dietary fat intake facilitated through nutrition education, can be a cost saving approach to today's health care.

#### Chapter 3

#### THEORETICAL FRAMEWORK

### Transtheoretical Model of Behavior Change

Stages of Change. Prochaska's study of self-attempts at stopping addictive behaviors led to the finding that change involved a transitional process with specific cognitive constructs. Self-efficacy, locus of control, barriers and facilitators to change, reinforcers and punishers in change, cues and consequences, and societal norms were identified as having an effect on the individual to change. Prochaska's study of change in other high risk behaviors revealed that individuals consistently follow a stable pattern of transformation in which specific *processes* or behaviors, emotions, and actions, are identifiable at each stage. This model assumes a focus on the person's intention to change in addition to their perceptions of the risks and benefits to change. (Prochaska, 1989; Prochaska & DiClemente, 1992; Prochaska et al., 1992). Prochaska has identified the six stages of behavior change as shown in Figure 1: precontemplation, contemplation, preparation, action, maintenance, and termination.

Precontemplation is the earliest stage identified in which the individual is unaware, underaware, and is not interested in changing within the next 6 months. They may have experienced few negative side effects from the behavior, feel that it is under control, do not see it as a problem, and may be defensive to social pressure to change. To progress toward changing the behavior, the precontemplator must acknowledge the behavior as a problem and increase their awareness of the long-term effects of the behavior. (O'Connell & Velicer, 1988; Prochaska, 1989; Prochaska & DiClemente 1992; Prochaska et al., 1992; Prochaska et al., 1994).

Contemplation is the stage in which the individual acknowledges a problem exists and is seriously thinking about overcoming it within the next six months but does not have a plan of action. Contemplators are involved in seeking information about their behavior. They chronically substitute thinking about the change for changing their behavior. These people would have to make a firm decision to take action and begin formulating a preliminary plan to change in order to move to the next stage. (O'Connell & Velicer, 1988; Prochaska, 1989, 1992; Prochaska & DiClemente 1992; Prochaska et al., 1992; Prochaska et al., 1994).

Preparation is the stage in which individuals are intending to take action in the near future, usually in the next month. They portray a readiness to change in both attitude and behavior. They are making firm commitments to change, setting goals and priorities to meet their commitment. Individuals in this stage typically progress through this state within six months. (O'Connell & Velicer, 1988; Prochaska, 1989, 1992; Prochaska & DiClemente 1992; Prochaska et al., 1992; Prochaska et al., 1994).

Action individuals are making consistent attempts at behavioral change with the beginning signs of improvement. These people must have the skills to use key processes identified as counterconditioning, stimulus control, and contingency management to interrupt their patterns of behavior (Prochaska & DiClemente 1992). The usual time frame for the action stage is usually zero to six months. Individuals in the action stage need effective strategies to prevent relapse if they are to maintain their goal. (Prochaska,

1989, 1992; Prochaska & DiClemente, 1992; Prochaska et al., 1992; Prochaska et al., 1994).

Maintenance is defined as the period six months after the goal behavior has been reached and engaging in the at-risk behavior has finally stopped. This is a period in which the behavior change is stabilized and attempts are made to prevent relapse. (Prochaska, 1989, 1992; Prochaska & DiClemente, 1992; Prochaska et al., 1992; Prochaska et al., 1994).

Termination is when the individual has no temptation to engage in the at risk behavior such as smoking, substance abuse, or eating diets high in fat. Self-efficacy has been reached against all previously tempting situations (Prochaska, 1992).

Processes of Change. Ten transtheoretical processes of change were identified in both self-initiated and therapy-assisted change (Prochaska & DiClemente, 1992; Prochaska et al., 1992). The processes are comprised of both cognitive and behavioral coping mechanisms that are used in each stage of change, allowing us to understand how the shifts in stages of change occur. Each process is a division which incorporates multiple techniques, methods, and interventions built on other theoretical constructs on self-motivation, decision making, and self-efficacy. Table 1 presents the 10 processes from Prochaska & DiClemente's (1992) work in behavior change, included are their definitions and examples of interventions applicable for each process.

