

THESIS

**ASSESSMENT OF NUTRITION EDUCATION STRATEGIES TO REDUCE
CARDIOVASCULAR DISEASE IN U.S ARMY HOSPITALS**

Submitted by

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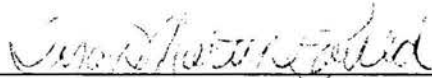
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**WE HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER
OUR SUPERVISION BY ASMA S. BUKHARI ENTITLED ASSESSMENT OF
NUTRITION EDUCATION STRATEGIES TO REDUCE CARDIOVASCULAR
DISEASE IN U.S ARMY HOSPITALS BE ACCEPTED AS FULFILLING IN
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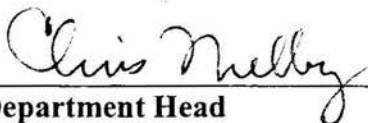
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ABSTRACT OF THESIS

**ASSESSMENT OF NUTRITION EDUCATION STRATEGIES TO REDUCE
CARDIOVASCULAR DISEASE IN U.S ARMY HOSPITALS**

Cardiovascular disease (CVD) continues to be the leading cause of death in the United States with an estimated 79,400,000 adults diagnosed with this disease in 2004 and costs of \$431.8 billion projected this year. As a result there is an increased emphasis on early detection and treatment of risk factors. Military personnel are vulnerable to this killer disease due to indulgence in unhealthy behaviors such as cigarette smoking, physical inactivity, poor nutrition, and increased stress. These behaviors can have a profound impact on the military readiness and mission accomplishment.

The purpose of this study was to identify strategies to enhance nutrition education provided to the military personnel at US Army hospitals to manage CVD. The results will be used to identify weaknesses and gaps in an existing program and facilitate improvement of CVD nutrition education. It was hypothesized that nutrition education can be enhanced by aligning the existing CVD management programs with evidenced based guidelines that will provide program consistency.

The target audience for this study was Registered Dietitians in clinical leadership positions at U.S Army hospitals and outpatient clinics. The study was approved by the Colorado State University Human Research Committee and the U.S Army Medical Research and Material Command Human Research Protection Office. Survey validity

was established by obtaining information from a review of literature and feedback from expert Army dietitians and CSU faculty. Survey reliability was established by a test and re-test during a pilot test on a subset of Army dietitians. The responses were analyzed using computer software and reported as mean, standard deviations and frequencies.

The survey response rate was 70% (n=21). The primary educators of CVD risk reduction were dietitian. Sixty-two percent of the hospitals provided nutrition education based on current guidelines. The current program was rated either “very good” or “good” by 67% of the dietitians. Eighty-one percent of dietitians experienced variation in the program at their hospitals. Only 24% of the dietitians indicated a mechanism to reach deployed soldiers with hypercholesteremia. A web-based resource center was selected by 43% of the dietitians followed by 23% who suggested development of a self-paced web-based education program for deployed or remotely located soldiers.

Caution is advised while interpreting the results because the findings are based on dietitians’ knowledge and opinions and may not have captured all the services offered to the patients. The survey provided insight into current program and suggestions for future program improvements. Cost effectiveness and improved patient satisfaction of medical nutrition therapy by Registered Dietitians is already established. Army dietitians need to take the lead in designing and implementing programs to reduce the CVD risks among military personnel. Such interventions will improve the quality of life of soldiers by providing long term health benefits; and that, in turn, will save resources from reduction

in mortality and morbidity associated with CVD events. It is important to explore various communication media for information dissemination.

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CHAPTER I

INTRODUCTION

Cardiovascular disease is the leading cause of death for all Americans with an estimated cost of \$431.8 billion in 2007 [1-3]. Coronary heart disease (CHD) is the single largest killer of American males and females and caused 1 of every 5 deaths in the United States in 2004. Myocardial infarction results in loss of 15 years of life and causes a 4 to 6 fold likelihood of sudden death compared to the general population [2].

Dyslipidemia, or abnormal lipid levels, is recognized as an independent and powerful risk factor of CHD. The Third National Cholesterol Education Adult Treatment Panel (NCEP ATP III) identified cholesterol-lowering therapy as a primary target to CHD risk reduction [4]. A 10% reduction in serum cholesterol is associated with a 20% to 30% reduction in risk for CHD [5]. Registered Dietitians (RDs) play important roles in the primary prevention and disease management by designing optimal nutrition prescription and nutrition outcome parameters [3]. A multifaceted lifestyle approach recommended by NCEP-ATP III to reduce the risk for CHD is called the "therapeutic lifestyle changes" (TLC) [4]. TLC encourages use of maximum diet therapy in reducing the risk factors by weight and lipids reduction.

There is sufficient evidence to support the effectiveness of Medical Nutrition Therapy (MNT) in management and reduction of CVD risk factors [3, 5, 6]. Sikand and colleagues reported a reduction of total cholesterol by 11%, low-density lipoproteins

(LDL-C) by 9% and triglycerides by 22% after 8 weeks of MNT by RDs. This study also showed a cost savings of \$3.03 in Statin drug therapy for each dollar spent on MNT[5]. Delahanty et al. stated that MNT from registered dietitians is a reasonable investment of resources because it resulted in significantly better lipid profile, diet, activity, weight and patient satisfaction [7].

Military personnel are not immune to CVD, resulting in immense necessity to identify and tackle the risk factors. The results of the 2005 Department of Defense (DoD) survey of *Health Related Behavior Among Military Personnel* showed that only 57.2% of the personnel had cholesterol levels checked in past 5 years, 37.2% of personnel above 20 years of age did not meet healthy weights, 44.5% indulged in binge drinking, only 54.7% took action to control high blood pressure and 32.2% had smoked cigarettes in the past 30 days [8]. The DoD is concerned about health related behaviors among military personnel that will reduce the risk of chronic diseases and avoid interference of poor health. The DoD mission is to maintain a high rate of military readiness and selected the Healthy People 2010 objective related to CVD risk reduction and the intent to conduct cholesterol screening $\geq 80\%$ of military personnel.

It is critical for military personnel to receive nutrition education as early as possible to obtain the benefit of delaying death due to a cardiac event and disabilities due to stroke. Department of Defense emphasis on more soldiers undergoing cholesterol screening will result in increased numbers of soldiers seeking cholesterol education. Increased awareness among soldiers will result in an increased demand for programs, and the need for the dietitians to be equipped to handle this demand will escalate. Identification and provision of additional educational resources to dietitians would

enhance their capabilities and allow more time for patient care versus designing programs. Ultimately, efforts should be directed towards enhancement of the existing CVD risk reduction and management strategies.

Research Purpose

The purpose of this study was to identify strategies to enhance nutrition education provided to military personnel at the U.S Army hospitals to manage CVD. This will identify weakness and gaps in existing programs and facilitate improvement of CVD nutrition education delivered by the Army dietitians in clinical and community settings.

Specific Objectives

1. To conduct a formative evaluation of existing nutrition education strategies at U.S Army hospitals.
2. To solicit input from dietitians in leadership positions for clinical services on current practices and suggestions for program enhancement.
3. Identify focus areas for future research with emphasis on the best mechanism of information dissemination to dietitians and deployed soldiers.
4. Provide recommendations to the Chief U.S Army Dietitian for any immediate changes to the existing program.

Hypotheses

1. It is hypothesized that nutrition education can be enhanced by aligning the existing CVD management programs with evidenced based guidelines and establishing consistency in the program.
2. Increased adherence to healthier lifestyle requires effective utilization of communication tools to access various segments of military population.

CHAPTER II

REVIEW OF LITERATURE

Prevalence of CVD Risks Factors among General Population

Cardiovascular disease (CVD) continues to be the leading cause of death in the United States based on the National Health and Nutrition Examination Survey (NHANES) data collected from 1999-2004 [2]. The American Heart Association (AHA) in collaboration with the Center for Disease Control (CDC) and the National Heart, Lung, and Blood Institute (NHLBI) and other organizations released an annual statistical update in February 2007 that stated an estimated 79,400,000 adults (above 18 years) have a diagnosis of CVD. This estimate accounts for one in three adults with approximately 50% of the cases being adults 65 years or older. The same report shows an increased trend in annual rates of a first major cardiovascular event from 7 per 1,000 men at age 35 to 45 years to 68 per 1,000 at ages 85 to 94 years. Similar rates of disease are seen in women 10 years later in life and the gender gap narrows with advancing age [2].

In 2004 deaths from CVD were 36.3% of all deaths in the United States. These deaths were equivalent to an average of 1 death for every 36 seconds. In 2002, CVD claimed 58% of the deaths; which is higher than the current data. The decline in death rates is attributed to improvement in diagnosis and treatment. Thirty two percent of the CVD deaths occur before 75 years of age and two thirds of unexpected cardiac deaths occur without prior diagnosis of CVD. The estimated direct and indirect cost of CVD for

2007 is \$431.8 billion [1, 2]. Fifty two percent of the deaths from CVD are due to Coronary Heart Disease (CHD). Estimated new cases of coronary events this year is 700,000 Americans and 500,000 Americans experience a recurrent attack. The average age for first myocardial infraction (MI) is 65.8 years for men and 70.4 years for women. High incidence of CHD is attributed to several modifiable and non-modifiable risk factors. Nine risk factors identified to cause CHD include cigarette smoking, abnormal blood lipid levels, hypertension, diabetes, abnormal abdominal obesity, lack of physical activity, low daily fruit and vegetable consumption, alcohol over-consumption, and psychosocial index. The estimated cost of CHD for 2007 is \$151.6 billion [2].

Healthy People 2010 focus area # 12 pertains to reducing heart disease and stroke. The goals are to “improve cardiovascular health and quality of life through prevention, detection, and treatment of risk factors; early detection and treatment of heart attacks and strokes; prevention of recurrent cardiovascular events” [1].

Healthy People 2010: Midcourse Review, emphasizes the importance of involvement at both national and community levels to promote healthful diet due to its link with several leading causes of morbidity and mortality. This Midcourse Review also recognizes metabolic syndrome as an emerging issue, the need for increased awareness among professionals and the public, and the first line of therapy as “lifestyle therapy” [9]. According to recent studies, diabetes mellitus is identified as an independent factor of cardiovascular related mortality and morbidity and is called as a “cardiovascular equivalent” [10].

Prevalence of CVD Risk Factors among Military Personnel

Department of Defense (DoD) recognizes the importance of health promotion among military personnel. Even though the military force consists of young and healthy individuals, they are not immune to unhealthful behaviors such as cigarette smoking, heavy alcohol consumption, illicit drugs use, physical inactivity, poor nutrition, and excess stress. These behaviors can have a profound impact on the military readiness and mission accomplishment. These unhealthful behaviors like illicit drug abuse can become grounds for dismissal of a military member and can have serious consequences later in life [11]. Department of Defense selected a few relevant objectives from Healthy People 2010 to improve the quality of life of military personnel. Objectives selected to reduce cardiovascular disease are those related to reduction of smoking among military personnel, improve healthy weight, increase physical activity, increase screening and treatment of military personnel with high blood pressure and high blood cholesterol. The DoD Survey of Health Related Behaviors among Active Duty Personnel has been conducted every three years since 1980. These surveys provide baseline information and trends on health related behaviors and identify areas for future interventions. The results of the most current DoD survey in 2005 showed some similarities and differences between health behaviors in military and civilian groups. This survey was administered among all military services (Air Force, Army and Navy) and all ranks of enlisted personnel and officers. The survey had a 51.8% response rate with 16,806 military personnel completing the survey. The results of the DoD survey on health related behaviors showed that the rate of personnel who were overweight in the military was roughly half of what is prevalent in civilian communities. The prevalence of obesity was

lower in military personnel compared to civilians 12.4%, versus 31%. However, the trend of overweight and obesity in military personnel shows a steady rise of 4% since 2002 [8].

The DoD behavioral risk assessment surveys showed that military personnel were well below the Healthy People 2010 baseline for fruit and vegetable intake.

Consumption of two or more servings of fruits in military personnel was at a 28% baseline compared to a target of 75% baseline as noted in for Healthy People 2010. Vegetable intake also showed a lower baseline of 49% compared to target of 50%. Less than 10% of military personnel consumed 3 or more servings of fruits and vegetables. Fruits and vegetables are key components of a healthy diet in reducing risk of certain chronic diseases and weight management. Twelve percent of the military personnel consumed whole grains and low fat milk products. The National recommendations for whole grains is three one ounce servings of whole grain products and three cups per day of fat-free or low-fat choice of dairy or equivalent products. Only 10% of military personnel stated consuming leaner protein sources three or more times per week. The self-report nature of the surveys raises issues with under and or over-reporting of certain foods. The survey showed that 38.2% of Army personnel reported skipping breakfast meal and 23.2% skipped lunch at least twice per week. Skipping lunch was highest for the Army compared to other military services [8].

Stress is another contributor of cardiovascular disease. In the 2005 DoD survey, 32.5% of the military personnel indicated their jobs were a source of stress followed by 18.9% who reported family as a source of stress. More men than women used alcohol (29.9% vs. 21.8%) and cigarettes (27.7% vs. 22.6%) as coping behaviors. An estimate of

4.3% military personnel considered suicide as an option of dealing with stress and depression [8].

Nutrition Education Strategies to Reduce CVD Risks

Agencies' Recommendations

Various federal agencies have recommended specific strategies for nutrition education. National Heart Lung Blood Institute (NHLBI) launched the National Cholesterol Education Program (NCEP) in 1985 and revised recommendations three times. Walden and colleagues in 1997 [12] assessed the effectiveness of NCEP Step II diet in hypercholesteremic men and women with triglycerides below 500mg/dL in a randomized controlled trial called the beFIT study. Participants were randomly assigned to an immediate intervention group or a delayed intervention group which served as a control group. Both groups had similar characteristics at baseline with dietary intake and serum lipid levels. The intervention group received 8 weeks of instruction on the NCEP Step II diet with a follow up at one, two, three, and six months. The results showed a reduction in fat calories in the intervention group from 34% to 25.2%, saturated fats reduced from 12% to 7.6% and dietary cholesterol from 258 mg/day to 171mg/day. Low density lipoprotein cholesterol reduced from 7.6% to 8.8% after 6 months of dietary intervention. There was, however, an increase in carbohydrate intake from 47% to 55.2%. This study was based on a free living population with a potential of under-reporting and consisted of younger subjects who may have impacted the study results.

