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University of Nevada, Reno

**Can Clinical Nutrition Be Effectively Incorporated into Medical School Education?**

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

Bachelor of Science in Nutritional Sciences and the Honors Program

by

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Dr. Ashley, Thesis Advisor

December, 2015

**UNIVERSITY  
OF NEVADA  
RENO**

**THE HONORS PROGRAM**

We recommend that the thesis  
prepared under our supervision by

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entitled

**Can Clinical Nutrition Be Effectively Incorporated into Medical School Education?**

be accepted in partial fulfillment of the  
requirements for the degree of

**BACHELOR OF SCIENCE, NUTRITIONAL SCIENCES**

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December, 2015

**Abstract:**

With an increased incidence of chronic diseases such as diabetes and obesity, physicians and health care professionals alike are searching for efficient and cost effective ways of preventing and curing disease. One of the proposed solutions rapidly gaining ground in the healthcare community is that of nutrition and life-style medicine. Research suggests that by adhering to a healthy lifestyle many chronic diseases can be prevented and reversed (Estruch et al., 2013), but further studies suggest that physicians do not feel as though their education in medical school sufficiently prepares them to be able to provide their patients with said nutrition information (Daley et al., 2015, Freidman et al, 2010, Franz et al., 2015).

It is the object of this paper to evaluate a proposed tool of including nutrition in medical schools in an efficient and feasible manner. The tool was developed by Dr. Judith Ashley, Associate Professor and nutrition faculty member at the University of Nevada, and involved 3<sup>rd</sup> year medical students at UCLA downloading and distributing nutrition related handouts to their patients during their internal and family medicine clerkship rotations. Data pertaining to the amount and type of handouts downloaded were analyzed. It was discovered that this tool is a way of introducing nutrition into medical schools without compromising the already crowded medical curricula. If such a tool is included in medical schools nationwide, the inclusion of nutrition education will drastically change the education of practicing physicians and thereby improve the health of the nation.

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## **Introduction**

The likelihood of developing a chronic health condition is becoming an increasingly serious problem throughout the world. Chronic health conditions, defined as disease states that can be controlled but not necessarily cured, include several well known disease states such as diabetes, heart disease, and cancer. Although there are several causes of death, statisticians have calculated that nearly 70% of the deaths in America are related to one or more of these conditions (Centers for Disease Control and Prevention [CDC], 2015). The Center for Disease and Control, an organization dedicated to collecting data pertaining to disease throughout the world, reported that two of these chronic conditions, heart disease and cancer, together accounted for nearly 50% of all of the deaths in the United States in 2010 (CDC, 2015). What is perhaps more concerning is that the incidence of these conditions appears to be rising. In 1995, it was proposed that 44.7% of the population was diagnosed with a chronic condition, and in 2010 this amount grew to 47%. The study showed that by 2030 it is estimated that nearly 49% of the population will be diagnosed with one or more chronic diseases (Wu & Green, 2000).

Although in general the rates of chronic diseases appear to be rising, Jemal et. al., (2005) and Ward et al., (2014), demonstrated that over the last 30 years trends in both heart disease and stroke related deaths have actually decreased, and although there was an initial increase in the prevalence of cancer development, the rates of cancer have also begun to decrease. The current health care system in the United States is prolonging life by reducing the mortality rates associated with individual conditions. Both technology and education in preventative mechanisms have contributed to this phenomenon by being

able to detect and treat disease, and continual advancement in the understanding of preventative medicine will ensure even greater results.

With the incidence of some of these conditions on the rise, debate has ensued as to whether or not these conditions can be effectively prevented. However, within the last 20 years, it has become more accepted among the scientific community that the prevalence of chronic health conditions can be significantly reduced by adhering to a healthy lifestyle (Estruch et al., 2013). Fryar et al., has demonstrated that there are several risk factors leading to the development of chronic health issues, including, habitual smoking, uncontrolled high blood pressure, uncontrolled blood lipids (dyslipidemia) and high blood glucose (2012). Further evidence demonstrates that these risk factors can be reduced and/or eliminated by adhering to a healthy lifestyle. One such study included 116,000 female participants and demonstrated reductions in coronary artery disease by 82% when the participants refrained from smoking, exercised modestly, ate a good diet, drank a glass or less of wine per day, and avoided becoming obese (Stampfer et al., 2000). In spite of the significant benefit from practicing these habits, only 3% of the participants admitted to being able to adhere to those recommendations.