Prochaska & DiClemente (1992) stress that specific processes can be more significant at different stages of change, table 2 demonstrates stages of change in which particular processes are in effect. Identifying the processes used in each stage allows the



Figure 1. The spiral model of the stages of change starts with precontemplation, moving through a series of attempts, until maintenance and termination is reached. (Prochaska et al., 1992, p. 1104)

educator to be aware of which stage the individual is in, yields for customization of interventions according to the cognitive and behavioral mechanisms that are being used, and allows for anticipatory guidance in attempting to change behavior (Prochaska & DiClemente, 1992).

Transtheoretical researchers have identified the Stage of Change Model as a cyclical pattern of movement using specific processes of transition during each stage of change. Researchers caution interventionists and clients against discouragement, as it is likely for clients to recycle several times through the stages before attaining long-term maintenance. Investigators have determined that effective change depends on engaging the right processes at the right stage. Stage of Change investigators have identified significant errors being used in a majority of today's nutrition education. First, some selfchangers rely mainly on consciousness raising and self-reevaluation while they are moving into the action stage, processes which are most indicated for the contemplation stage. These individuals are trying to modify behaviors solely through insight which has been found to be ineffective in bringing about behavior change. (Prochaska, 1992; Prochaska & DiClemente 1992; Prochaska et al., 1992). Other changers are depending entirely on reinforcement management, stimulus control, and counterconditioning; all having their greatest impact in the action stage of change. A prerequisite of awareness, decision making, and readiness are a necessity in the contemplation and preparation stages.(Prochaska, 1992; Prochaska & DiClemente 1992; Prochaska et al., 1992). Prochaska et al. (1992) attribute failure to change the at-risk behavior to the mismatch of stage of change and process interventions. Furthermore, they point out that most education programs to change behavior are targeted toward the individual in the action stage of change, making them ineffective for individuals in different stages of change. These researchers go on to call for research in assessing the stage of a client's readiness for change and tailoring interventions accordingly.

### Stages of Change and Dietary Fat

Due to the effects that high-fat diets have on disease, research is examining the process of change as people attempt to modify their diets by decreasing the fat content. Among healthy people of a normal weight, most diet-related health problems do not surface with immediate, dramatic symptoms, and what further deters the acquisition of a healthy diet is an absence of a social stigma to eat a diet high in fat. (Kristal, Shattuck, & Henry 1990). Dietary behavior modification for disease prevention strongly relies on the acquisition of knowledge, as the nutrient composition of foods is complex (Kristal, Shattuck, & Henry 1990). Having an understanding of the impact of dietary fat on health, the factors that impact dietary selection, and the possibility to have more effective methods to educate individuals on dietary change through the assessment of their stage of change, has led researchers to apply the stage model to dietary behavior in healthy populations (Prochaska 1994, Prochaska et al., 1994).

<u>Validation of the stage of change algorithm.</u> Curry et al., (1992) used a brief dietary assessment tool along with a stage of dietary change algorithm to determine the validity of self-reported stage of fat reduction. The algorithm focused on *limiting* 

Table 1

Processes of Change: Definitions and Interventions

Process	<b>Definitions and Interventions</b>		
Consciousness Raising	Individual becomes more aware of themselves and their behavior, by seeking: new information, understanding, and feedback.		
Dramatic Relief	Experiencing and expressing feelings about the individuals problems and solutions; use of role play and grieving losses is helpful.		
Environmental Re-evaluation	Assesses thoughts and feelings about oneself with respect to one's environment. A reappraisal of personal experience of adapting new behaviors.		
Self-Evaluation	Considers personal values, visualize doing new behavior and envision the emotional impact of the behavior change		
Self-Liberation	A conscious choice and commitment to change their behavior. Possessing a belief one can change. Intervention: discussion about decision-making techniques and resolution.		
Stimulus Control	Gain control over situations and other causes of behavior. Includes the development of cues to stimulate the new behavior, avoid or counter things that instigate the at risk behavior, and restructure environment to avoid situations at risk for the unwanted behavior.		
Counter Conditioning	Substituting alternatives for the undesirable behavior such as relaxation, positive self-statements, or assertiveness.		
Helping Relationships	Utilizes support during attempts to change behavior from individuals who care about their behavior through therapeutic alliance, social support, self-help groups.		
Reinforcement Management	The person rewards themselves or are rewarded by others for making changes, with use of contingency contracts, reinforcement techniques, self-reward.		
Social Liberation	An increased awareness of alternatives for implementing behavior changes in their surroundings with empowerment.		