The NCEP-ATP III was revised in 2002 and it continues to emphasize the importance of identifying and treating elevated low density lipoproteins (LDL) cholesterol and suggests adults above 20 years of age or older obtain a lipid profile at least once in five

years [4]. Previous studies have shown a strong link between elevated cholesterol, especially LDL cholesterol, and CHD [1].

Adherence to NCEP-ATP III needs to be improved because less than half the persons at high risk for CHD are receiving treatment. Approximately one third of patients who are being treated are achieving their LDL cholesterol goal and approximately less than 20% of CHD patients have LDL cholesterol maintained at optimal levels. An LDL cholesterol level of 130-159 mg/dL is considered borderline high. The LDL cholesterol levels of 160-189 mg/dL are classified as high and levels of 190 mg/dL and higher are considered very high. Good cholesterol or high-density lipoproteins (HDL) cholesterol needs to be higher than 40mg/dL. Lower HDL cholesterol is considered to be a risk factor for heart disease and stroke. The mean HDL cholesterol levels for American adults age 20 and older is 51.3 mg/dl according to NHANES 1999-2002 (NCHS) [2].

Dietary Recommendations from USDA and USHHS

The USDA and USHHS *Dietary Guidelines of Americans* represents the federal nutrition policy. Revised in 2005, this document provides science based information for Americans to promote good health and lower risk of chronic diseases. The messages from these National guidelines have been translated into an interactive educational tool called "MyPyramid". MyPyramid food guidance system illustrates the dietary guidelines and is a valuable credible online tool for American consumers interested in pursuing dietary and physical activity behaviors [13].

Dietary Recommendations from Department of Defense (DoD)

The US Department of Defense Health Survey of Health Related Behaviors among Active Duty in Personnel (2005) showed approximately 57.2% of the Army

personnel reported having their cholesterol checked within the preceding five years. The Healthy People 2010 target is ≥ 95 % of adults having their cholesterol checked within five years. The estimate by DoD survey is subject to recall bias because one in four personnel (24.7%) were unable to remember the date of when their cholesterol was checked [11].

The American Heart Association, Veterans Affairs, and Department of Defense (VA/DoD, 2006) dyslipidemia guidelines recognize that a healthy lifestyle is the foundation of primary prevention of cardiovascular disease (CVD) [4, 14]. Healthier lifestyle includes components of diet, tobacco cessation and increased physical activity. Registered Dietitians or qualified nutritionists play a critical role in providing medical nutrition therapy (MNT) to lower the risk factors of CVD [4]. Sufficient evidence is available to support the effectiveness of MNT in managing dyslipidemia and reducing risk factors associated with CHD [15].

Varady et al. [16] conducted a critical review of studies with diet, exercise and supplementation. The purpose of the review was to examine the cholesterol lowering efficacy of low saturated fat diets combined with exercise and use of nutritional supplementation such as fish oil, oat bran and plant sterol combined with exercise. Lifestyle therapies combined with exercise and diet were found to result in a 7-18% reduction in total cholesterol and 7-15% reduction in LDL-cholesterol, 4-18% reduction in triglycerides and 5-14% increase in HDL cholesterol. These changes in the lipid profile were further enhanced in studies when nutrition supplements were combined with exercise. It is therefore suggested that for patients requiring a 5-25% reduction in LDL

cholesterol, a combination of interventions should be the primary measure or used as adjunct therapy to reduce the dose of lipid lowering drugs.

Kris-Etherton and colleagues [17] discussed the benefits of a Mediterranean-Style National cholesterol education program. The Lyon Diet Heart study had significant beneficial effects of lowering the risk of recurrent heart disease by 50-70%. The Mediterranean diet does not have a specific definition because variations exist in 16 different Mediterranean countries. This diet usually consists of high amounts of fruits, vegetables, breads, other forms of cereals, potatoes, nuts and seeds. Olive oil is an important source of fat with moderate consumption of dairy, fish and poultry. Eggs are consumed 0-4 times per week with small quantities of red meat and low to moderate intake of wine. These investigators suggested the need to recognize the enormous public health benefit of this diet and possible incorporation in primary and secondary prevention and the need for more research in this arena.

Studies on CVD Program Structure

Byers et al. [18] performed a randomized trial to evaluate the effects of a post-screening nutrition education program and the feasibility of being delivered by public health workers in small work-sites. This study was collaboratively conducted by State Health Departments in Colorado, Minnesota, Missouri, and Washington by the Center of Disease Control and Prevention. Forty worksites with less than 200 employees were selected and 20 sites were randomized to either “usual” or “special” intervention group. The study recruited 2,067 workers and found 846 workers with cholesterol of greater than 200mg/dL blood cholesterol levels who were randomly assigned to one of the groups. Usual intervention consisted of approximately five minutes of American Heart

Association Step I diet education counseling immediately after cholesterol testing. The special intervention group received the same information as “usual” group and two hours nutrition education delivered in multiple sessions at the worksite usually by a nutritionist over the following month. Cholesterol was checked by the finger prick method with capillary whole blood using Reflotron testing equipment at baseline, 6 and 12 months for both study groups. Cost was determined from each worksite using salaries of providers, workers preparation, travel, supplies and telephones. Compliance to 6 month follow up for cholesterol testing was 62% for usual group and 71% for special intervention group. At 12 months, compliance to cholesterol retesting was 59% for both groups. Cholesterol reduction at 6 months for usual care was 0.4% and 1.2% for special education program. There was a significant ($p < 0.01$) reduction of cholesterol of 3.0% in the usual group and of 6.5% in the special education group. The difference of 3.5% reduction in the special education group was attributed to the intervention. Worksite health promotion programs have to demonstrate the expected benefit with the cost of implementation. The total cost of cholesterol screening and education was approximately \$50 per person. The cost of this program to the employer was approximately \$75. A major cost contributor for the employer was worker salaries and for the education program it was the printed materials. The investigators concluded the need for continued future efforts to lower cholesterol by providing nutrition education programs that are cost effective at worksites [18].

Kotani and colleagues [19] conducted a study on the effects of different interval length in hypercholesteremia education class on participants health behaviors and satisfaction levels. Comprehensive group education consisting of six sessions was delivered by a physician, dietitian and exercise instructor either once or twice a month.

Intervention for both groups was based on the constructs of the Transtheoretical Model of Change (TTM) approach. The participants rated the program on a 100-point scale and stage level of change was determined using a questionnaire. Participants clinical characteristics at baseline for monthly group (n=45) and twice-monthly group (n=46) were found to be not significant. At six month follow up, there was no significant difference in dietary changes among the two groups ($p < 0.05$). There was however, a 60-70% of increase in number of participants in “action” stage with regards to diet changes in twice-monthly group. The participants in twice-monthly group were found to have significantly ($p < 0.05$) better understanding of diet (81.8 ± 11.5) compared to the monthly group (76.0 ± 10.8). In the area of exercise, a significant increase ($p < 0.05$) in “action” stage was found among twice-monthly group (76.1%) as compared to the monthly group (54.2%). The twice monthly group also showed a significantly ($p < 0.01$) higher satisfaction levels (85.7 ± 12.4) compared to the monthly group (75.2 ± 11.3). The investigators concluded the success of incorporation of TTM and indicated that the intensive twice-monthly classes to be a superior education format.

Reid and coworkers [20] assessed the feasibility of a one-hour evening information session provided by the hospital dietitian and found that patients reported high level of satisfaction. The session attendance increased from 79% initially to 87% after a reminder was sent to clients before the class. The group format showed benefits of transfer of responsibility of making changes to the patient and attendance indicated readiness to make a change. The group environment also provided reinforcement with the potential for social compliance and reduced the waiting time of several months for an individual appointment [20].

Role of Registered Dietitians in Management of CVD

Registered Dietitian and Registered Diet Technicians are leaders in delivering preventive services. Primary prevention of chronic diseases is recognized as the most cost effective course of action for disease prevention [21]. Registered Dietitians can provide a cost effective means of managing cholesterol, weight and diabetes. By managing these conditions patients can lower risks for CVD [14]. Even if drugs are used to prevent mortality and morbidity of CVD, medical nutrition therapy continues to improve patients' outcomes [5-7, 22]. Diet and lifestyle recommendations are complementary not contradictory, in the management of chronic diseases. The best approach to manage these lifestyle behaviors is a person-to-person approach and Registered Dietitians are health professionals trained to implement changes at individual or population basis [23].

Sikand and colleagues [5] conducted a retrospective chart review on 73 men with hyperlipidemia and previous history of niacin noncompliance. These patients received MNT from a dietitian for 8 weeks before initiation of statin therapy. The study showed an 11% ($p < 0.001$) reduction in total cholesterol and a 4% increase in high-density lipoproteins after MNT. Only 15 patients out of 30 required lipid-lowering drugs resulting in a cost savings of \$638.35 per patient, \$3.03 in statin therapy for every dollar spent on MNT. This study also found that at least three one-hour visits with the dietitians are needed to obtain the benefits.

Delahanty and coworkers [7] conducted a prospective study on 90 subjects with patients being randomly assigned to receive MNT or usual care. The purpose of the study was to assess patients' quality of life (QOL) and satisfaction with MNT. This study was conducted to dispel the preconceived notion and skepticism of poor QOL with a prudent diet. This study demonstrated a significant positive impact of MNT on cholesterol reduction and improvement of QOL and patient satisfaction when compared to patients receiving usual care.

In a prospective randomized controlled study, Nasser et al. [24] compared two nutrition education strategies by recruiting 212 hyperlipidemia clients. These clients were randomly assigned to an educational approach using Stages of Change or Usual Care by dietitians. Both groups received four weekly educational sessions and followed up at 16, 28 and 40 weeks. Regardless of the educational approach, Registered Dietitians were found to be effective in disseminating nutrition education. One hundred and forty one participants completed the study with 11% serum LDL cholesterol reduction in Stages of Change approach group versus 8% reduction in Usual group from baseline to 40 weeks ($p < 0.001$). Both groups reported approximately 30% fat intake ($p < 0.001$) and reduced total serum and LDL cholesterol were sustained over 40 weeks. Usual care nutrition education activities can be enhanced by incorporating methods from the Stages of Change approach.

Herbert and colleagues [25] suggested need for empirical data to demonstrate the effectiveness of dietitians in lowering the risks of coronary heart disease. This study recruited 1,162 subjects who were randomized to either a physician delivered or dietitian based program. The dietitian based program ($n=645$) consisted of a 45 minute individual

appointment followed by a two-hour group session and a final individual session. The study found that changes in dietary fat and serum lipids were related to the “dose” of intervention. There was a significant relationship between serum cholesterol reduction and time spent with the dietitian ($p < 0.05$). It was found that at one year, subjects who attended three or four nutrition sessions had significant reduction in outcome measures compared to subjects attending fewer than three sessions. This study addresses the need to educate physicians about the Registered Dietitians expertise in order to improve the rate of referrals.

Role of Computer-Based Interventions in Primary Prevention of CVD

Healthy People 2010 provide detailed objectives on the impact of effective health communication. The environment for communication about health has changed tremendously with the expansion of communication channels and competition for people’s time and attention. People have more opportunities to select topics of their interest and preference. Health communication from non-commercial and public sources have to withstand the marketing models of Internet commercialization [1].

To effectively implement strategies to lower the risk of CVD, it is critical to explore avenues to improve awareness of risk factors and implement programs. Internet use is rising with the ever expanding technology. Internet can be a valuable tool in the era of scarce resources and an environment with rampant prevalence of risks factors for chronic diseases. According to a PEW Internet and American Life Project survey in December 2006, 70% of adults use the Internet and accounts for approximately 141 million people [26]. Highest Internet usage was seen in the 18-29 years age group with 83% usage. Internet use was lowest for the following groups: 58% for Black Non-Hispanic; 49% for

people with household income less than \$30,000/year; 33% for 65+ years age group; 36% for people with less than high school education. Even with noted disparity in internet use, it is a viable media to reach mass population. Use of internet for health and medical information ranked fourth with 79% users [27]. The top three reasons for internet use are 91% for e-mail, 91% for search engine to find information and 84% for a map or driving directions. The use of the internet for health advice is found to be used for reassurance and to confirm decisions rather than used independently.

Eight of the ten internet users have looked for health information in 2006; this ratio was the same as in 2002 and 2004 [28]. Forty nine percent of the internet users have searched for information on diet, nutrition, vitamins or nutrition supplements. Searching for nutrition information ranked third in the health topics with 64% searching for specific disease or a medical problem and 51% searching for a certain medical treatment or procedure. It is interesting to note that 66% of the health seekers initiate a search using a search engine and only 27% accessed health directly from the health-related website. There appears to be a great demand for health information; 72% of the health seekers visited two or more websites during their last health information session. Among the health seekers 53% indicated that the information accessed had an impact on self-care or caring for someone else's health. This accounts for a substantial population who experience some type of impact due to information on the internet. The experience with online information appears to be mostly assuring for 74% of health seekers, but for 18% the information was confusing, and 10% of health seekers were frightened by the serious and graphic nature of information found online.

An experimental study was conducted [29] to evaluate the impact of Web-based nutrition counseling and social support. No significant differences between the web-based intervention group and the usual care control group were seen. This study addresses the issue of lower uptake of Web-based interventions as mentioned in other studies. There is a potential for Web-based nutrition counseling to ease the burden of continuous care for patients with chronic disease like cardiovascular disease. This study strongly advocated that Web-based counseling was ineffective when used independently. It was suggested that the World Wide Web should not fully replace the consultations by health professionals.

Physicians have time constraints but at the same time it is important to provide nutrition information to the patients. The University of Wisconsin designed a Medical Nutrition Handbook that can be accessed online [30]. The web-site provides evidenced based information and key counseling messages that can be quickly disseminated to the patients by the physicians during an acute appointment. Availability of reliable nutrition materials on the computer can save a general practitioner's time when giving advice to patients. General practitioner can print the needed information for their patients.