Unfortunately, the confession of this 3% seems to represent the current experience of many Americans. The increasing rates of chronic disease demonstrates the fact that although Americans may know *how* to live a healthy lifestyle, they may not exactly be motivated to put their knowledge into practice. Of the several lifestyle recommendations health organizations such as the American Heart Association have made, one of the most difficult elements to incorporate into one's daily life is nutrition (2015). Cogswell et al., points out a startling fact when they note that ninety percent of Americans consume too

much sodium, a compound which has been repeatedly linked to an increased risk of the chronic conditions high blood pressure and stroke (2012). And, although many individuals can attest to the value of eating several servings of fruits and vegetables per day, a report by the CDC in 2011 shows that more than one third of adolescents and adults admitted to eating less than one serving of fruit per day, and nearly 38% of adolescents and 23% of adults reported eating less than one serving of vegetables per day (CDC, 2013). The CDC also collected statistics on the rates of obesity over the last 50 years, showing that the prevalence of obesity in adults has increased from 13% in the 1960s to 35% in 2011 (CDC, 2014). The prevalence of obesity in children is also rising. In the 1970s about 5% of the adolescent population was considered obese, but in 2011 nearly 17% of adolescents were obese (CDC, Prevalence of Overweight and Obesity Among Children and Adolescents, 2014).

With knowledge about the benefits of adopting a healthy lifestyle, why does it then appear then that “we the people” are becoming more unhealthy? Michael Moss in his book, *Salt, sugar, fat: How the food giants hooked us* poses several suggestions as to the causes in the increased rates of obesity. Some of the most logical suggestions point to the changes in the pace of the American life, the constant bombardment from seductive and tasteful advertisements made by the food industry, and the notion that unhealthy food is specifically designed to be addicting (2013). However, one of the more serious and recently acknowledged causes of obesity may be that the health care professionals responsible for the care of the American people are not properly educating their patients on how to prevent and control diseased states (Frantz et al, 2011). Although it is difficult to compete with crammed schedules, addictive foods, and seducing advertisements,

doctors may not be receiving adequate education in nutrition prior to becoming practicing physicians. Estruch et al showed that dietary and physical activity interventions are shown to have more benefits and less risks, side effects, and costs than pharmacological interventions, (2013), yet physicians repeatedly state that their nutrition education during medical school was inadequate to prepare them to treat their patients with nutritional counseling (Daley et al., 2015). What is also interesting to note is that, in spite of there being several health professions that include nutrition counseling in the treatment plan of patients, a survey by Ball et al., demonstrated that patients prefer to receive nutrition counsel from physicians and tend to respect the counsel of the physicians more than other health professionals as well (2014).

Considering the current progression of chronic health conditions in the United States, it is, therefore, now a critical time to assess the value of nutrition in both the prevention and treatment of these conditions. If nutrition related information can be imparted to physicians early in their educational training, there is potential to change the field of medicine across all medical specialties. The demanding curriculum already established in medical schools, poses a challenge to determine the best time and location of effectively integrating nutritional instruction in medical school curriculum. **The object of this thesis is to evaluate a particular mechanism conducted by Dr. Judith Ashley to see if the tool provides an effective means of including nutrition in the education of medical students.**

## Literature Review

### *Nutrition and Health*

To continue the discussion of the subject of nutrition in medical schools, it is important to define what exactly *nutrition* is. “Nutrition” can include a variety of subjects such as the anatomy and physiology of digestion; absorption, transport and excretion of nutrients; energy intake; the biochemistry behind nutrients and their metabolism; nutritional therapy for medical conditions, and/or nutritional requirements at different stages of the life-cycle. For the purpose of this discussion, however, the World Health Organization defines nutrition as “the intake of food, considered in relation to the body’s dietary needs” (World Health Organization, 2015). Considering the fact that this discussion specifically highlights what medical schools term nutrition, a later section will be provided to define which nutritional topics educational professionals consider to be important in the establishment of medical school curriculum. Before evaluation of nutrition in medical school curriculum can be done however, further discussion on the role of nutrition in chronic disease prevention is needed to understand its importance in disease prevention.

Several scientific studies have demonstrated the role of nutrition in preventing chronic diseases. For example, interventions in nutrition are linked with a reduced morbidity rate associated with hypertension (Sacks et al., 2001), dyslipidemia (Marik & Varon, 2009), type 2 diabetes (Knowler et al., 2002), breast and colorectal cancers (Bruno et al., 2015; Vargas & Thompson, 2012), and obesity (de Souza et al., 2012; Ledikwe et al., 2007), some of the major diseases that physicians treat on a daily basis. Also, White shows that many deaths in the United States are preventable and related to

nutrition (1994) and the World Health Organization declares that nutrition is crucial for optimal health (2013). With this in mind, if physicians are genuinely interested in securing the health of their patients, it would seem to make sense to include nutrition in the education of medical students.