# Stages of Change Where Processes of Change Occur

<b>Precontemplation</b>	Contemplation	<b>Preparation</b>	Action	<u>Maintenance</u>

Consciousness raising

Dramatic relief

Environment reevaluation

Self-reevaluation

Self-liberation

Reinforcement management

Helping relationships

Counterconditioning

**Stimulus Control** 

(Prochaska et al., 1992, p. 1109)

consumption of fat as the behavioral description of eating a low-fat diet. Their data depicts that one can classify individuals according to their stage of dietary fat reduction, as their stage of change correlated with their results of the dietary assessment. It shows that those who have tried and believe that they have succeeded in reducing dietary fat, are indeed eating diets lower in fat. Those who have not been trying and have no inclination of trying to reduce dietary fat intake, have the highest fat intake.(Curry et al., 1992). The results from two samples show that precontemplators consume 38% of calories from fat, contemplators 37.5%, preparers 37.5%, those in action 35%, and maintainers 34%. As one can see, the average percent of calories from fat in the maintenance stage is still greater than the national 30% or less goal and the authors stress that even maintainers need intervention. (Curry et al., 1992).

A study funded by the National Cancer Institute assessed the validity of the stage of change algorithm using different behavioral criteria for dietary fat reduction with a dietary assessment tool (Rossi, Greene, Reed, Prochaska, Velicer, & Rossi, 1993). The study assessed stage algorithms based on four different single behavioral staging questions on (1) limiting dietary fat intake, (2) avoiding eating high fat foods, (3) eating a low fat diet, and (4) eating a diet that is 30% or less fat from total calories. Results supported Curry et al., (1992), showing dietary fat consumption decreased as stage of change progressed from precontemplation to maintenance. The algorithm with the behavioral criteria of 30% or less of dietary fat as total intake was found to be unsuitable due to the

lack of the subject's understanding of the term of a diet less than or equal to 30% of dietary fat intake. The study also discovered that a significant number of individuals consistently classified themselves in the maintenance stage with intakes greater than 30% of calories from fat. (Curry et al. 1992)

A large epidemiologic study of (N=17,121), geographically diverse population of workers examined the association of the stage of change with the dietary intake of fat, fiber, and fruits and vegetables (Glanz, Patterson, Kristal, DiClemente, Heimendinger, Linnan, & McLerran, 1994). Researchers used a full-length Food Frequency Questionnaire, developed by Kristal, Shattuck, Henry, & Fowler (1990), as the objective measurement to validate the stage of change algorithm, rather than a short dietary assessment tool as in the previous studies mentioned above. Percentages of dietary intake of fat for individuals in precontemplation was 39.7%, contemplation 39.3%, preparation 39.7%, action 37.4%, and maintenance 31.7%. Results demonstrated that individuals can be classified into stages of dietary change, and that dietary fat consumption decreases as stage of change progresses, supporting previous research. Glanz et al., (1994) conclude that the method of categorizing individuals into stages of dietary change is a valid model. They state that their results are generalizable only to large samples and self-administered diet questionnaires, while other studies have validated the use of the stage of change model with dietary fat using smaller samples with short self-administered diet questionnaires.

As was identified in these studies, individuals find it difficult to understand the concept of eating a diet that consists of a fat intake at or below 30% of energy. Another

study has used an dietary *fat avoidance* algorithm plus a subset of five dietary and *behavioral markers* for low-fat intake as the objective criteria to predict fat intake of less than or equal to 30% and classify individuals into the stage of change model accordingly (Greene, Rossi, Reed, Willey, & Prochaska, 1994). With the use of the behavioral algorithm, they were able to demonstrate the mean percentage of dietary fat in precontemplation as 39.4%, contemplation 38.7%, preparation 34.4%, action 29.9%, maintenance 28.5%. The algorithm for fat avoidance demonstrated results similar to previous studies mentioned above, but the additional behavioral markers classified individuals more specifically into the 30% or less than criteria within the stage of change model. (Greene et al., 1994).