The use of the internet for disease management involves further research with website usability and user readiness to change and maintain an improved behavior. According to recent trends there is increased use of internet for health and nutrition information; however Health Behavior Change on the Internet (HBC-I) is in its early stages of development [31]. Behavior change is a complex task, and if the internet is to assist people to change behavior, it needs to contain certain basic elements. Websites with programs on smoking and diet appear to be ahead in incorporating elements of behavior

change compared to other medical conditions [31]. The other issue is the readiness of people to access programs with improvement in self-efficacy. There appears to be a lack of intention among 62% of the Internet users to start a health behavior change program [31]. There are only 24.7% using the Internet for health promotion and disease management indicating need for extensive research on improving health of more people through the internet use [32]. The Internet can serve as a cost-effective modality for a tailored health communication for health behavior change [31]. Effective health communication needs to be based on rigorous formative research and evaluation of outcomes [1].

The Healthy People 2010 objective on Health Communication provides a list of attributes for effective health communication because it has an impact on leading health indicators [1]. The objective suggests a need for comprehensive health communication, which is derived from a systematic exploration of factors impacting health and how to influence these factors. The Healthy People 2010 suggests use of multidimensional interventions to reach diverse audiences using relevant information suited to the targeted segment. The use of the internet has made interactions between provider and patient possible online. This interactive nature makes internet media an advantage compared to traditional media. Along with interactivity, customization and multimedia, the widespread information availability raises serious challenges due to consumers using poor quality information that can be misleading, inaccurate and inappropriate. Consumers are at increased risk of misinformation and potentially jeopardized in regards to privacy and confidentiality. There is an increased demand for rigorous evaluation of healthcare and public health delivery systems for evidence-based practices.

Effective health communication using the internet can facilitate informed decision making, promote health behavior, enhanced peer and emotional support, promote self care, manage increase demand for health service and support clinical care [1]. Extensive empirical research is warranted to evaluate the use of internet in larger health communication system and incorporate communication concepts. The research should address 'net-gap' and quality of information provided [33]. It is important to take advantage of the "e-revolution" to enhance the current outdated health care system of the United States [34]. The increased trend in internet users (of all ethnicities) makes it an influential force with the potential to revolutionize the health care industry. Groups such as minority, seniors, and low-income who previously had poor access are now showing an increased usage such trends result in narrowing of the "digital divide". Internet can enhance provider-patient relationships by sharing the burden of responsibility for knowledge and shifting the locus of control from the doctor being the sole manager of patient care to being partners. The Internet can serve as a valuable tool in self care endeavors such as a federally funded program on home glucose monitoring via internet. An online support group not only facilitates disease specific information but provides a unique social and emotional support to patients. More studies are needed to assess the role and value of the internet in improving patients' health and behavior outcomes as well as the relationship between patients and providers.

CHAPTER III

METHODS

Dietitians at various Army hospitals are providing quality medical nutrition therapy to soldiers, family members and retirees. Nutrition education programs, offered by dietitians at Army hospitals, to manage cardiovascular disease (CVD) risk have not been evaluated before. A formative assessment of the existing nutrition education strategies will enable program enhancement. Identifying dietitians' needs and developing and offering the needed information will enhance dietitians' capabilities and effectiveness in managing this leading cause of mortality and morbidity. The bottom-line of this project is to reduce CVD risks among soldiers.

Target Audience

Registered dietitians currently in the position of Chief, Clinical Nutrition Services in the Army hospitals were the identified target group for this research study. Registered dietitians play a key role in educating patients on reducing coronary heart disease (CHD) risks with a focus on cholesterol management and other healthy lifestyle counseling to patients. A web-based survey was developed to assess the current nutrition education programs to reduce cardiovascular risk at various US Army hospitals. Based on discussion with experts (Army dietitians in leadership positions) a decision was made to solicit one survey completion per army hospital versus obtaining responses from all Registered Dietitians in the Army to avoid duplication of data. The Chief Dietitians of

Clinical Services responding to the surveys were encouraged to solicit input from other dietitians at their medical facility to provide a thorough overview of the education programs offered at that facility. The surveys were sent to the Chief Nutrition Care Division (C, NCD) of all Army hospitals to ensure completion of the survey for their facility. Some medical facilities may have only one dietitian performing management and clinical duties. Thus in the absence of Chief of Clinical Services C, the C, NCD responded to the survey.

Web-based Survey Development

The survey consisted of 28 questions and obtained information on bed size, outpatient patient census, referral mechanism, program structure, program content, mechanism to reach deployed soldiers, training, collection of outcomes data, strengths and weaknesses of the program along with suggestions on areas to improve. A deployed soldier refers to a soldier who is away from his/her home base on a mission related to wartime or peacetime. The Survey was designed using information from the literature and current recommendations by NCEP-ATP III, the American Dietetic Association and the American Heart Association. Survey validity was established by review and feedback from experts in the US Army and faculty and graduate students at Colorado State University. A telephone conference with two Army dietitians in leadership positions with clinical and education expertise was conducted to identify the target audience and survey content. The experts and graduate research group reviewed the final survey prior to conversion to a web-based format. The final web-based survey was tested by the Co-Investigator and reviewed by experts in the US Army and at Colorado State University.

Pilot Test

The two primary reasons to pilot test the web-based survey were to establish reliability (test – retest method) and to identify and rectify any technical problems with the electronic media (Appendix A). The pilot survey was administered approximately 10 days apart to a group of Army dietitians who had prior knowledge of cholesterol education. Twenty-three dietitians responded to test and 16 to ret-test. The matched survey results were analyzed by calculating agreements divided by agreements plus disagreements (Appendix B). The questions with poor agreements (<0.6) were modified to improve clarity.

Change to the final survey included reduction of several open-ended questions by using responses from the pilot test to generate pick lists. The experts in the field and the graduate research group students reviewed the revised survey. The pilot survey had a unique code requirement for conducting matching of the surveys. This unique code was not required for the final survey. The surveys were anonymous to the investigator and were confidential. As anticipated there was a glitch in the pilot survey. The pilot study participants were unable to submit the completed survey and this technical difficulty was corrected. This correction eliminated a potential barrier during final web-based survey administration.

Human Subjects' Approval

The research proposal, surveys and cover letters were approved by Colorado State University Human Research Committee (HRC) (Appendix C) and U.S Army Medical Research and Material Command Human Research Protection Office. The target

audience received the link to access the web-based survey along with the cover letter approved by the Colorado State University HRC. A consent form was not required for this research study. Amendments to the final survey were submitted to HRC at Colorado State University for approval prior to implementation of the final survey. The cover letter provided the study participants with details on the voluntary nature of the survey and issues related to confidentiality and participants' rights. The survey responses were anonymous to the investigators.

Data Collection and Analysis

The final surveys were sent to the Chief, Clinical Nutrition Services through the Chief Army Dietitian's Office. The surveys reached the target audience electronically with the survey link and a scanned cover letter on the Colorado State University letterhead signed by the Co-Investigator. The target audiences were given one week response time. After discussion with the HRC at CSU, the deadline for response was extended to improve the response rate. Twenty-one Army hospitals responded to the survey. The survey responses were received through the Colorado State University web-mail. All responses were forwarded to the Food Science and Human Nutrition (FSHN) information technology staff member. These data were transferred to a Microsoft Access application to organize and store for later statistical analysis. The Statistical Package for Social Sciences Version 14.0 (SPSS) was used to calculate mean and frequencies of the responses.

CHAPTER IV

RESULTS

The survey was sent to fifty seven Registered Dietitians at twenty-seven US Army hospitals and three non-hospital settings. The Registered Dietitians from twenty-one US Army hospitals participated in this study resulting in a response rate of seventy percent.

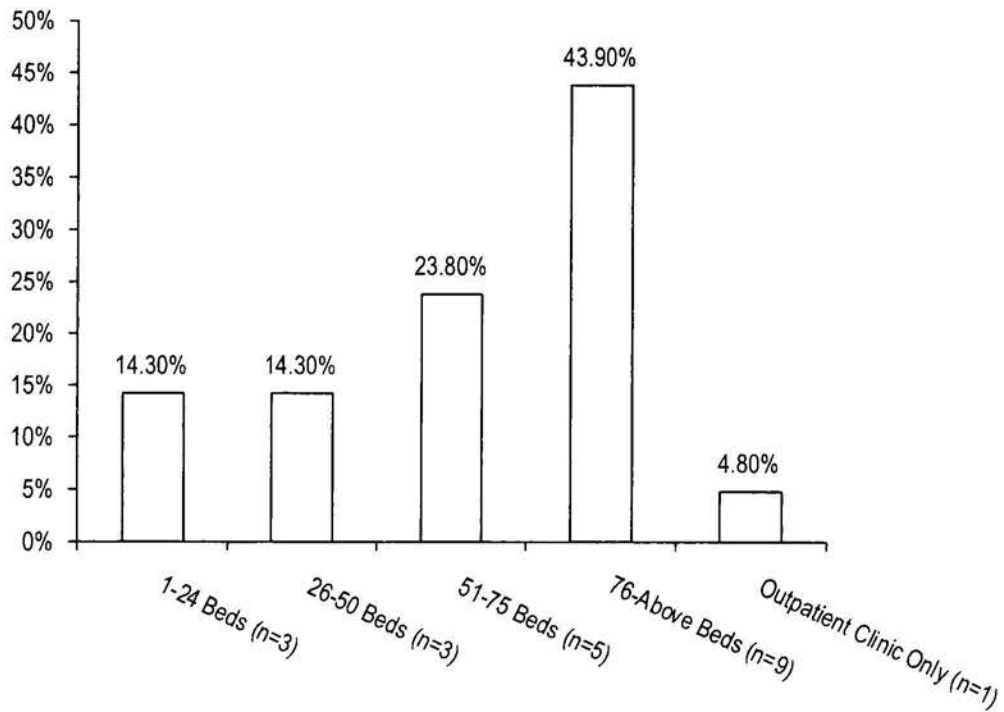


Figure 1. Distribution of medical facility size based on inpatients beds

Table 3.1 Average per month patient visits in outpatient clinics

Outpatients visits (Question # 2 & 3)	Mean/month	SD
Q2: Total patients seen in outpatient clinic	294.29	214.606
Q3: Total patients receiving cholesterol education	56.90	48.260

Table 3.2 Patient referral mechanisms for cholesterol education

Questions (4 & 5)	Responses (n=21) n (%)
Q4: The majority of the patients are referred by	
a. Primary care manager	18 (85.7%)
b. Dietitian	1 (4.8%)
c. Self referred	-
d. Unit Commander	-
e. Other	2 (9.5%)
Q5: Referral criteria at your facility for cholesterol education is primarily based on	
a. NCEP-ATP III criteria	3 (14.3%)
b. DOD/VA guidelines	3 (14.3%)
c. Laboratory values only	12 (57.1%)
d. Self referral due to risk factors	-
e. Other	3 (14.3%)

The majority (85.7%) of the patient referrals are generated by primary care manager (see Table 3.2). Two hospitals provided details on “other” category as a screening procedure established for soldiers arriving to duty station or upon return from deployment. The majority (57%) of the patients are referred to cholesterol education due to abnormal laboratory values. Other criteria for referral scored equally indicating clinical judgment of the treating primary care manager.

Table 3.3 Patient types for cholesterol education and mechanism to reach deployed soldiers.

Questions (6 & 12)	Responses (n=21) n (%)
Q6: The majority of the patients for cholesterol education are	
a. Active duty soldiers	9 (42.9%)
b. Dependants of soldiers	1 (4.8%)
c. Retirees	9 (42.9%)
d. Civilians	1 (4.8%)
e. Other	1 (4.8%)
Q12: Do you have a mechanism to reach deployed soldiers with elevated cholesterol and other cardiac risk factors?	
• Yes	5 (23.8%)
If yes, select the primary mechanism for cholesterol education	
a. American Heart Association Web-site	-
b. Internet classes	1 (4.8%)
c. Primacy care manager	3 (14.3%)
d. Printed material provided before deployment	-
e. Other	1 (4.8%)
• No	16 (76.2%)

Table 3.3 shows that the majority of the patients who attend cholesterol education were either active duty or retired soldiers. According to the dietitians' responses, 76% indicated lack of a mechanism to reach deployed soldiers for cholesterol education. The primary mechanism during deployment appears to be through the primary care manager.

Table 3.4 Cholesterol education program structure

Questions (7, 8, 9, 10 & 11)	Responses (n=21) n (%)
Q7: Primary mechanism of cholesterol education at your facility is through?	
a. Dietitians	19 (90.5%)
b. 91 M (enlisted soldier)	-
c. Diet Technician	-
d. Nursing staff	-
e. Multidisciplinary team	2 (9.5%)
Q8: Cholesterol education is provided by	
a. Group sessions	1 (4.8%)
b. Individual appointments	1 (4.8%)
c. Combination of group and individual	19 (90.5%)
Q9: Number of group sessions offered for cholesterol education	
a. One session	10 (47.6%)
b. Two sessions	7 (33.3%)
c. Three sessions	4 (19.0%)
d. Four sessions	-
e. More than four sessions	-
Q10: How much time is allocated for group session?	
a. 45 minutes	2 (9.5%)
b. 60 minutes	8 (38.1%)
c. 90 minutes	8 (38.1%)
d. More than 90 minutes	3 (14.3%)
Q11: How much time is allocated for individual patient counseling?	
a. Less than 30 minutes	-
b. 30 to 45 minutes	11 (52.4%)
c. More than 45 minutes	10 (47.6%)

Table 3.4 provides information on the dietitians' responses to the current cholesterol education program structure. The Registered Dietitians (90.5%) appeared to be the primary educators of CVD risk reduction. The education sessions consisted primarily (90.5%) of a combination of group and individual sessions. None of the participating hospitals provided more than four or more group sessions.