Also, considering that two of the more serious chronic conditions – diabetes and obesity – are directly related to nutrition (Eisenberg & Burgess, 2015), it would be beneficial for physicians to have a basic knowledge of nutrition to counsel their patients diagnosed with these conditions. The World Health Organization estimates that one-third of the US population is currently obese and that two-thirds are currently overweight (WHO, 2013). In addition, economists state that nearly 20.6% of all health care costs are devoted to treating obesity (Crawley J., 2013), and that 75% of all health care costs are spent specifically on chronic lifestyle-related diseases (Levy et al., 2013). It becomes imperative, therefore, to find alternative solutions to treating the health of the nation without spending exorbitant costs. Not only are chronic diseases costing patients financially, but they are also threatening the livelihood of the youth. A study conducted on the expected life-expectancy of Americans demonstrates that “There is now evidence that America’s children will be the first in the nation’s history to live shorter lives than their parents” (Olshansky et al., 2005, 1143). The diabetes crisis in both pediatric and adult cases is adequately described by the editors of *Lancet* when they state, “The fact that Type 2 diabetes, a largely *preventable* disorder, has reached epidemic proportions is a public health humiliation” (The Lancet, 2010). With the knowledge that these conditions are largely preventable comes the responsibility to ensure that physicians are properly equipped with nutrition knowledge to properly counsel their patients.

In spite of the notion that chronic conditions can be prevented with proper lifestyle habits, there are currently several arguments that propose that chronic conditions have more to do with genetics than lifestyle. However, human genes have not changed nearly as dramatically as the incidence of diabetes, obesity, and heart disease. (Eisenberg & Burgess, 2015). Therefore, the increased rates of these conditions must be related to factors other than just genes alone, and may have prevention mechanisms outside of switching family trees. Before physicians enter their education and practice they are required to recite the Hippocratic Oath, part of which states “I will exercise my art solely for the cure of my patients” (Association of American Medical Colleges, 2015). Considering the evidence that nutrition does indeed relate to both the cure and prevention of a patient’s chronic condition, it becomes paramount that more attention be given to its instruction in medical schools.

### ***Structure and Design of Medical Schools***

As a medical school curriculum director seeks to find ways of including nutrition into medical school curriculum, he or she must first understand the general structure of the program. The Association of American Medical Colleges (AAMC, 2015) outlines the general path to become a physician in their article, *The Road to Becoming a Doctor*. There are two recognized medical degrees a student can pursue, either a Doctor of Medicine degree (MD), or a Doctor of Osteopathy degree (DO), and there are currently 141 MD accredited schools and 31 DO granting schools. All MD schools are accredited by the Liaison Committee on Medical Education (LCME), which is supported by the Association of American Medical Colleges (AAMC) and the American Medical Association (AMA) (Association of American Medical Colleges, 2015). DO schools are

accredited by the Commission on Osteopathic College Accreditation (COCA), and is supported by the American Osteopathic Association (AOA)(American Osteopathic Association 2015).

Before applying to medical school a prospective physician typically earns a bachelor's degree. Medical school itself consists of four years, typically with two years designated to the study of factual medical knowledge and two years designed to develop clinical skills. Specifically, medical schools teach the normal structure and function of body tissues during the first year and abnormal structure and function the second year. The third and fourth years consist of clerkship rotations (rotations in clinics) in family medicine, internal medicine, pediatrics, surgery, and a variety of other specialties to assist medical students in developing skills in diagnosing and treating disease.

Learning as much scientific information as possible in four years makes medical school one of the most demanding and arduous paths a student could pursue. With new scientific discoveries made every day, the committees responsible for designing the medical school curriculum are constantly faced with the challenge of knowing what sort of information needs to be added and removed from the curriculum. It is difficult to know when and how nutrition should be incorporated into the medical school curriculum to provide future physicians with the best possible training.