Dietary intervention using stage of change. Research has continued to take the dietary fat stage of change results one step further. The Partners in Prevention-nutrition program used the stage of change model to categorized individuals according to their stage of readiness to modify their dietary fat behavior in primary care settings (Campbell, DeVillis, Strecher, Ammerman, DeVillis, & Sandler, 1994). After categorizing the primary care client into the stage of readiness for diet modification, tailored messages at decreasing dietary fat were given to each individual accordingly. A short 18-item food frequency questionnaire was used to assess fat , fruit, and vegetable intake for the purpose of continuing to monitor the validity of the stage of readiness to change and to help guide intervention. The program was designed for self-administration while patients wait for their physician appointment. The experiment consisted of 3 randomly assigned groups: an intervention group who received tailored nutrition messages, a comparison group who

received traditional non-tailored material, and a control group which did not receive any nutrition information. The appropriate nutrition information was accessed via computer program, according to the individual's stage of change and then sent to the client. The results of their project showed that participants who were sent tailored messages were more than twice as likely than those who were sent non-tailored messages to remember receiving the information. What is most impressive is that at a 4 month follow-up posttest, participants in the tailored intervention group had reduced their total fat intake over 10 grams, from 45.6 to 35.3, and their saturated fat decreased by nearly 5 grams. The non-tailored group did decrease their total fat intake but only by 3.6 grams, a level of change that becomes less weighty when compared to the tailored intervention group. This study demonstrates that effective individualized nutrition information can be provided to prevent chronic disease in the primary care setting. (Campbell et al., 1994).

Demographics. All of the studies examined above had very similar results. Surprisingly, a majority of people indicated that they were considering changes in their fat intake, only about one-third of individuals studied indicated they were in the early three stages of change, not considering changes, thinking about changing, or planning on change (Curry et al., 1992; Glanz et al., 1994; Greene et al., 1994; Rossi et al., 1993). Investigators attribute this to the trends in awareness of nutrition. Dietary fat consumption has been the leading nutritional concern in the U.S. since 1980 (Glanz et al., 1994). All of the studies demonstrated that those individuals in the precontemplation and contemplation stages were consuming the most fat and those in the maintenance stage were eating the least fat (Campbell et al., 1994; Curry et al., 1992; Glanz et al., 1994;

Greene et al., 1994; Rossi et al., 1993; Sporny & Contento 1995). Age, sex, and education all had an effect on the stage of change an individual was in. Those who were female, older, and had an education greater than 12 years were more likely to be in the action or maintenance stages (Campbell et al., 1994; Curry et al., 1994; Glanz et al., 1994). Women, consumed less dietary fat then men and were more likely to be in the action and maintenance stages of change than men (Campbell et al., 1994; Curry et al., 1992; Glanz et al., 1994; Greene et al., 1994; Rossi et al., 1993; Sporny & Contento 1995). Conversely, men and those with an education of less than 12 years, were more likely to be in the precontemplation and contemplation stages. Glanz et al. (1994) found that individuals who were classified as being overweight or obese by their Basal Metabolic Indexes were less likely to be precontemplators and more likely to be actively attempting dietary changes to reduce fat intake, than those in the less than average to overweight categories. The health care provider must be alert to these demographics in the stage of change for the modification of fat intake, as they may change some misconceptions of the overweight and non-obese individual. These demographics may also help the health practitioner to be alert to special groups of individuals needing nutrition intervention such as men, individuals who are less than 35 years of age, and those with an education of less than 12 years, as they may be more likely to be in the precontemplation stage of readiness to change and have higher fat intakes.

Sporney & Contento (1995) examined the social psychological variable on dietary fat reduction with the stages of change. The perceived health status, perceived susceptibility, and perceived benefits to health were important variables to note for

individuals in each stage of change. Individuals in the contemplation stage had the highest perceived susceptibility to disease and perceived barriers to taking action, and the lowest self-efficacy of any group. Individuals in the maintenance stage had the highest perception of the benefits of eating a diet low in fat, highest self-efficacy, lowest perceived barriers to change and highest overall concern and motivation to comply with the opinions of significant others. (Sporny & Contento, 1995). Curry et al., (1994) had similar results with the individual's perceived health status, as those with perceptions that fat intake has an impact on health were more likely to be in the action or maintenance stages of change. These results of the social and psychological influences on the stage of change during dietary modification of fat intake support Prochaska's research on the processes one goes through while modifying problem behavior.