Table 3.5 Cholesterol education program content

Questions (13,15,16 & 17)	Responses (n=21) n (%)
Q13: Is the current cholesterol education at your facility based on	
a. NCEP-ATP III and AHA guidelines	
• Yes	13 (61.9%)
• No	3 (14.3%)
• Unsure	5 (23.8%)
b. American Dietetic Association, Medical Nutrition Therapy protocol	
• Yes	10 (47.6%)
• No	5 (23.8%)
• Unsure	6 (28.6%)
c. American Heart Association (AHA) guidelines	
• Yes	13 (61.9%)
• No	1 (4.8%)
• Unsure	7 (33.3%)
Q15: Do you discuss food sources of Omega 3 fatty acids?	
• Yes	20 (95.2%)
• No	1 (4.8%)
Q16: Do you discuss nutritional supplements with patients during cholesterol education?	
• Yes	14 (66.7%)
• No	7 (33.3%)
Q17a: Are you or other dietitians at your facility aware of “ Disorders of Lipid Metabolism Toolkit”	
• Yes	7 (33.3%)
• No	14 (66.7%)
If yes, has your facility used it?	
• Yes	1 (4.8%)
• No	11 (52.4%)
Q17b: Awareness and Use of ADA, Evidenced Based Library	
• Yes	16 (76.2%)
• No	5 (23.8%)
If yes, has your facility used it?	
• Yes	7 (33.3%)
• No	12 (57.1%)
Q18: Is the current program based on any established behavior change theory?	
• Yes	6 (28.6%)
• No	15 (71.4%)

Table 3.5 shows information on dietitians' responses to current cholesterol education program content. The majority (61.2%) of the dietitians indicated using NCEP-ATP III and AHA guidelines for their education protocols. The American Dietetic Association MNT protocol was used by 47.6% of the dietitians. Education on Omega 3 fatty acids was provided by 95.2% of the dietitians at their hospitals. Question 17 discussed the use of recently released Evidence-Based Guidelines by American Dietetic Association called "Disorders of Lipid Metabolism." Only 33.3% of the dietitians were aware of this toolkit with 4.8% of dietitians using it at their hospital. The dietitians were however aware of already established "Evidenced Based Library" from the American Dietetic Association as evidence by a 76% response to awareness of this tool; but the percent response reduced to 33.3% when the use of this tool was questioned.

Table 3.6 Patient health outcome data collection and patient feedback

Questions	Responses (n=21) n (%)
Q19: Do you collect outcome data?	
• Yes	9 (42.9%)
If yes, following data is collected	
a. Body Mass Index (BMI)	3 (14.3%)
b. Waist circumference	-
c. Blood pressure	1 (4.8%)
d. Laboratory tests: Lipid profile & fasting glucose	8 (38.1%)
e. Nutrition survey scores (diet recall, food frequencies, etc)	2 (9.5%)
f. Specific dietary changes (fat, cholesterol, fiber, etc)	2 (9.5%)
g. Monitor stages of change	1 (4.5%)
h. Changes in physical activity	2 (9.5%)
i. Smoking cessation	-
j. Changes in lipid lowering medications	-
k. Changes in hypertensive medications	-
l. Co-morbidities – DM, HTN, metabolic syndrome	-
m. Patient/client centered outcomes	-
n. Other	-
• No	12 (57.1%)
Q20: How does your facility track, analyze and report outcomes selected in Question 19?	
a. No outcomes data collected	12 (57.1%)
b. Use monitoring forms from “Disorders of Lipid Metabolism Toolkit”	1 (4.8%)
c. Locally designed spreadsheets	1 (4.8%)
d. Other	7 (33.3%)
Q21: Patient feedback or satisfaction with cholesterol education is obtained by?	
a. No mechanism	6 (28.6%)
b. Verbally by patients	5 (23.8%)
c. Clinic or facility surveys	8 (38.1%)
d. Other	2 (9.5%)

Table 3.6 shows the information on collection of outcome data that is useful to assess program effectiveness and efficacy. Fifty seven percent of the dietitians’ did not collect any outcomes data. In an open ended question on reasons hindering data collection, dietitians responded by indicating deployment issues, constant moving,

staffing shortages, lack of time, lack of mandate, insufficient administrative support and loss of patients to follow up. Question 21 provides information on collection of patient feedback or satisfaction data. Majority of the hospitals appeared to have an established mechanism to obtain this information.

Table 3.7 Dietitians opinions on current cardiac risk reduction programs

Question # 22	Very good n (%)	Good n (%)	Fair n (%)	Poor n (%)
How do you rate the current cholesterol management program?	2 (9.5%)	12 (57.1%)	7 (33.3%)	0%

Two thirds of the dietitians noted their current CVD program was “very good” or “good “ and one third indicated it as being “fair.” Listed in Table 3.8 the strengths and weakness of program mentioned by the dietitians.

Table 3.8 Dietitians comments on current program strengths and weaknesses

Q23: Strengths of current CVD risk reduction education	n=20
a. Program content	9
b. Multiple sessions	5
c. Referral system	2
d. Good accessibility	2
e. Improved screening mechanism	1
f. Interdisciplinary approach	1
Q24: Weaknesses of current CVD risk reduction education	n=21
a. Lack of collection of outcome data	6
b. Limited follow up by patients	4
c. Outdated protocol	3
d. Not individualized	3
e. Patients referred with incomplete lipid profile	1
f. Group sessions too long	1
g. Boring	1
h. Not interdisciplinary	1
i. Indicates need for standardized approach	1

Table 3.9 shows dietitians responses to current CVD nutrition education as strengths and weaknesses. Common themes were identified and responses were consolidated and ranked in descending order.

Table 3.9 Dietitians opinions on variation in nutrition education and current training on CVD management

Questions 25 & 26	Strongly agree n (%)	Agree n (%)	Neutral n (%)	Disagree n (%)	Strongly disagree n (%)
Q25: Education varies at each hospital	8 (38.1%)	9 (42.9%)	4 (19.0%)	0%	0%
Q26: Dietitians' knowledge on heart disease management is current?	5 (23.8%)	13 (61.9%)	3 (14.3%)	0%	0%

The majority (81%) of the dietitians agreed on the prevalence of variation in the CVD risk education at the US Army hospitals. The majority (86%) of the dietitians also agreed on the presence of current knowledge of heart disease management.

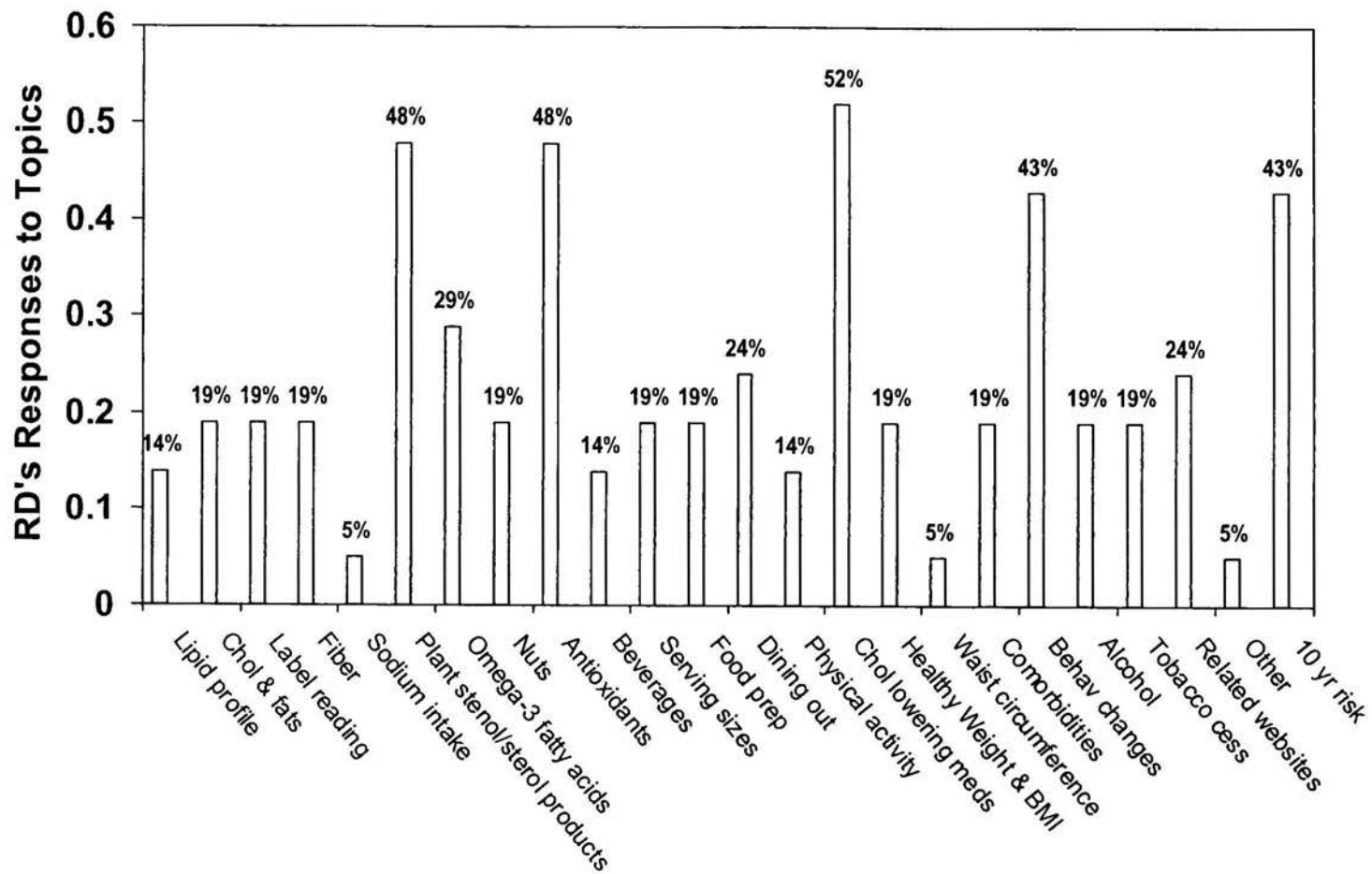


Figure 2. Dietitians' responses to nutrition education topics requiring assistance

The histogram (Figure.2) provides a graphic representation on dietitians' responses to topics they desired needing assistance with. The topics listed on x-axis are identified from the medical nutrition therapy guidelines and possible topics to discuss with patients during group or individual nutrition counseling sessions. The dietitians identified the top eight ranking needs for information as follows: cholesterol lowering medications; plant sterol/sterol products and antioxidants; behavior change techniques; calculating 10 year cardiac risk; Omega 3 fatty acids; dining out; and health related websites.

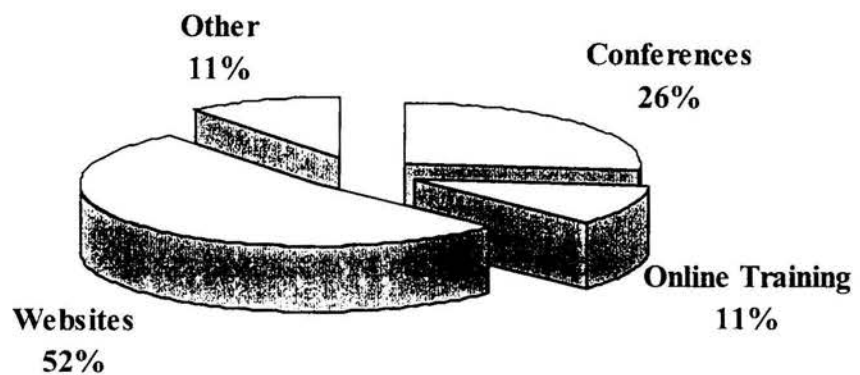


Figure 3. Mechanisms for dietitians to obtain CVD nutrition information

Figure 3 show that 52% of the dietitians maintained their current information by visiting websites. There was a 63% usage of a computer by dietitians to stay current with CVD management information.

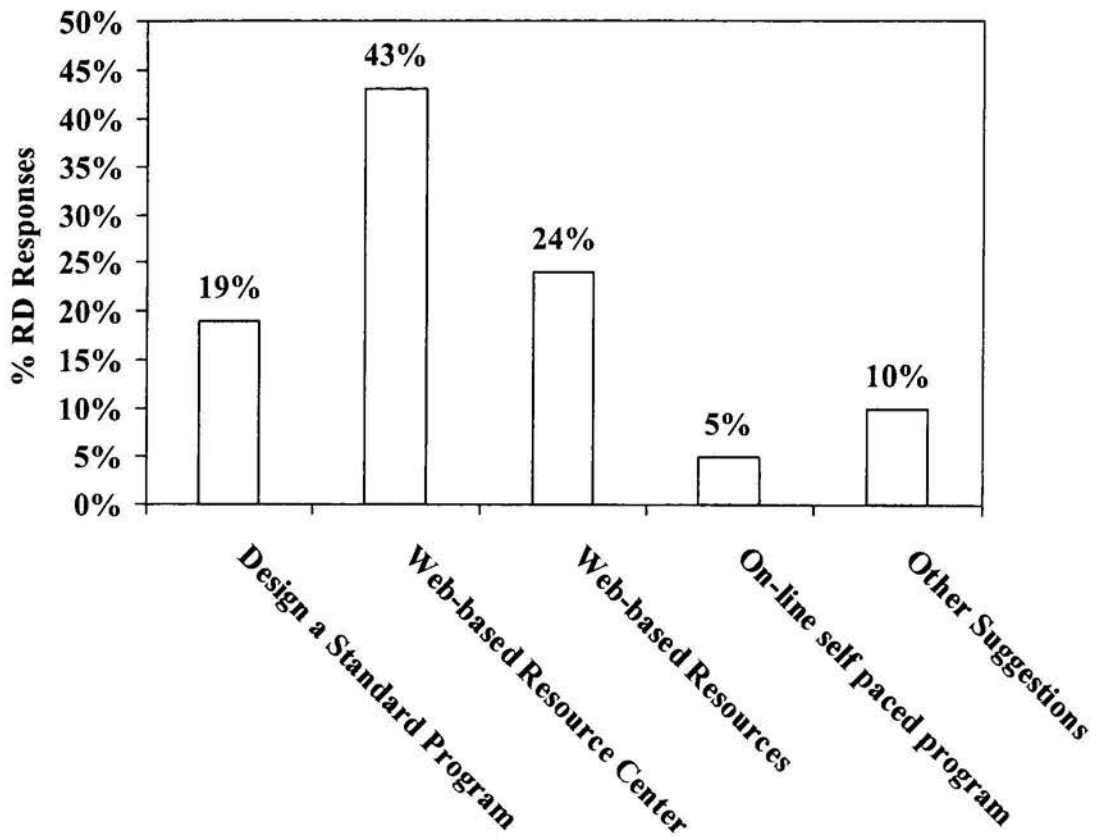


Figure 4. Dietitians responses to ideas on CVD risk reduction program enhancement

Figure 4 indicates dietitians' responses to program improvement ideas. The majority responded for a need for a web-based resource center with pertinent information where dietitians can pick and choose topics and tailor their program to have current guidelines and be easy to implement. This was followed by a self-paced education program that will be of benefit to deployed or remotely located soldiers.