### ***History of Incorporating Nutrition into Medical Schools***

The need to incorporate nutrition into medical schools was first recognized in the early 1950s (Lewis, 1956). Once implemented into the curriculum, nutrition education was so successful that a push was made to make nutrition a fully accredited medical specialty (Franz et al., 2011). However, the subject of nutrition was misrepresented and

deemed less credible after two studies in the 1990s demonstrated harm by the overuse of parenteral nutrition, or feeding patients by IV administration (Detsky et al., 1987; The Veterans Affairs Total Parenteral Nutrition Cooperative Study Group, 1991). An extensive history of the inclusion of nutrition in the medical education of physicians was researched by Kris-Etherton, P. M., Akabas, S. R., Bales, C. W., Bistrain, B., Braun, L., Edwards, M. S., and Van Horn, L., (2014). Key dates from their research are highlighted below. The dates illustrate how nutrition was recognized to be an important component of curriculum many years ago. In spite of the recognized need, the attempts to include nutrition into the curriculum but have met with little success, considering in 2010 only 27% of medical schools include nutrition in their curriculum.

Table 1. History of Nutrition in Medical Schools.

1963	Council on Foods and Nutrition, AMA: Recognizes the lack of support for nutrition education in medical schools
1977	AMA survey by Cyborski: 19% of medical schools have a nutrition course
1982	The LCME: 37% of medical schools have a course in nutrition
1985	National Academy of Sciences, National Research Council: recommends a separate 25- h nutrition course with reinforcement in clinical clerkships
1991	Healthy People 2000 Objectives: called for requirement to include courses in nutrition in all medical schools
1998	Intersociety Professional Nutrition Education Consortium: Established standards, certification process, and monitoring for fellowship training of physician nutrition specialists

2000-2005	Nutrition Academic Awards from the National Heart Lung and Blood Institute of the National Institute of Health: Awards given to 21 medical schools to enhance the medical curricula in nutrition and prevention of cardiovascular disease, diabetes, obesity and other chronic disease.
2006	Survey by Hark: Made nutrition sub score recommendations for the national licensing examination of physicians (USMLE)
2010	ASPEN: Convened a summit discussing shortage of nutritionally qualified physicians
2010	Survey by Adams et al: 27% of medical schools have a course in nutrition

In 1985 the Institute of Medicine issued a report that discussed the recommendation to include a minimum of 25-30 hours of nutrition instruction into the four-year medical school curriculum (Committee on Nutrition in Medical Education, 1985). The Institute of Medicine is a division of the National Academies of Sciences, Engineering, and Medicine that provides unbiased reports of scientific information to influence public policy decisions related to science, technology, and medicine. (Institute of Medicine, 2015). The specifics of how the goal of incorporating 25-30 hours of nutrition into medical schools is or is not being met will be discussed below.

### ***Curriculum***

The World Medical Association shows that all medical schools in both the United States and Canada are accredited by the Liaison Committee on Medical Education (LCME), and must adhere to the guidelines established by this institution. However, individual schools are granted a degree of freedom in how they incorporate the guidelines

into their curriculum. The responsibility of developing the curriculum is usually given to professional associations or interest groups affiliated with the particular school (2006).

The AAMC (Association of American Medical Colleges), a supporter of the LCME, has developed a specific set of curriculum guidelines that incorporates nutrition as a major component of preventing and treating obesity (Association of American Medical Colleges, 2007), but a report by the Committee on Nutrition in Medical Education demonstrates that these guidelines are often not followed with adequate adherence (Committee on Nutrition in Medical Education, 1985). Specifically, Adams et al., demonstrates that only 19.6 hours of nutrition instruction is included across the entire four-year span of medical school, nearly 5 hours less than the current recommendation established by the Institute of Medicine. This 19.6 hours, however, does not necessarily include a class that is solely devoted to nutrition but also includes the small tidbits of nutrition that may have been incorporated into the medical students' biochemistry or anatomy class. Also, schools such as the Boston University School of Medicine reported over 40 hours of nutrition instruction, which offsets the average for those schools that do not include any nutrition at all (Adams et al., 2010).

Irrespective of the fact that medical schools do not devote enough time to nutrition education, the schools that have recognized this need, have had to come to agreement on what sort of nutrition topics are most essential for the future physician to incorporate into his/her training. Overall, a general consensus among educators has deemed it necessary to include clinical nutrition, under-nutrition, and over-nutrition across all age groups (American Medical Student Association's Nutrition Curriculum Project, 1996) into their curriculum. In addition, the Institute of Medicine agreed that

nutrition instruction should include discussion on energy balance, the role of specific nutrients, nutrition through the life cycle, protein and energy needs, malnutrition, the role of nutrition in disease prevention and treatment, possible risks from poor dietary practices, and social and cultural factors that influence dietary practice (Committee on Nutrition in Medical Education, 1985). The incorporation of these subjects is still a work in progress for many medical schools, but the academic community is seeking to make sure that the inclusion of nutrition education is a primary concern.