#### Chapter 4

#### SCHOLARLY PROJECT PROTOCOL

#### Nutrition Education

<u>Steps 1 & 2: assessment.</u> The risks associated with eating diets high in fat is a key force in the drive to change dietary behavior. Possessing an awareness of the general public's level of understanding dietary fat, realizing that societal norms have a large impact toward affecting one's attitude toward nutritional intake, knowing the population's current level of dietary fat intake, and recognizing the cognitive skills one requires for selecting food gives the primary care provider a foundation for understanding current dietary trends in America. These findings are important to health care providers, as it guides us in formulating an effective intervention to decreasing a person's dietary fat intake.

The goal of this project is to formulate a nutrition education protocol developed from the research reviewed for the Advance Practice Nurse's use in primary care. It will be targeted toward the individual in the precontemplation and contemplation stages of change. The first step involves identifying the client's stage of readiness to change by using an algorithm which categorizes the individual according to the limitation of fat intake, as used in some studies mentioned above (Campbell et al., 1994; Curry et al., 1992; Rossi et al., 1993). As was pointed out in the literature review, the stage of change algorithm has been identified as a valid tool for dietary fat consumption. Table 3 presents the algorithm to be used to categorize clients into the appropriate stage of change. This step is crucial so the APN may understand where the client is in relation to changing their

dietary behavior and then intervene with the most appropriate method. Table 4 represents the method of scoring for the stage of change algorithm.

The second step will be taken to assess the individual's food behavior by using a short dietary questionnaire which assesses fat intake by Kristal, Shattuck, Henry, & Fowler (1990). It prepares the client to start thinking about his/her own dietary behavior and may be scored in the later stages of dietary change. In the later stages of preparation and action, the tool may be scored and the educator and client are able to identify areas of intervention and formulate an plan. Table 5 represents the dietary questionnaire that will be used to assess dietary fat intake. Refer to Kristal, Shattuck, Henry, & Fowler (1990) for information on scoring.

The dietary assessment and the stage of change algorithm are designed to be short, self-administered, and ideally while in the waiting room of the primary care office. It is designed to be an assessment and intervention protocol for health promotion included as part of the client's yearly physical exam. These initial steps at screening are intended for all individuals 18 and over.

<u>Step 3: Intervention.</u> Once the stage of readiness for dietary change has been reviewed, focus on intervention toward the individual in the precontemplation and contemplation stages will begin. The intervention will be nutrition education tailored to the stage of change processes. Methods include raising the individual's awareness of dietary fat, enhance self-evaluation, allowing for dramatic relief and discussion of techniques to relate the physical self with the environment.

Raising awareness of dietary fat is important because Transtheoretical researchers have defined precontemplation as a stage where the individual is unaware, underaware or does not have an interest in changing. Contemplators understand a problem exists but do not have a plan of action. Because public knowledge about the concept of fat and what it does in the body is relatively low, it needs to be simply explained to the client. Raising awareness will be carried out by first presenting the risks of cardiovascular disease which includes hypertension, obesity, diabetes, and cancer, and how they are related to ingesting a diet that is high in dietary fat as a total percentage. A brief description of how artherosclerosis is formed in the body and how it affects cardiovascular health and weight will also be done. It will be a very simple explanation consisting of the following:

Dietary fat is broken down in the liver and is transported in the blood, to be taken up by the cells. An excess amount of dietary saturated fat can lead to a high cholesterol level in the blood, leading to plaques on the arteries. This can lead to high blood pressure, heart disease, and stroke. Dietary fat has a higher content of calories. One fat gram is equivalent to 9 calories, whereas 1 gram of carbohydrate or protein is equal to 4 calories. A high daily intake of dietary fat places one at risk for having an excessive intake of calories. An excess of caloric intake can lead to obesity. Obesity has been associated with hypertension, cardiovascular disease, certain cancers.