These results provided an insight on Registered Dietitians (RDs) perspective on CVD risk reduction programs offered at U.S Army hospitals. The suggestions by RDs will be instrumental in future program enhancements.

CHAPTER V

DISCUSSION

The results of the formative assessment of cardiovascular risk reduction provided insight into the current administration of cholesterol education program at twenty-one U.S Army hospitals. It is critical to recognize that the basis of this assessment is dependent upon the responses received. A potential exists, with doing surveys that detecting intricate details may be difficult. This assessment was an attempt to understand key issues surrounding cholesterol education programs and to initiate steps for program enhancement. More formative qualitative evaluation is needed to obtain more specific suggestions.

Understanding the current management of CVD risks is critical to align the existing programs to guidelines recommended by various organizations as discussed in chapter two earlier. In the present study, the majority of the dietitians participated from larger facilities as evidenced by larger inpatient beds. There was a larger variation in the number of outpatients seen and the number reduced for patients receiving cholesterol education. Approximately, 19% of the outpatient visits pertained to cholesterol education. However, with the Department of Defense emphasis on increased screening of cholesterol and high blood pressure to meet the Healthy People 2010 goals, these numbers will change dramatically. According to dietitians' responses, 85.7 % of the nutrition referrals were generated by the primary care manager. These results indicate most of the CVD risk reduction in Army hospitals occurs in the clinical settings. These

data may however be skewed because only 5% of the dietitians' responses were from outpatient settings. Two hospitals obtained referrals from a screening performed outside the hospital when soldiers report to a new duty station. The large standard deviation in patients counseled could be due to differences in procedures at various hospitals in screening and referral generation.

The majority (57%) of the patients' referrals for nutrition education appeared to be based on abnormal lipid profiles. Few other facilities incorporated guidelines provided by NCEP-ATPIII and DoD/VA guidelines. This study showed that the majority of the patients who attended cholesterol education consisted of either active duty or retired soldiers. Civilians and family members of the soldiers represented a smaller proportion of patients attending cholesterol education programs. The dietitians (76%) reported a lack of a mechanism to provide CVD risk education to soldiers in a deployed status. Few hospitals were able to reach these soldiers through printed materials provided at the clinics and primary care manager provided this information to soldier before or after deployment. Less frequently used resources were e-mails and web-sites links. A quarter of the dietitians suggested development of a self-paced web-based option for soldiers and other beneficiaries who cannot attend the hospital offered program as a way to enhance the existing program.

Studies have demonstrated improvement in lipid profile and other CVD risk factors improvement with multiple sessions in healthful lifestyle [18-20]. The Army hospitals in the present study are in-line with this evidenced based finding; 91% patients receive a combination of individual and group sessions. This type of program structure will provide the social reinforcement and an opportunity to tailor the messages to

individual patients' condition and learning ability. Sixty two percent of the dietitians report their education protocol is consistent with NCEP ATP III and American Heart Association guidelines. Twenty four percent of the dietitians were unsure about the protocol used for cholesterol education. Use of NCEP-ATP III and AHA was higher than the use of American Dietetic Association recommended Medical Nutrition Therapy plan. Most of the dietitians (95%) discussed Omega 3 fatty acids and 67% discussed nutritional supplements during cholesterol education sessions. The food sources of Omega 3 fatty acids predominantly discussed were fish, flax, and walnuts. The most commonly discussed supplements were fish oil and flaxseed oil.

The "Disorders of Lipid Metabolism Toolkit" is a recently released evidenced based guideline for management of CVD from the American Dietetic Association [3]. The awareness of existence of this toolkit was among only 33% of the dietitians. Poor adoption could be due to barriers of cost involved in purchasing this toolkit. Awareness towards this toolkit will improve with time since 76% of the dietitians were aware of the American Dietetic Association's Evidence-Based Library. This toolkit is posted on the Evidenced Based Library and it is anticipated that potential future review or use in patient care will occur.

Several studies involving behavior modification and improvement in self-efficacy have suggested use of a behavior change theory [24, 35]. The majority (71%) of CVD nutrition education at Army hospitals appears to lack the basis of a behavior change theory. Twenty-nine percent of the hospitals that incorporate a behavior change theory indicated use of Stages of Change in the education process.

Collection of outcome data is essential to demonstrate the effectiveness of the program and clear identification of areas to focus. Army dietitians have a dual responsibility of performing duties of a Registered Dietitian and as an officer performing other leadership position tasks. Based on the dietitians' responses it appears there is lack of a standard established mechanism to collect, track and report outcome data parameters. Some of the reasons stated were support staff deployments, staffing shortages, lack of time, and few patients, lose to follow up care and lack of administrative support. Other dietitians indicated a plan to initiate outcome tracking and stated lack of a mandate to collect outcome data. Hospitals that collected outcomes mentioned a variety of mechanisms on how they track such data. Few dietitians use a standard program, some record laboratory tests, in patients' records and others indicated collection of data but it was not analyzed yet. Twenty-nine percent of the dietitians who indicated collecting outcome data, collected information on laboratory tests, body mass index, nutrition survey scores, dietary changes, and changes in physical activity. One of the newly recognized and easy to monitor parameter is waist circumference; currently none of the hospitals collected this measure on a regular basis.

Studies have shown that the patients are usually satisfied with the education on lifestyle changes [7]. In the current study, patient feedback and satisfaction information was obtained by a majority of the hospitals. Only 29% of the hospitals indicated a lack of mechanism for obtaining patient feedback. Obtaining patient feedback is critical for on-going program enhancement.

Dietitians at Army hospitals identified the following features as adding strength to their respective programs to include program content, multiple sessions, referral system,

accessibility, improved screening mechanism, and interdisciplinary approaches. Features of a program that were considered as weaknesses are as follows: lack of outcome data collection, limited patient follow up care, outdated protocol, program not individualized, lengthy group sessions, not interdisciplinary, boring, and a need for a standardized approach. Dietitians are leaders in preventive services and are in a position to provide valuable insight on program strengths and weaknesses.

The majority of the dietitians expressed their opinion on variability in cholesterol education at different Army hospitals. This variation in programs does not imply suboptimal care. Earlier information discussed variation in referral criteria, protocol used, program structure and outcome data collection. The key issue is aligning the existing cholesterol program to current guidelines established by NCEP-ATP III, ADA MNT protocols and AHA. The lack of outcome data and standardized protocol results in an inability to establish program effectiveness and efficacy. The results revealed that dietitians primarily used computer and online resources to stay current with CVD risk management education. Army dietitians are often challenged with limited resources and issues with deployment resulting in barriers to data collection, analyzing and reporting outcomes.

The purpose of this study was to identify the extent of compliance of current cholesterol education in Army hospital to the established guidelines and involve dietitians in exploring avenues for program improvement for the soldiers. Dietitians selected a web-based resource center for them to access pertinent current information. Dietitians prefer the flexibility to select a topic and tailor the program to their hospitals and ultimately to individual patients. The suggestion of a web-site for dietitians could be a

feasible solution because it will provide easy access whenever needed. Enhanced tools will result in reduction of dietitians' time in searching for information and more time to counseling patients on ways to reduce cardiac disease risk. The Army dietitians also suggested the availability of a web-based, self-paced education program for the soldiers and other beneficiaries who cannot attend facility offered programs. Development of web-based programs is also a viable solution in this age of increased internet use and use of computers in military. More and more studies are being conducted to evaluate the effectiveness of web-based interventions and have expressed challenges with respect to adoption of behaviors.

Cardiovascular disease is a disease of massive magnitude; therefore, a multifactorial approach in management of this disease should be considered. Patients who are unable to attend the traditional nutrition education classes or individualized counseling offered on outpatient basis are still unaware of the importance of CVD management. The use of computer technology will assist in reaching that segment of military beneficiaries who are ready to make a lifestyle changes and are motivated to use self-help methods. In addition, this technology could provide a refresher course and supplement the existing cholesterol education program. Use of communication interventions has potential of improving adherence, patient satisfaction, and decrease resources used [36].

CHAPTER VI

CONCLUSIONS

There is an urgent need to address the ever increasing risk factors of CVD, the leading killer of American. The U.S military personnel have similar CVD risk factors as the general population. Emphasis is required to maintain optimal health of the military personnel due to its profound impact on readiness and mission accomplishment. This study on formative assessment of the existing CVD nutrition education was the first step toward examining the current CVD programs in US Army hospitals. This study involved the Registered Dietitians since they are the primary educators of CVD risk reduction in Army hospitals. The study identified two key areas for program enhancement by providing web-based current information for dietitians and establishment of an alternate mechanism of CVD risk reduction educations for deployed and remotely located soldiers.

Recommendations

1. To conduct future research and design a web-based resource center for dietitians. This web-site will serve as a primary source of current information needed to manage CVD in military personnel.
2. There is a need for a web-based self-paced CVD risk reduction and management education program for deployed soldiers. This web-site will serve other populations who are remote and cannot attend hospital offered education session.
3. To set up a mechanism that will allow collection of critical outcome measures to evaluate program effectiveness.

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APPENDIX A
NEEDS ASSESSMENT SURVEY

Department of Food Science and Human Nutrition

College of Applied Human Sciences

234 Gifford Building

502 West Lake Street

1571 Campus Delivery

Fort Collins, Colorado 80523-1571

Office: (970) 491-3663 FOOD

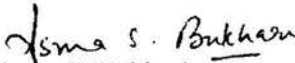
FAX: (970) 491-3875 or (970) 491-7252

website: www.caahs.colostate.edu/fshn

**MEMORANDUM Thru COL Maria Worley, Chief, Army Dietitian
FOR Army Dietitians with Cholesterol Education Experience**

SUBJECT: Pilot Study to Establish Reliability of a Survey to Assess Cholesterol Education Strategies in US Army Hospitals

1. You are invited to complete a needs survey as part of a research project entitled "Assessment of Nutrition Education Strategies to reduce Cardiac Risk in U.S. Army Hospitals" for MAJ Asma Bukhari, an active duty Army dietitian, who is currently pursuing a MS/Ph.D at the Colorado State University. The purpose of this needs survey is to assess the existing cholesterol education (classes and individual sessions) offered at various Army medical facilities. Some of you may not be directly involved with cholesterol education at this time. You can use information from one of your previous assignment where you may have been involved with cholesterol education. Information obtained from the survey will assist in identifying best practices and program enhancement for dietitians and most of all our patients.
2. The survey will take approximately 30 minutes to complete. Participation in this research study is strictly voluntary. Completing and returning the survey implies your consent to participate in this study. There are no known risks and an electronically submitted survey remains anonymous since it does not disclose the sender's name. Confidentiality will be maintained and only the investigator will have access to survey responses. The data will be securely stored and reported as aggregate data without identifying any participants.
3. Pilot testing instructions: The purpose of pilot testing is to establish reliability of the survey prior to actual fielding of the survey to the Chiefs of Clinical Nutrition Services. The pilot survey will be administered two times (pre test and post test). The investigator will electronically send out the pre and post test to all the pilot study participants. Please select a unique code for your survey and use the same code for pre-test and post-test.
4. I am very appreciative and grateful for your assistance with my pilot study. I need your valuable professional judgments, opinions and suggestions to conduct a useful needs assessment. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem, Human Research Administrator, at 970-491-1655. Please note that it is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. Questions related to the research study may be directed to the principal investigator, Jennifer Anderson, Ph.D., Professor in the Department of Food Science and Human Nutrition at 970-491-7622 or the co-Principal Investigator, Major Asma Bukhari, at 970-669-1932 or abukhari@lamar.colostate.edu. Thank you!


Asma S. Bukhari
Major, SP
U.S. Army

Research Topic

ASSESSMENT OF NUTRITION EDUCATION STRATEGIES TO REDUCE CARDIAC RISK IN US ARMY HOSPITALS

Principal Investigator: Dr. Jennifer Anderson, Professor, Ph.D

Co- Investigator: MAJ Asma Bukhari, MS/Ph.D Student,
Colorado State University, Fort Collins, Colorado

Assessment of cardiac risk reduction in this survey refers to lowering of blood lipids. The purpose of this survey is to assess the existing cholesterol education offered at various Army hospitals. Cholesterol education includes group sessions and individual counseling nutrition sessions. This information will assist in identifying best practices and weakness in the current nutrition education strategies used at various Army hospitals. The survey will take approximately 30 minutes to complete.

Instructions for pilot study participants:

- **Your participation is greatly appreciated. Pilot surveys will assist in establishing reliability to the final survey that will be administered to clinical chief dietitian at the Army hospitals.**
- **Please use the information from your previous assignment if you are not currently involved in cholesterol education.**
- **You will be requested to complete this survey two times (pre-test and post-test).**

Important: Please select a unique code that you can easily remember (example: mother's or your initials). It is critical that you use the same code for pre-test and post-test pilot surveys.

Unique code: _____ (3 letters).