### ***Lack of Physician Confidence***

Despite the promotion of the AAMC to include nutrition into the curriculum of medical schools (2007), Freidman et al, 2010, have demonstrated the fact that physicians feel as though their training in nutrition is far from adequate. Physician nutrition knowledge may be less than that of their patients on some topics, which may be one of the reasons why physicians are reported to not often include nutrition in their treatment plans (Lazarus, 1997). A survey conducted by Frantz et al., showed that less than one third of interns reported that they felt that medical school had sufficiently exposed them to clinical nutrition (2015), and 71% of interns reported that they felt inadequately prepared by their medical school education to practice clinical nutrition. Referring back to the prevalence of preventable chronic health conditions, doctors engaged overweight adult patients in weight-loss counseling in only 11% of encounters (Scott et al., 2004), leaving the other 89% to struggle with their obesity. If Nutrition is shown to be a scientifically researched and credible component of disease prevention, it must be included in more than just 10% of physician encounters. These statistics show a

significant gap in the education and practice of physicians and demonstrate a need for comprehensive and ongoing educational reform.

### ***Objectives and Hypothesis***

It is apparent that there is a need to change certain components of the medical school curriculum, but it must be considered that the introduction of new subjects into medical school curriculum often meets with several obstacles. Some of these obstacles include the competition for time in the already arduous and overcrowded medical school curriculum, the resistance to adding new courses and lectures, the emphasis on disease treatment instead of prevention, and the lack of qualified nutritional faculty to adequately teach such courses (Makowske & Feinman, 2005; Touger-Decker, 2004; Walker, 2003; Wong et al., 2004). It becomes imperative, therefore, to develop ways to include nutrition instruction that does not require more funding and time, and can be incorporated into the pre-existing curriculum in an easy and efficient manner.

It is the object of this thesis to evaluate the success of such a mechanism. Dr. Judith Ashley, Associate Professor and nutrition faculty member at the University of Nevada, Reno proposed a clinical nutrition assignment to the UCLA School of Medicine during the academic years occurring between 2011 and 2014. Medical students were required to distribute at least 4 nutritionally related handouts to their patients during their 3rd year outpatient clerkships in internal and family medicine. The results of this assignment will be analyzed to see what handouts were downloaded most frequently and whether there is a correlation between handouts downloaded and the incidence of chronic health conditions. The aim of the assignment conducted at UCLA was to evaluate both its feasibility and effectiveness as a possible mechanism of incorporating nutrition into

medical school curriculum, providing medical students an easy tool to deliver nutrition information to their patients. An additional objective was to test the ability of the tool of nutrition handout distribution to be replicated in other medical schools. Since this clinical nutrition assignment was implemented with minimal extra medical faculty, cost, staff instruction, or time, it is hypothesized that this assignment will be found to be a feasible and effective tool to include nutrition into medical school curriculum. It is expected that the evaluation of this data will support the proposition that clinical, hands-on nutrition instruction is beneficial when integrated into the education and training of medical students.

## **Materials and Methods**

### ***Description of Dr. Ashley's Project***

As has been stated previously, it is the object of this thesis to evaluate a particular method of incorporating nutrition into medical schools developed by Dr. Ashley, associate professor and nutrition faculty at the UNR. To test the feasibility of incorporating nutrition into the curriculum of medical schools, Dr. Ashley developed a tool in which medical students at UCLA were required to download at least 4 nutritionally related handouts to distribute to their patients during their clerkship rotations in internal and family medicine. While rotating through these rotations students would download handouts that most closely fit to the diagnosis of their patient. The medical school at UCLA has two sets of 24-week long clerkship's during the school year in which patients begin to become involved with patient counseling. These 24-week long clerkships are further divided into 3 sets of 8-week rotations in which students rotate through different specialties (Figure 1). A full diagram of the structure of the medical school curriculum at UCLA can be found in Appendix A. The students were required to download handouts when they rotated through the internal and family medicine rotations and had 8 weeks to complete the assignment. This assignment was allowed at the direction of LuAnn Wilkerson, Senior Associate Dean of Education at the UCLA school of Medicine.