Self-evaluation is also an important process identified in the precontemplation and contemplation stages. A take-home pamphlet, the *Guide to Good Eating*, which explains different food groups, the amount of servings needed in each group and what a serving

constitutes, will also be reviewed together for questions / answers (United Dairy Council, 1994). Self-evaluation will be carried out by using the dietary questionnaire the client filled out after the *Guide to Good Eating* is reviewed. At this time it will be asked of the client to identify which food behaviors he or she engage in that lead to a diet that is high in fat. If he or she is unable to, the APN will point out dietary behaviors that are high in fat and place the individual at risk for disease. Becoming familiar with the *Guide to Good Eating* also gives the individual a beginning foundation for the later stages of change. This sets up the person for the 'how to' in making the dietary behavior change. As was pointed out in the literature review above, individuals are lacking the knowledge of how to pursue their goal of decreasing their dietary fat intake.

Dramatic relief and environmental evaluation are similar processes used during precontemplation and contemplation stages of change. Methods to facilitate the client to use these for dietary behavior change will be presented in two ways. The first is to ask the client their perceptions or feeling about the possibility of making a dietary behavior change to decrease dietary fat intake. The second approach would be to ask the individual to look at some of the negative and positive aspects to eating a diet that is lower in dietary fat and how it would affect his or her lifestyle. This is important because it will allow the APN to be aware of how well the client understood the information conveyed in the awareness raising intervention and adjust for clarification, give some insight to the client's decision making process, and set up the client for the preparation stage of change.

<u>Nutrition education evaluation / research</u>. The nutrition education protocol will be evaluated for the facilitation of the individual to move from the precontemplation and

contemplation stages of change to the preparation stage for the reduction of the intake of dietary fat. As outlined above, the preparation stage of change portrays a readiness to change in both attitude and behavior in approximately the next month. Since precontemplation and contemplation stages were found to last anywhere from 6 months to 1 year, clients will be evaluated at 6 months from the time of their annual physical by sending them the stage of change algorithm with a self-addressed stamped envelope. The algorithm will show that the client has moved on to the preparation stage of change.

At the preparation stage of change different techniques of intervention will then need to be implemented specific for that stage, which this project does not cover. However, for future project development, intervention can continue according to the stages of change, focusing on the processes that occur at each stage. As was pointed out earlier, the Food Frequency Questionnaire can be scored in the preparation and action stages to formulate a plan and monitor the reduction of dietary fat intake. Furthermore, this educational protocol could be set up in the same fashion as a research project for a variety of different patient populations.

Program evaluation can be set up as was indicated above or it could be set up as a research study to test its effectiveness against traditional nutrition programs. Participants can be screened based on whether they are in the precontemplation and contemplation stages of change, are 18 years of age, and are a patient of a family practice group. Participants could be randomly placed into one of three groups: an intervention group, which receives tailored nutrition messages specific for precontemplation and contemplation, one which receives traditional nontailored nutritional messages (as

previously pointed out, traditional education focuses on those that are in action and may be inappropriate for those not ready to act), and a control group which does not receive any nutritional messages at all. At the six month point the individuals can be given the algorithm to see if they progressed to the preparation stage of change. The APN has the opportunity to use this nutrition education protocol in a variety of methods in nutrition research and education.

# Chapter 5

# IMPLICATIONS FOR ADVANCED NURSING PRACTICE

This educational protocol, formulated to facilitate the individual to move from the early stages of dietary change to the preparation stage of dietary behavior change, can be an integral part of the primary care Advanced Practice Nurse's approach to health promotion. The protocol was formulated as one of the solutions toward the nationwide problem of attempting to decrease American's dietary fat intake. This document has shown that current education methods to decrease dietary fat intake are ineffective, as only 14% of Americans are consuming a diet composed of 30% or less of fat.

It can be argued that these steps in assessment and intervention for the precontemplation and contemplation stages are a method of disease prevention, as dietary fat intake has been identified as a risk factor to three of the most frequent causes of morbidity and mortality in the United States. Since the literature shows individuals in the precontemplation and contemplation stages of change have the highest intakes of dietary fat, it makes this target population one of the most crucial in attempts toward disease prevention. This document has shown the potential impact that this project could have on the health of individuals through dietary education. The APN has the opportunity to implement this educational protocol into family nursing practice by expanding transtheoretical stages of change nutrition research.

Staging questions for dietary fat reduction

1. Have you ever changed your eating habits to decrease the amount of fat in your diet?

Yes 1

No 2 (Skip to #2)

1A. IF YES, Are you currently limiting the amount of fat in your diet?