1. Your medical facility size (select one)
 - 1-25 beds
 - 26-50 beds
 - 51-75 beds
 - 75 beds and above
 - Outpatient clinic only
2. Total patients seen in outpatient nutrition clinic average per month _____
3. Total patients receiving cholesterol education average per month _____
4. The majority of the patients are referred by (select one)
 - PCM
 - Dietitian
 - Self- referred
 - Unit Commander
 - Other: _____

5. Please explain the referral criteria at your facility for cholesterol education

6. The majority of the patients for cholesterol education are (select one)
- Active duty soldiers
 - Dependants of soldiers
 - Retirees
 - Civilians
 - Other: _____
7. Cholesterol education is provided by (select all choices that applies)
- Dietitian
 - 91M (enlisted soldier)
 - Diet technician
 - Nursing staff
 - Multidisciplinary team
 - i. Please specify the team members: _____
 - Other, please specify: _____
8. Cholesterol education is provided by
- Group sessions
 - i. Number of sessions _____
 - ii. Length of time for each session _____
 - Individual appointment with dietitian
 - i. Number of sessions _____
 - ii. Length of time for each session _____
 - Combination of group and individual
 - i. Number of sessions: group _____ Individual _____
 - ii. Length of time for each session group _____ Individual _____
 - Other
 - i. Please specify: _____
9. Do you have patients who cannot attend the cholesterol management classes or individual appointment due to deployment?
- Yes
 - No
 - Unsure
10. Are there other mechanisms available for the deployed soldiers to learn about managing elevated cholesterol?
- Yes
 - i. If Yes, please specify: _____
 - No
 - i. If No, do you have suggestions to assist these patients?

 - Unsure
11. Is the current cholesterol education protocol based on
- | | | | |
|--|-----|----|--------|
| <input type="checkbox"/> NCEP- ATP III guidelines (released in 2000) | Yes | No | Unsure |
| <input type="checkbox"/> ADA MNT Protocol (current) | Yes | No | Unsure |

▫ AHA revised recommendations (2006) Yes No Unsure

12. Please check the topics covered during cholesterol education

- CHD risk factors
- Estimating 10 year risk for CHD
- Lipid profile
- Types of Cholesterol
- Types of fats
- Trans fat
- Label reading
- Fiber
- Fruit and vegetable intake
- Sodium intake
- Plant stanol or sterol products
- Nuts
- Antioxidants
- Beverages with added sugar
- Serving sizes
- Food preparation
- Physical activity
- Cholesterol lowering medications
- Healthy weight
- BMI
- Waist circumference
- Other co morbidities – diabetes, metabolic syndrome, hypertension and obesity
- Behavior modification
- Alcohol intake
- Tobacco cessation
- Related websites for further reading
- Other: _____

13. Do you discuss food sources of Omega 3 fatty acids?

- Yes
 - i. If yes, which ones? _____
- No
- Unsure

14. Do you discuss nutrition supplements with your patients during cholesterol education? (Include supplements patients inquire about)

- Yes.
 - i. If yes, Please specify the top 3 supplements you discuss
(1) _____ (2) _____ (3) _____
- No

15. Are you or other dietitians at your facility aware of

- | | | | |
|--|-----|----|--------|
| ▫ Disorders of Lipid Metabolism Toolkit? | Yes | No | Unsure |
| i. If yes, have they used it? | Yes | No | Unsure |
| ▫ ADA, Evidence Based Library? | Yes | No | Unsure |
| i. If yes, have they used it? | Yes | No | Unsure |

16. Is the current program based on any established behavior change theory (example: stages of change)?

- Yes
 - i. If yes, specify: _____
- No
- Unsure

17. Do you collect any of the outcome data listed below? (Check all that applies).

- None of the below listed measures
 - i. Please specify what is preventing data collection: _____
- BMI
- Waist circumference
 - i. Do you measure waist circumference? Yes/No
- Blood pressure
- Lipid profile (Fasting blood cholesterol, triglycerides, LDL-C, HDL-C)
- Fasting glucose
- Nutrition survey score – (MEDFICTS, food frequencies, diet recall, etc)
 - i. Please specify: _____
- Specific dietary changes – fats, cholesterol, carbohydrates, protein, total calories, fiber, eating out,
 - i. Please specify: _____
- Monitor stages of change
- Changes in physical activity
- Smoking cessation
- Changes in lipid lowering meds
- Changes in HTN meds
- Co morbidities – DM, HTN, metabolic syndrome
- Patient/client centered outcomes
- Other: Please specify

18. How do you track individual patient outcomes?

- By reviewing previous MNT notes from medical record
- Use monitoring forms from “Disorders of Lipid metabolism Toolkit”
- Locally designed spreadsheet for collecting and tracking data
- Other, specify: _____

19. The outcome data collected is usually

- Analyzed
 - i. Yes
 - If Yes, please specify how it is done: _____
 - ii. No
 - If No, please specify what is preventing data analysis? _____
- Reported
 - i. Yes
 - If yes, please specify how it is done: _____
 - ii. No
 - If No, please specify what is preventing data analysis? _____

20. Do you obtain patient feedback on the cholesterol education?
- Yes
 - i. If yes, please specify how you obtain this information? _____
 - No
21. At your facility are dietitians allowed to order laboratory test for cholesterol management?
- Yes
 - i. If yes, please specify the tests ordered: _____
 - No
 - i. If No, please specify the reason: _____
22. At your facility dietitians monitor laboratory test for cholesterol management?
- Yes
 - i. If Yes, please specify which ones: _____
 - No
 - i. If No, please specify the reason: _____
23. How do you rate the current cholesterol management program?
- Very good
 - Good
 - Fair
 - Poor, needs improvement
24. Please state a strength of your cholesterol education
- _____
25. Please state a weaknesses of your cholesterol education
- _____
26. In your experience, cholesterol education varies from installation to installation?
- Strongly agree
 - Agree
 - Neutral
 - Disagree
 - Strongly disagree
27. Do you feel that the knowledge of your facility clinical dietitians in heart disease management is current?
- Strongly agree
 - Agree
 - Neutral
 - Disagree
 - Strongly disagree
28. How do you stay current with this nutrition topic
- Use ADA Evidence Based Library
 - Attend ADA meetings
 - Attend other professional meetings
 - Take online courses

- Continuing education offerings
- Other: _____

29. Here are some ideas on program enhancement. Please check the ones you like

- A totally revised standardized cholesterol education protocol
- Web based cholesterol education program
- A self paced program for patients who cannot attend the classes
- Newsletters on cholesterol lowering practices
- Other: _____

Please feel free to write any additional information about the existing program.

I am particularly interested in knowing your needs on how I can assist you and other Army dietitians in delivering an effective, state of art cholesterol management program to our patients.

- _____

Note: (Not for pilot study phase). Please send me cholesterol education materials you currently use via e-mail or by regular mail. The addresses for e-mail and mailing are provided in the cover letter. The more information I receive the better would be my assessment of your needs and a better program for our patients receiving care in US Army hospitals.

**Reminder: Please remember to use the
same unique code for the post test.
You will be receiving post-test electronically
in a few weeks.**

Your contribution to this research study is greatly appreciated.

THANK YOU!

APPENDIX B
PILOT STUDY RESULTS

PILOT STUDY RESULTS

Test: 23 surveys completed
 Re-test: 16 surveys completed
 Matches: 16 used of data analysis

Agreements/agreements + disagreements

Questions	n	Agreements/ Agreements + Disagreements
Q1: Demographics: Facility size	16	0.812
Q2: Total outpatients average per month	16	0.6
Q3: Total patients receiving cholesterol education average/ month	16	.533
Q4: Referral for cholesterol education	16	1.0
Q6: Patients in cholesterol education	16	0.75
Q7: Cholesterol education – provider	16	
a. Dietitian		1.0
b. 91M (enlisted soldier)		1.0
c. Diet technician		1.0
d. Multidisciplinary staff		0
e. Other		0.667
Q8: Cholesterol education – structure	16	
a. Group sessions		0.8
b. Individual appointments		0
c. Combination: group+ individual sessions		0.78
d. Other		0.50
Q9: Deployment: Cannot attend cholesterol education	16	.75
Q10: Deployment: Cholesterol education mechanisms	16	.688
Q11: Cholesterol education protocol	16	
e. NCEP		0.875
f. ADA		0.875
g. AHA		0.812
Q12: Cholesterol education topics		
a. CHD risk factors	16	1.0
b. Estimating 10 year risk of CHD	4	0.5
c. Lipid profile test	15	1.0
d. Types of cholesterol	16	0.938
e. Types of fats	16	1.0
f. Trans fat	16	1.0
g. Label reading	16	1.0
h. Fiber	16	1.0
i. Fruits and vegetables	16	1.0
j. Sodium intake	13	0.769
k. Plant sterols and stenol products	13	0.769
l. Nuts	13	1.0
m. Antioxidants	11	0.818
n. Beverages with added sugar	12	0.833
o. Serving sizes	15	1.0
p. Food preparation	15	0.867
q. Physical activity	16	0.875
r. Cholesterol education medications	7	0.875
s. Healthy weight	15	0.876
t. BMI	11	0.818
u. Waist circumference	8	0.395
v. Co morbidities	11	0.727
w. Behavior modification	13	0.846
x. Alcohol intake	14	0.857

y. Tobacco cessation	12	0.917
z. Related websites	11	0.909
aa. Other	3	0.667
Q13: Discuss Omega 3 fatty acids	16	0.938
Q14: Discuss nutritional supplements	16	0.875
Q15: Awareness of current cholesterol education resources		
a. Disorders of Lipid Metabolism Toolkit (awareness)	16	0.688
a. If yes, has your facility used this toolkit?	10	0.40
b. ADA Evidence Based Library (awareness)	16	0.938
a. If yes, has your facility used it?	9	0.6
Q16: Use of behavior change theory	16	0.875
Q17: Outcomes data: Collection		
a. None of the measures	7	0.857
b. BMI	8	0.375
c. Waist circumference	0	-
d. Blood pressure	8	0.125
e. Lipid profile	11	0.818
f. Fasting glucose	6	0.667
g. Nutrition survey scores	4	0.75
h. Specific dietary changes	4	0.5
i. Monitor stages of change	0	-
j. Changes in physical activity	8	0.375
k. Smoking cessation	5	0.8
l. Changes in lipid profile	6	0.333
m. Changes in HTN medications	2	0.5
n. Co morbidities – DM, HTN, metabolic syndrome	5	0.4
o. Patient/client centered outcomes	2	1.0
p. Other	0	-
Q18: Outcomes data: Tacking procedure		
a. Previous MNT notes from medical record	9	0.557
b. Monitoring forms from “Disorders of lipid metabolism Toolkit”	0	-
c. Locally designed spreadsheets	4	0.25
d. Other	3	0.333
e. Do not document patient outcomes	8	0.375
Q19: Outcomes data: Analysis		
a. Analyzed	16	0.875
b. Reported	16	1.0
Q20: Cholesterol education: Patient feedback	16	0.875
Q21: Laboratory tests: Do RD’s monitor	16	1.0
Q22: Laboratory tests: Monitoring	16	1.0
Q23: Rate your current cholesterol education	16	0.875
Q26: Variability in cholesterol education	16	0.625
Q27: Dietitians knowledge of heart disease management	16	0.938
Q28: Dietitians stay current with cardiovascular nutrition information		
a. Attend ADA meetings	8	0.75
b. Attend other professional meetings	9	0.333
c. Take online courses	5	0.2
d. Continuing education offerings	13	0.615
e. Other	6	0.667
Q29: Ideas on program improvement		
a. A totally revised standardized program	14	0.643
b. Web based cholesterol education program	10	0.6
c. A self paced program for patients who cannot attend the classes	9	0.556
d. Newsletters on cholesterol lowering practices	10	0.5
e. Other	3	0


APPENDIIX C
HUMAN SUBJECTS APPROVALS

Notice of Approval for Human Research

Principal Investigator: Jennifer Anderson, FSHN, 1571
Co-Principal Investigator: Asma Bukhari, FSHN, 1571

Title: Assessment of Nutrition Education Strategies to Reduce Cardiac Risk in the U.S. Army Hospitals

Protocol #: 06-200H **Funding Source:** N/A
Number approved: 20 pilot study participants; 40 study participants
Committee Action: Approved on: September 1, 2006 Expires: August 16, 2007

HRC Administrator: Janell Meldrem 

Consent Process:

Because of the nature of this research, it will not be necessary to obtain a signed consent form. However, all subjects must receive a copy of the approved cover letter printed on department letterhead. The requirement of documentation of a consent form is waived under § __.117(c)(2).

Conditions:

The IRB approval from the Army Human Subjects Review Board must be obtained and submitted to the CSU HRC prior to data collection. Any changes that may be requested from the Board must be submitted to the CSU HRC as an amendment.

Investigator Responsibilities:

- It is the PI's responsibility to obtain consent from all subjects.
- It is the responsibility of the PI to immediately inform the Committee of any serious complications, unexpected risks, or injuries resulting from this research.
- It is also the PI's responsibility to notify the Committee of any changes in experimental design, participant population, consent procedures or documents. This can be done with a memo describing the changes and submitting any altered documents.
- Students serving as Co-Principal Investigators must obtain PI approval for any changes prior to submitting the proposed changes to the HRC for review and approval.
- The PI is ultimately responsible for the conduct of the project.
- A status report of this project will be required within a 12-month period from the date of review. Renewal is the PI's responsibility, but as a courtesy, a reminder will be sent approximately two months before the protocol expires. The PI will be asked to report on the numbers of subjects who have participated this year and project-to-date, problems encountered, and provide a verifying copy of the consent form or cover letter used. The necessary continuation form (H-101) is available from the RCO web page www.research.colostate.edu/rcoweb/.
- Upon completion of the project, an H-101 should be submitted as a close-out report.
- If approval did not accompany a proposal when it was submitted to a sponsor, it is the PI's responsibility to provide the sponsor with the approval notice. This approval is issued under Colorado State University's OHRP Federal Wide Assurance 00000647.
- **Should the protocol not be renewed before expiration, all activities must cease until the protocol has been re-reviewed.**

Please direct any questions about the Committee's action on this project to me for routing to the Committee. Additional information is available from the Regulatory Compliance web site at <http://www.research.colostate.edu/rcoweb/>.