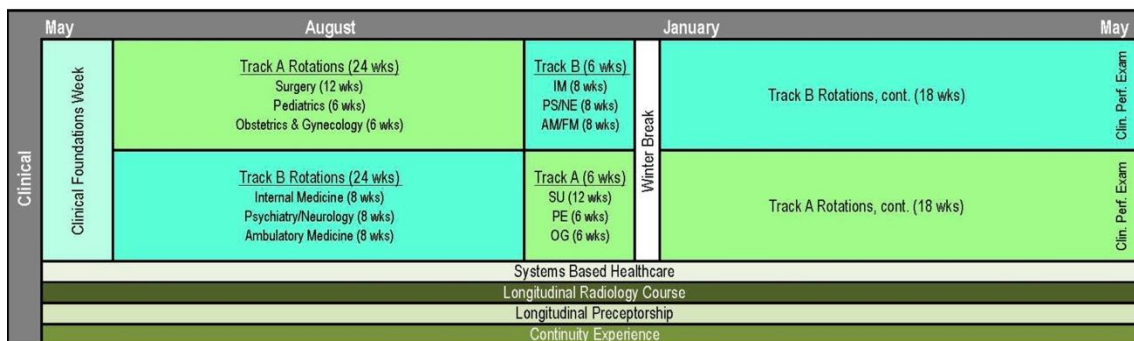


Figure 1. Diagram of block schedules demonstrating rotations in different medical specialties

The data were collected over a four-year period, from 07/01/2011-07/08/2015, and were divided based on the start and end of these block schedules, the first set of blocks beginning in July and ending in December; the second set of beginning in January and ending in July. Each student was assigned to one of these blocks and had to download 8 handouts within that time frame. A sample of the division of blocks for the year 2011 is included in Table 2.

Table 2. Sample Calendar of block divisions for the academic year 2011-2012

Block 1	July 11 –Sept 4
Block 2	Sept 5 – Sun Oct 30
Block 3	Oct 31 – Dec 23
Block 4	Jan. 9 – March 4
Block 5	Mar 5 –May 1
Block 6	May 14 –July 6

In medical school here are several goals of third-year clerkship rotations. During this time, students learn how to obtain patient's history, perform a physical exam,

foreshadow potential diagnoses, perform diagnostic and therapeutic procedures, write orders and progress notes, establish priorities in treating patients, and also develop judgmental and decision making skills. In addition, the medical students become familiar with common medical conditions and begin learning how to incorporate textbook and scientific knowledge into a practice setting. This period was an ideal time to include a nutritional component in the treatment of disease. The nutrition handouts were downloaded by medical students and given to their patients based on the disease the patient had.

Students obtained the handouts from a password protected website developed by Dr. Ashley entitled, "Education in Nutrition Study". The handouts can be found at the website <http://cabnr.unr.edu/nutritionstudy/default.aspx>. The handouts were divided into 5 different age groups – adolescent, adult, child, infants, and seniors – and were then subdivided into approximately 18 different nutritionally related categories such as cardiovascular disease, diabetes, anemia, general nutrition, pregnancy and breastfeeding, and weight management. Examples of a few handouts of the different categories and age groups can be found in Appendix C.

To keep track of how many handouts the medical student downloaded and what category he/she chose from, each medical student was provided an ID number and a password that linked his/her download selections to a secure data base. The database included information on the date the handout was downloaded, what category the student selected from, and title of the handout chosen. It is estimated that approximately 200 students participated per year for this project; and considering the study took place over the span of four years it is estimated that there were a total of 800 students involved in

this assignment. As previously mentioned, each student was required to download at least 4 handouts during their clerkship rotation. Approximately 3200 downloads over the course of the 4 years, or on average, 800 per year would be expected.

### ***Medical Student Illustration***

To get a visual representation of this process, an illustration will be used. John Smith is a 3<sup>rd</sup> year medical student in 2011, and based on the dates in Figure 2, he is assigned to block 3 for his family medicine outpatient clinic rotation.