Yes 1

No 2 (Skip to #2)

1B1. IF YES, How long have you been limiting the amount of fat in your diet?

Less than 30 days	1
1-6 months	2
7-12 months	3
Over 1 year	4

1B2. IF YES, Would you say your are now eating a low-fat diet?

Yes 1 No 2

2. In the past month, have you thought about changes you could make to decrease the amount of fat in your diet?

Yes 1 No 2

2A How confident are you that you will make some of these changes during the next month?

Very confident	1
Somewhat confident	2
Mildly confident	3
Not at all confident	4

(Curry, Kristal, & Bowen, p. 104-105, 1992).

# Staging Algorithm Scoring

Stage	Question(s)	Answer(s)
Precontemplation	1 or 1A	No
	2	No
Contemplation	l or lA	No
-	2	Yes
	2A	Mildly or not at all confident
Preparation	l or 1A	No
-	2	Yes
	2 <b>A</b>	Somewhat or very confident
Action	1 and 1A	Yes
	1 <b>B</b>	6 months or less
Maintenance	1 and 1A	Yes
	1 <b>B</b>	7 months or more

(Curry, Kristal, & Bowen, p. 105, 1992).

Food Frequency Questionnaire

Part 1. Please circle Y for all the foods you usually eat <u>everyday or 5</u> <u>or more days a week.</u> Otherwise circle N.

<u>Part 2.</u> Please circle Y for all the foods you usually eat <u>at least once each week.</u> etc.)Otherwise circle N.

- Y/N Breakfast cereal
- Y/N Oranges, grapefruit
- (fruit, not juice)
- Y/N Eggs
- Y/N Non-fat or 1% milk
- Y/N Low fat cottage cheese or other low fat diet cheeses (include snacks and casseroles)
- Y/N Dark breads (whole wheat, rye, pumpernickel)
- Y/N Rice, spaghetti or com tortillas
- Y/N Squash (acorn, zucchini, etc)
- Y/N Broccoli, cauliflower, brussel sprouts or cabbage
- Y/N Peas or green beans
- Y/N Cooked dried beans(baked, chili, kidney, refried, black, etc.)
- Y/N Brown rice
- Y/N Tofu or bean curd
- Y/N Bananas
- Y/N Raisins, prunes or other dried fruit
- Y/N Melon (cantaloupe, watermelon, etc.)
- Y/N Hot dogs
- Y/N Hamburger
- Y/N Chicken with skin on
- Y/N Bacon
- Y/N Processed or lunch
  - meat (bologna, sausage, etc.)

- Y/N Margarine on breads, vegetables, potatoes, et
- Y/N Butter on breads,
- Y/N Lard in cooking
- Y/N Green salad
- Y/N Salad dressings or mayonnaise (exclude low calorie diet type)
- Y/N Red meat (beef, ham, pork or pork, or lamb)
- Y/N A vegetable at lunch
- Y/N A vegetable at dinner
- Y/N Two or more servings of vegetables(exclude lettuce)
- Y/N Two or more servings fruit
- Y/N Nuts or peanut butter
- Y/N Cookies
- Y/N Tuna fish
- Y/N Fried fish
- Y/N All other fish (broiled, baked,
- Y/N Grains, pasta or beans for main meal(no meat, eggs, cheese
- Y/N Cream or whipped cream
- Y/N Ice cream
- Y/N Sour cream
- Y/N Yogurt
- Y/N Low calorie mayonnaise or salad dressing
- Y/N Food fried in restaurant (french fries, chicken, etc.)
- Y/N Food fried at home
- Y/N Pastries (donuts, danish,
- sweet rolls, croissants etc.)
- Y/N Pies, cakes or cookies
- Y/N Meal in fast food restaurant

<u>Part 3.</u>

A. About how many times a week do you eat red meat (beef, pork, ham, lamb) for dinner or your main meal? None Every Day 2 3 4 5 6 7 Λ B. When you prepare or eat meat, do you trim the fat? Trim all or most fat Trim some fat Do not trim fat 2 2 C. Which of the following best describes how you spread butter or margarine on bread, rolls, etc.?

- None Just a scrape Light coating Medium coating Thick coating 1 2 3 4 5
- l 2 3 (Kristal, Shattuck, Henry, & Fowler, 1990)

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