Attachment

Date of Correspondence: 9/6/06

Enclosure # 1: Revised Cover letter

Research Title: Assessment of Nutrition Education Strategies to Reduce Cardiac Risk in US Army Hospitals

PI: Dr. Jennifer Anderson, FSHN

CO PI: MAJ Asma Bukhari, FSHN

MEMORANDUM Thru COL Maria Worley, Chief, Army Dietitian
FOR Chief, Clinical Nutrition Division, Army MTFs

SUBJECT: Needs Assessment Survey of Cholesterol Education Strategies

1. You are invited to complete a needs survey as part of a research project entitled "Assessment of Nutrition Education Strategies to reduce Cardiac Risk in U.S Army Hospitals" for MAJ Asma Bukhari, an active duty Army dietitian, who is currently pursuing a MS/Ph.D at Colorado State University. The purpose of this needs survey is to assess the existing cholesterol education (classes and individual sessions) offered at various Army medical facilities. This survey is to be completed primarily by the Chief of the Nutrition Clinical Services. However, you are welcome to involve other dietitians at your hospital to obtain their valuable opinions and suggestions. This information will assist in identifying best practices and program enhancement.
2. Participation in this research study is strictly voluntary. Each medical facility will receive only one survey and therefore maximum response is critical and valuable. Completing and returning the survey implies your consent to participate in this study. There are no known risks and electronically submitted surveys remains anonymous since it does not disclose sender's name. Confidentiality will be maintained and only the investigator will have access to survey responses. The data will be securely stored and reported as aggregate data without identifying any participant or site.
3. The survey will take approximately 30 minutes to complete. I appreciate your valuable time spent completing this survey. Your input will be an important milestone in program enhancement that will benefit all Army dietitians and most important our patients. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem, Human Research Administrator, at 970-491-1655. Please note that it is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. Questions related to the research study may be directed to the principal investigator, Jennifer Anderson, Ph.D., Professor in the Department of Food Science and Human Nutrition at 970-491-7622 or to the co-principal investigator, Major Asma Bukhari, at 970-669-1932 or via e-mail at abukhari@lamar.colostate.edu.
4. Note: Please mail (UPS or e-mail) the education material and forms you use at your facility for cholesterol management. This information will assist in better assessment of your needs and a better program for our patients. Mailing Address: Asma Bukhari, Graduate Student, 234 Gifford Building, 502 West Lake Street, 1571 Campus Delivery, Fort Collins, Colorado 80523-1571. AKO: asma.s.bukhari@us.army.mil. Thank you!

Asma S. Bukhari
Major, SP
U.S. Army

Enclosure # 2: Pilot Study Cover letter

Research Title: Assessment of Nutrition Education Strategies to Reduce Cardiac Risk in US Army Hospitals

PI: Dr. Jennifer Anderson, FSHN

CO PI: MAJ Asma Bukhari, FSHN

MEMORANDUM Thru COL Maria Worley, Chief, Army Dietitian
FOR Army Dietitians with Cholesterol Education Experience

SUBJECT: Pilot Study to Establish Reliability of Surveys to Assess Cholesterol Education Strategies in US Army Hospitals

1. You are invited to complete a needs survey as part of a research project entitled "Assessment of Nutrition Education Strategies to reduce Cardiac Risk in U.S Army Hospitals" for MAJ Asma Bukhari, an active duty Army dietitian, who is currently pursuing a MS/Ph.D at Colorado State University. The purpose of this needs survey is to assess the existing cholesterol education (classes and individual sessions) offered at various Army medical facilities. Some of you may not be directly involved with cholesterol education at this time. You can use information from one of your previous assignment where you may have been involved with cholesterol education. This information will assist in identifying best practices and program enhancement for dietitians and most of all our patients.
2. The survey will take approximately 30 minutes to complete. Participation in this research study is strictly voluntary. Completing and returning the survey implies your consent to participate in this study. There are no known risks and electronically submitted surveys remains anonymous since it does not disclose sender's name. Confidentiality will be maintained and only the investigator will have access to survey responses. The data will be securely stored and reported as aggregate data without identifying any participants.
3. Pilot testing instructions: The purpose of pilot testing is to establish reliability of the survey prior to actual fielding of the survey to the Chiefs of Clinical Nutrition Services. The pilot survey will be administered two times (pre test and post test). The investigator will electronically send out the pre and post test to all the pilot study participants. The information from pre and post test will be statistically analyzed and will be instrumental ensuring the final survey is a reliable tool.
4. I am very appreciative and grateful for your assistance with my pilot study. I need your valuable professional judgments, opinions and suggestions to conduct a useful needs assessment. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem, Human Research Administrator, at 970-491-1655. Please note that it is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. Questions related to the research study may be directed to the principal investigator, Jennifer Anderson, Ph.D., Professor in the Department of Food Science and Human Nutrition at 970-491-7622 or the co-Principal Investigator, Major Asma Bukhari, at 970-669-1932 or abukhari@lamar.colostate.edu. Thank you!

Asma S. Bukhari
Major, SP
U.S. Army

Department of Food Science and Human Nutrition
College of Applied Human Sciences
234 Gifford Building
502 West Lake Street
1571 Campus Delivery
Fort Collins, Colorado 80523-1571
Office: (970) 491-3663 FOOD
FAX: (970) 491-3575 or (970) 491-7252
website: www.cahs.colostate.edu/tshn

MEMORANDUM Thru COL Maria Worley, Chief, Army Dietitian
FOR Chief, Clinical Nutrition Division, Army MTFs

SUBJECT: Survey on Needs Assessment of Cholesterol Education Strategies

1. You are invited to complete a needs survey as part of a research project entitled "Assessment of Nutrition Education Strategies to reduce Cardiac Risk in U.S Army Hospitals" for MAJ Asma Bukhari, an active duty Army dietitian, who is currently pursuing a MS/Ph.D at Colorado State University. The purpose of this needs survey is to assess the existing cholesterol education (classes and individual sessions) offered at various Army medical facilities. This survey is to be completed primarily by the Chief of the Nutrition Clinical Services. However, you are welcome to involve other dietitians at your hospital to obtain their valuable opinions and suggestions. This information will assist in identifying best practices and program enhancement.
2. Participation in this research study is strictly voluntary. Each medical facility will receive only one survey and therefore maximum response is critical and valuable. Completing and returning the survey implies your consent to participate in this study. There are no known risks and electronically submitted surveys remains anonymous since it does not disclose sender's name. Confidentiality will be maintained and only the investigator will have access to survey responses. The data will be securely stored and reported as aggregate data without identifying any participant or site.
3. The survey will take approximately 30 minutes to complete. I appreciate your valuable time spent completing this survey. Your input will be an important milestone in program enhancement that will benefit all Army dietitians and most important our patients. If you have any questions about your rights as a volunteer in this research, contact Janell Meldrem, Human Research Administrator, at 970-491-1655. Please note that it is not possible to identify all potential risks in an experimental procedure, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. Questions related to the research study may be directed to the principal investigator, Jennifer Anderson, Ph.D., Professor in the Department of Food Science and Human Nutrition at 970-491-7622 or to the co-principal investigator, Major Asma Bukhari, at 970-669-1932 or via e-mail at abukhari@lamar.colostate.edu.
4. Note: Please mail (UPS or e-mail) the education material and forms you use at your facility for cholesterol management. This information will assist in better assessment of your needs and a better program for our patients. Mailing Address: Asma Bukhari, Graduate Student, 234 Gifford Building, 502 West Lake Street, 1571 Campus Delivery, Fort Collins, Colorado 80523-1571. AKO: asma.s.bukhari@us.army.mil. Thank you!

Asma S. Bukhari

Asma S. Bukhari
Major, SP
U.S. Army

Research Topic

ASSESSMENT OF NUTRITION EDUCATION STRATEGIES TO REDUCE CARDIAC RISK IN US ARMY HOSPITALS

Principal Investigator: Dr. Jennifer Anderson, Professor, Ph.D

Co- Investigator: MAJ Asma Bukhari, MS/Ph.D Student,
Colorado State University, Fort Collins, Colorado

Assessment of cardiac risk reduction in this survey refers to lowering of blood lipids. The purpose of this survey is to assess the existing cholesterol education offered at various Army hospitals. Cholesterol education includes group sessions and individual counseling nutrition sessions. **This survey is to be completed primarily by the chief of the clinical services.** However, you are welcome to involve other dietitians at your hospital to obtain their valuable opinions and suggestions. This information will assist in identifying best practices and weakness in the current nutrition education strategies used at various Army hospitals. The survey will take approximately 30 minutes to complete.

1. Your medical facility size (select one)
 - i. 1-25 beds
 - ii. 26-50 beds
 - iii. 51-75 beds
 - iv. 76 beds and above
 - v. Outpatient clinic only
2. Total patients seen in outpatient nutrition clinic average per month _____
3. Total patients receiving cholesterol education average per month _____
4. The majority of the patients are referred by (select one)
 - i. PCM
 - ii. Dietitian
 - iii. Self- referred
 - iv. Unit Commander
 - v. Other: _____
5. Referral criteria at your facility for cholesterol education is primarily based on (select one)
 - i. NCEP-ATP III criteria
 - ii. DOD/VA guidelines
 - iii. Laboratory values only
 - iv. Self referral due to risk factors
 - v. Other: Please specify: _____
6. The majority of the patients for cholesterol education are (select one)
 - i. Active duty soldiers
 - ii. Dependants of soldiers
 - iii. Retirees
 - iv. Civilians
 - v. Other: _____

7. Primary mechanism of cholesterol education at your facility is through (select one)
- i. Dietitian
 - ii. 91M (enlisted soldier)
 - iii. Diet technician
 - iv. Nursing staff
 - v. Multidisciplinary team
8. Cholesterol education is provided by (select one)
- i. Group sessions
 - ii. Individual appointment with dietitian
 - iii. Combination of group and individual
9. Please select the number of group sessions offered for cholesterol education?
- i. One session
 - ii. Two sessions
 - iii. Three sessions
 - iv. Four sessions
 - v. More than four sessions
10. How much time is allocated for each group session?
- i. 45 minutes
 - ii. 60 minutes
 - iii. 90 minutes
 - iv. More than 90 minutes
11. How much time is allocated for individual patient counseling for cholesterol education?
- i. Less than 30 minutes
 - ii. 30 to 45 minutes
 - iii. More than 45 minutes
12. Do you have a mechanism to reach deployed soldiers with elevated cholesterol and other cardiac risk factors?
- i. Yes
 - i. If yes, select the primary mechanism for cholesterol education
 1. American Heart Association web-site
 2. Internet classes
 3. Through PCM at new duty station
 4. Printed material provided through clinic before or after deployment
 5. Other: _____
 - ii. No
13. Is the current cholesterol education at your facility protocol based on
- | | | | |
|--|-----|----|--------|
| i. NCEP- ATP III guidelines (released in 2000) & recent AHA revised recommendations (2006) | Yes | No | Unsure |
| ii. ADA MNT Protocol (current) | Yes | No | Unsure |
| iii. AHA revised recommendations (2006) | Yes | No | Unsure |

14. Medical Nutrition Therapy involves discussing topics listed below with the patient. Please check the topics you need assistance to make the program at your facility complete and effective.

- i. Estimating 10 year risk for CHD
- ii. Lipid profile
- iii. Cholesterol and fats (including trans fat)
- iv. Label reading
- v. Fiber (soluble vs. insoluble)
- vi. Sodium intake
- vii. Plant stanol or sterol products
- viii. Omega-3 fatty acids
- ix. Nuts
- x. Antioxidants & supplements (Vitamin E, C, carotenoids, folate, garlic, etc.)
- xi. Beverages with added sugar
- xii. Serving sizes
- xiii. Food preparation
- xiv. Dining out
- xv. Physical activity
- xvi. Cholesterol lowering medications & potential food & drug interactions
- xvii. Healthy weight, BMI
- xviii. Waist circumference
- xix. Other co morbidities – diabetes, metabolic syndrome, hypertension and obesity
- xx. Behavior modification theory/techniques
- xxi. Alcohol intake
- xxii. Tobacco cessation
- xxiii. Related websites for further reading
- xxiv. Other: _____

15. Do you discuss food sources of Omega 3 fatty acids?

- i. Yes
 - i. If yes, which ones? _____
- ii. No

16. Do you discuss nutrition supplements with your patients during cholesterol education? (Including supplements patients inquire about)

- i. Yes.
 - i. If yes, Please specify the top 3 supplements you discuss
(1) _____ (2) _____ (3) _____
- ii. No

17. Are you or other dietitians at your facility aware of

- | | | |
|---|-----|----|
| i. "Disorders of Lipid Metabolism Toolkit"? | Yes | No |
| i. If yes, have you used it? | Yes | No |
| ii. ADA, Evidenced Based Library? | Yes | No |
| i. If yes, have you used it? | Yes | No |

18. Is the current program based on any established behavior change theory (example: stages of change)?

- i. Yes

- i. If yes, specify: _____
- ii. No

19. Do you collect any of the outcome data listed below? (Check all that applies).

- i. None of the below listed measures. Please select one primary reason that is preventing data collection efforts.
 - i. Lack of administrative support
 - ii. Too time consuming and not a priority
 - iii. Lack of skills to track outcomes
 - iv. Lack of easy to use mechanism
 - v. Other: _____
- ii. BMI
- iii. Waist circumference
- iv. Blood pressure
- v. Laboratory tests: Lipid profile (Fasting blood cholesterol, triglycerides, LDL-C, HDL-C) & Fasting glucose
- vi. Nutrition survey score – (MEDFICTS, food frequencies, diet recall, etc)
- vii. Specific dietary changes – fats, cholesterol, carbohydrates, protein, total calories, fiber, eating out
- viii. Monitor stages of change
- ix. Changes in physical activity
- x. Smoking cessation
- xi. Changes in lipid lowering meds
- xii. Changes in HTN meds
- xiii. Co morbidities – DM, HTN, metabolic syndrome
- xiv. Patient/client centered outcomes
- xv. Other: Please specify: _____

20. How does your facility track, analyze and report outcomes selected in Question 19?

- i. Currently no outcome data on cholesterol education is being collected at this facility
- ii. Use monitoring forms from “Disorders of Lipid metabolism Toolkit”
- iii. Locally designed spreadsheet for collecting and tracking data
- iv. Other, specify: _____

21. Patient feedback/satisfaction with cholesterol education is obtained by (select one)

- i. Currently there is no mechanism at this facility to obtain patient feedback
- ii. Verbally by patients attending the group/individual session
- iii. Clinic/facility surveys
- iv. Other: _____

22. How do you rate the current cholesterol management program?

- i. Very good
- ii. Good
- iii. Fair
- iv. Poor

23. Please state a strength of your cholesterol education program

- i. _____

24. Please state a weaknesses of your cholesterol education program

i. _____

25. In your opinion cholesterol education varies from installation to installation?

- i. Strongly agree
- ii. Agree
- iii. Neutral
- iv. Disagree
- v. Strongly disagree

26. Do you feel that the knowledge of your facility clinical dietitians in heart disease management is current?

- i. Strongly agree
- ii. Agree
- iii. Neutral
- iv. Disagree
- v. Strongly disagree

27. What is the primary mechanism for dietitians at your facility to stay current with cardiovascular nutrition information (select one)

- i. Attend ADA and other similar conferences
- ii. Take online continuing education offerings
- iii. Regularly access AHA, ADA and other similar websites
- iv. Other: _____

28. Here are some ideas on program enhancement. Please select or suggest **one idea** that you think will be most effective

- i. Design and use a standard program like “Weight to Stay” for cholesterol education
- ii. Design a web-based resource center for Army dietitians: Includes critical MNT components needed to manage dyslipidemia and have dietitians to pick and choose as needed
- iii. A web-based, self paced cholesterol education program for soldiers and other beneficiaries who cannot attend facility offered program
- iv. Develop an on-line course on management of dyslipidemia for the Army dietitians
- v. Other: _____

Please feel free to write any additional information about the existing program.