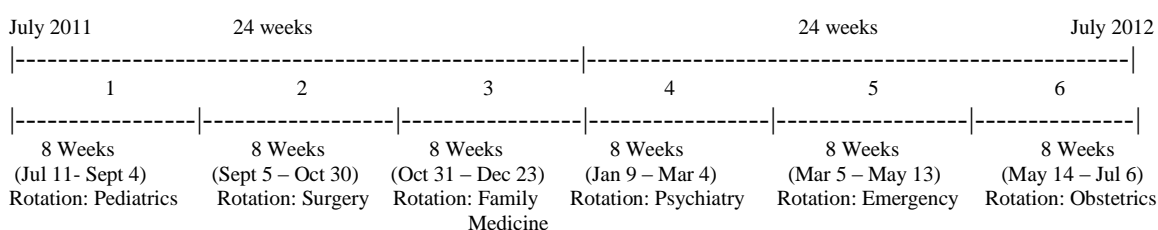


Figure 2. Visual sample of block divisions during the academic year 2011-2012

During the family medicine rotation clerkship, John is assigned a faculty preceptor who is a family physician or a family medicine resident who will supervise him in counseling his patients and learning how to determine their diagnoses and medical treatment. He will primarily work in a family medicine outpatient clinic staffed by several UCLA physicians and will be able to get his clerkship experience during regular clinic hours Monday through Saturday. The family medicine rotation will expose John to a variety of patients of all ages, including infants, children, adolescents, adults, and seniors. Patient primary diagnoses could include acutely conditions, e.g., those with back pain and common colds, as well as patients with chronic conditions, e.g. diabetes and obesity. John's preceptor will assign John his own patients so he can practice recording the patients' history, examining the patient and developing a proper plan for their treatment. The entire family medicine clinic office will typically have appointments

scheduled and walk-ins for about 30 and 50 patients per day, so the family medicine physicians and residents will have full schedules and will be very busy. John will need to learn to formulate a concise presentation of each patient's chief complaint and main findings so the physician can assist him in the best treatment plan. As part of counseling each patient, John will be provided the opportunity to educate his patients on their clinical diagnosis and treatment. This is when the nutrition handouts can be utilized if John feels that it would be appropriate to give a nutrition education handout and diet information to a patient. To access the study nutrition handout, John will need to use his username and password to login to the Nutrition Education Study website and download and distribute an appropriate handout to his patient. This will assist the patient in making nutritionally sound decisions pertaining to his/her medical condition. When his family medicine clerkship begins on October 31, 2011, John will have 8 weeks (or until December 23, 2011) to download at least 4 handouts from the website to complete the assignment. He is provided the user name "johnsmith" and his password is "1234567" which he will use to login on the Education Nutrition Study Website (Figure 3).



Contact Us

## Nutrition Education Study

**User Login**

Username:

Password:  [Lost Password?](#)

User Type:

**Log In**

 University of Nevada, Reno

Figure 3. Login Site on Nutrition Study Website

On November 5, 2011 John's preceptor asks him to see a 45 year old male adult who was diagnosed with Type 2 diabetes 2 years ago, but is not currently on any oral glucose lowering medications. The results of the patient's FPG test (fasting plasma glucose test) show that his fasting blood glucose level is above normal (150 mg/dl). John discusses with the patient the results of his blood test. While counseling him, the patient expresses that he would like more information on how he can adjust his diet to manage his diabetes. John remembers seeing a patient education handout on the Nutrition Education Study website that will help answer his patient's questions, and he downloads the handout from the "adult" "diabetes" section entitled "Diabetes and Healthy Diet" (Figure 4) and gives it to his patient. Information is then electronically sent to the secure database to keep track of the handout title, category, age group, and date the handout was downloaded (Figure 5).

Handouts	English	Spanish	QuickTip English	QuickTip Spanish
Carbohydrate Counting	Download	Download		
Diabetes and Healthy Diet	Download	Download	Download	Download
Exchange List for Meal Plans	Download			
Food List for Carbohydrate Counting	Download			
Gestational Diabetes	Download	Download		
Hypoglycemia	Download	Download		
Metabolic Syndrome	Download	Download		
PA and Food Adjustments - T1 DM	Download	Download		
Reactive Hypoglycemia	Download	Download		
Snacks for Diabetes	Download	Download		
Type 2 Diabetes and Dietary Supplements	Download	Download		

Figure 4. Adult- diabetes handout selection options from Nutrition Education Study website

	A	B	C	D	E	F	G
1	<b>Handout Title</b>	<b>Age Category</b>	<b>Category</b>	<b>Language</b>	<b>Date</b>	<b>User</b>	<b>BLOCK</b>
2	Diabetes and Healthy Diet	Adult	Diabetes	English	11/6/11	johnsmith	3

Figure 5. Sample of database collection based on Johns download on November 6, 2011.

John continues to work through his rotation, and a few days later is assigned by his preceptor to an 18- year old female patient who has eliminated all milk products from her diet to cut down on her calories and maintain her weight. After a full workup and counseling the patient, John then uses the website to download a handout for his patient on bone health and calcium foods (Figure 6).