I am particularly interested in knowing your needs on how I can assist you and other Army dietitians in delivering an effective, state of art cholesterol management program to our patients. _____

Note: Please send me cholesterol education materials you currently use via e-mail or by regular mail. The addresses for e-mail and mailing are provided in the cover letter. The more information I receive the better would be my assessment of your needs and a better program for our patients receiving care in US Army hospitals.

Your contribution to my research study is greatly appreciated.

THANK YOU!



DEPARTMENT OF THE ARMY
US ARMY MEDICAL RESEARCH AND MATERIEL COMMAND
504 SCOTT STREET
FORT DETRICK, MD 21702-5012

REPLY TO
ATTENTION OF

MCMR-ZB-PS

11 September 2006

MEMORANDUM FOR THE RECORD

SUBJECT: Exemption Determination for "Assessment of Nutrition Education Strategies to Reduce Cardiac Risk in U.S. Army Hospitals," Submitted by MAJ Asma Bukhari and Jennifer Anderson, PhD, Colorado State University, Log Number A-14021.

1. The subject protocol has been administratively reviewed by the U.S. Army Medical Research and Materiel Command's Office of Research Protections, Human Research Protection Office for applicability of human subjects protection regulations.
2. This protocol was determined to be exempt from the requirements of the human subjects protection regulations at 32 CFR 219 under the following category: research involving survey or interview procedures with adult subjects [32 CFR 219.101(b)(2)]. The research undertaken in this protocol is a web-based survey of dieticians at U.S. Army hospitals to assess existing cholesterol education programs.
3. The Human Research Committee (HRC) at Colorado State University reviewed and approved this protocol (HRC Protocol #06-200H) on 1 September 2006 with a waiver of documentation of informed consent. Its approval expires 16 August 2007.
4. Modifications to the scope of work, to include changes in human subjects, require review by the local HRC and this office prior to implementation.
5. The point of contact for this action is the undersigned at 301-619-7801.

E-Signed by Andrea J Kline?
VERIFY authenticity with Approve

ANDREA J. KLINE, M.S., C.I.P.
Chief, Research Administrative Support
Human Research Protection Office
Office of Research Protections

August 3, 2006

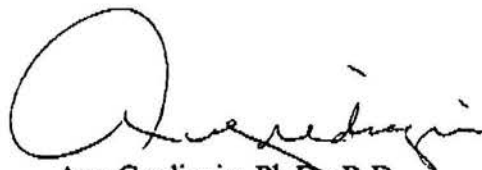
Department of Medical Science
ATTN: MCCS-HMN STE 1229, Bldg 2841
3151 Scott Road
Fort Sam Houston, TX 78234

Jennifer Anderson PhD., RD
Professor, Department of Food Science and Human Nutrition
Colorado State University
Ft. Collins, CO 80523-1571).

Dr. Anderson,

Thank you for working with CPT Bukhari on her protocol "Assessment of Cardiac Risk Reduction Nutrition Education Strategies in US Hospitals". This is a very important project for Army Dietitians and military health care beneficiaries. The project has my full support and I will work with CPT Bukhari on overcoming any military administrative barriers she may encounter.

In order to publish the results of this survey the protocol must be approved by the Army Human Subjects Research Review Board (HSRRB), Fort Detrick, MD. Thus, once the University Human Subjects Review Board approves the protocol we will need to forward it to the military HSRRB. I will serve as the POC to coordinate this process with CPT Bukhari.



Ann Grediagin, Ph.D., R.D.

Colonel, US Army

Dir, Graduate Program in Nutrition

ASSESSMENT OF NUTRITION EDUCATION STRATEGIES TO REDUCE CARDIAC RISK IN US ARMY HOSPITALS

Principal Investigator: Dr. Jennifer Anderson, Professor, PhD
Co- Investigator: MAJ Asma Bukhari, MS/PhD Student,
Colorado State University, Fort Collins, Colorado

Assessment of cardiac risk reduction in this survey refers to lowering of blood lipids. The purpose of this survey is to assess the existing cholesterol education offered at various Army hospitals. Cholesterol education includes group sessions and individual counseling nutrition sessions. **This survey is to be completed primarily by the chief of the clinical services.** However, you are welcome to involve other dietitians at your hospital to obtain their valuable opinions and suggestions. This information will assist in identifying best practices and weakness in the current nutrition education strategies used at various Army hospitals. The survey will take approximately 30 minutes to complete.

Questions related to the research study may be directed to the principal investigator, Jennifer Anderson, at 970-491-7622 or to the co-principal investigator, Major Asma Bukhari, at 970-669-1932 or via e-mail at abukhari@lamar.colostate.edu.

Note: Please mail (UPS or e-mail) the education material and forms you use at your facility for cholesterol management. This information will assist in better assessment of your needs and a better program for our patients.

Mailing Address:

Asma Bukhari

Graduate Student, 234 Gifford Building

502 West Lake Street, 1571 Campus Delivery

Fort Collins, Colorado 80523-1571.

When you are ready, click on the link below to start the survey.

Cardiac Risk Survey

Thank You!

Cardiac Risk Survey

There are a total of 28 questions - Please take your time and thanks for your input. This survey should take less than 30 minutes to complete.

1. Your medical facility size (select one)

- 1-25 beds
- 26-50 beds
- 51-75 beds
- 76 beds and above
- Outpatient clinic only

2. Total patients seen in outpatient nutrition clinic average per month:

3. Total patients receiving cholesterol education average per month:

4. The majority of the patients are referred by (select one)

- PCM
- Dietitian
- Self-referred
- Unit Commander
- Other:

5. Referral criteria at your facility for cholesterol education is primarily based on (select one):

- NCEP-ATP III criteria
- DOD/VA guidelines
- Laboratory values only
- Self referral due to risk factors
- Other: Please specify:

6. The majority of the patients for cholesterol education are (select one)

- Active duty soldiers
- Dependants of soldiers
- Retirees
- Civilians
- Other:

7. Primary mechanism of cholesterol education at your facility is through (select one)

- Dietitian
- 91M (enlisted soldier)
- Diet technician
- Nursing staff
- Multidisciplinary team

8. Cholesterol education is provided by (select one)

- Group sessions
- Individual appointment with dietitian
- Combination of group and individual

9. Please select the number of group sessions offered for cholesterol education?

- One session
- Two sessions
- Three sessions
- Four sessions
- More than four sessions

10. How much time is allocated for each group session?

- 45 minutes
- 60 minutes
- 90 minutes
- More than 90 minutes

11. How much time is allocated for individual patient counseling for cholesterol education

- Less than 30 minutes
- 30 to 45 minutes
- More than 45 minutes

12. Do you have a mechanism to reach deployed soldiers with elevated cholesterol and other cardiac risk factors?

- Yes
 - i. If Yes, select the primary mechanism for cholesterol education
 - American Heart Association web-site
 - Internet classes
 - Through PCM at new duty station
 - Printed material provided through clinic before or after deployment
 - Other:
- No

13. Is the current cholesterol education at your facility protocol based on

	Yes	No	Unsure
NCEP- ATP III guidelines (released in 2000) & recent AHA revised recommendations (2006)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ADA MNT Protocol (current)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
iii. AHA revised recommendations (2006)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Medical Nutrition Therapy involves discussing topics listed below with the patient. Please check the topics you need assistance to make the program at your facility complete and effective.

- Estimating 10 year risk for CHD
- Lipid profile
 - Cholesterol and fats (including trans fat)
 - Label reading
 - Fiber (soluble vs. insoluble)
- Sodium intake
- Plant stanol or sterol products
- Omega-3 fatty acids
- Nuts
- Antioxidants & supplements (Vitamin E, C, carotenoids, folate, garlic, etc.)
- Beverages with added sugar
- Serving sizes
- Food preparation
- Dining out
- Physical activity
- Cholesterol lowering medications & potential food & drug interactions
- Healthy weight, BMI
- Waist circumference
- Other co morbidities - diabetes, metabolic syndrome, hypertension and obesity
- Behavior modification theory/techniques
- Alcohol intake
- Tobacco cessation
- Related websites for further reading
- Other:

15. Do you discuss food sources of Omega 3 fatty acids?

Yes

i. If Yes, which ones?:

No

16. Do you discuss nutrition supplements with your patients during cholesterol education? (Including supplements patients inquire about)

Yes

i. If Yes, Please specify the top 3 supplements you discuss

(1)

(2)

(3)

No

17. Are you or other dietitians at your facility aware of

	Yes	No
Disorders of Lipid Metabolism Toolkit?	<input type="checkbox"/>	<input type="checkbox"/>
i. If yes, has your facility used it?	<input type="checkbox"/>	<input type="checkbox"/>
ADA, Evidence Based Library?	<input type="checkbox"/>	<input type="checkbox"/>
i. If yes, has your facility used it?	<input type="radio"/>	<input type="checkbox"/>

18. Is the current program based on any established behavior change theory (example: stages of change)?

Yes

i. If Yes, specify:

No

19. Do you collect any of the outcome data listed below?

Outcome data is not collected. Please provide a primary reason.

Outcome data listed below are collected (Check all that applies)

- BMI
- Waist circumference
- Blood pressure
- Laboratory tests: Lipid profile (Fasting blood cholesterol, triglycerides, LDL-C, HDL-C) & Fasting glucose
- Nutrition survey score - (MEDFACTS, food frequencies, diet recall, etc)
- Specific dietary changes - fats, cholesterol, carbohydrates, protein, total calories, fiber, eating out
- Monitor stages of change
- Changes in physical activity
- Smoking cessation
- Changes in lipid lowering meds
- Changes in HTN meds
- Co morbidities - DM, HTN, metabolic syndrome
- Patient/client centered outcomes
- Other Please specify:

20. How does your facility track, analyze and report outcomes selected in Question 19?

<input type="radio"/> Currently no outcome data on cholesterol education is being collected at this facility <input type="radio"/> Use monitoring forms from "Disorders of Lipid metabolism Toolkit" Locally designed spreadsheet for collecting and tracking data <input type="radio"/> Other, specify:
21. Patient feedback/satisfaction with cholesterol education is obtained by (select one)? <input type="radio"/> Currently there is no mechanism at this facility to obtain patient feedback <input type="radio"/> Verbally by patients attending the group/individual session <input type="radio"/> Clinic/facility surveys <input type="radio"/> Other:
22. How do you rate the current cholesterol management program? <input type="radio"/> Very good <input type="radio"/> Good <input type="radio"/> Fair <input type="radio"/> Poor
23. Please state a strength of your cholesterol education program
24. Please state a weaknesses of your cholesterol education program
25. In your opinion cholesterol education varies from installation to installation? <input type="radio"/> Strongly agree <input type="radio"/> Agree <input type="radio"/> Neutral <input type="radio"/> Disagree <input type="radio"/> Strongly disagree
26. Do you feel that the knowledge of your facility clinical dietitians in heart disease management is current? <input type="radio"/> Strongly agree <input type="radio"/> Agree <input type="radio"/> Neutral <input type="radio"/> Disagree <input type="radio"/> Strongly disagree
27. What is the <u>primary</u> mechanism for dietitians at your facility to stay current with cardiovascular nutrition information (select one) <input type="radio"/> Attend ADA and other similar conferences <input type="radio"/> Take online continuing education offerings <input type="radio"/> Regularly access AHA, ADA and other similar websites <input type="radio"/> Other:
28. Here are some ideas on program enhancement. Please select or suggest one idea that you think will be most effective <input type="radio"/> Design and use a standard program like "Weight to Stay" for cholesterol education <input type="radio"/> Design a web-based resource center for Army dietitians: Includes critical MNT components needed to manage dyslipidemia and have dietitians to pick and choose as needed <input type="radio"/> A web-based, self paced cholesterol education program for soldiers and other beneficiaries who cannot attend facility offered program <input type="radio"/> Develop an on-line course on management of dyslipidemia for the Army dietitians <input type="radio"/> Other:

Please feel free to write any additional information about your existing cholesterol education program. I am particularly interested in knowing your needs and how I can assist you and other Army dietitians in delivering an effective, state of the art cholesterol management program to our patients.

Submit