Figure 6. Child-bone health handout selection options from Nutrition Education Study website

Throughout his 8-week rotation, John counsels other patients with different medical conditions and follows a similar process as described above, delivering the nutrition handouts to his patients according to their needs.

The scenario described above took place for approximately 30 students per block, and information on each student, how many handouts they downloaded, the category they downloaded from, and the date they downloaded the handout was all kept track of

through the secure database and were also reported to the clerkship coordinator to document completion of the mandatory nutrition patient handout assignment.

### ***De-Identifying Process***

Although the initial entries included the usernames of the UCLA medical students, the data was de-identified by assigning each user a numerical value preceded by the letter U. The data set was copied from the secure website and downloaded as an Excel file. In order to ensure proper coding, the users were sorted alphabetically, and each user received a code. For example, user "johnsmith" received the code "U001" and both his initial entry in the data base as well as subsequent entries were decoded with this code to track his downloads. The user name also received his/her block placement based on the date he/she downloaded the handout. A calendar of block divisions as well as the manual for the de-identification process is provided in Appendix D.

### ***Data Set Sample***

The data set includes columns for the title of the handout, the age group the handout pertained to, the type of handout downloaded, the language the handout was downloaded in (English vs Spanish), the date the handout was downloaded, the block schedule the student was a part of, the academic year the student was a part of, and the student's user name. These columns were abbreviated "title", "age", "category", "language", "date", "block", "academic year", and "user" respectively. There was one instance when a medical student downloaded 1000 handouts. Only the students required 4 handouts were retained to ensure more accurate readings and data analysis. The data set from July 2013 to July 2014 was skewed because the assignment was not mandatory for

students to complete, so the data from this time period were omitted. A sample of the data set is included below in Table 3:

<b>Handout Title</b>	<b>Age Category</b>	<b>Category</b>	<b>Language</b>	<b>Date</b>	<b>ID</b>	<b>BLOCK</b>
High Blood Cholesterol	Adult	Cardiovascular Disease	English	12/11/12	U001	3
High Blood Triglycerides	Adult	Cardiovascular Disease	English	12/11/12	U001	3
Cholesterol and Dietary Supplements	Adult	Cardiovascular Disease	English	12/11/12	U001	3
Fat Facts	Senior	Cardiovascular Disease	English	12/9/12	U001	3
DASH Diet	Senior	Cardiovascular Disease	English	12/9/12	U001	3
Fat Facts	Senior	Cardiovascular Disease	English	12/9/12	U001	3
Cardiovascular Disease and Diet	Senior	Cardiovascular Disease	English	12/9/12	U001	3
Diabetes and Healthy Diet	Senior	Diabetes	English	12/9/12	U001	3

Table 3. Sample data set including title, age, category, language, date, block, and user information

### *Data Analysis*

Results of this project were analyzed by considering both the total and type of nutrition handouts chosen to be downloaded by the medical students at UCLA. Specifically, the usage of the various types of handouts was analyzed using statistical methods to calculate comparisons and correlations of the averages of handouts downloaded, what types were most commonly downloaded, and what age groups were downloaded from most frequently. The user information of each medical student was de-identified to protect the privacy of the medical students; this de-identified data were analyzed using chi-square and ANOVA tests. Chi-square tests were used to determine the relationship between categorical variables included in the dataset (e.g., age group and handout type). ANOVA tests were used to determine differences across years on continuous outcomes (e.g., average number of handouts given across different years).

### ***Questions Analyzed***

The specific questions analyzed were:

- What was the average total number of handouts downloaded?
  - o Is this assignment statistically proven to be an effective way to incorporate nutrition into medical schools considering only 4 handouts were required?
- What was the average number of handouts downloaded per year?
- What was the average total number of students per year/how many total handouts were downloaded per year?
- What were the most frequently downloaded from categories in general?
- What was the most frequently downloaded category per academic year?
- What age category was downloaded the most frequently?

The tests were performed by SPSS data analysis software with the assistance of faculty from the Research and Design Department at the University of Nevada Reno.

### ***IRB Approval***

As part of IRB protocol, this project was exempt under category 4: “Research Involving Existing Specimens, Biomedical”. The principal investigator of the thesis project, Dr. Ashley, was part of implementing nutrition into the curriculum of UCLA medical students and thereby had right to access and use the data. As previously mentioned, the user names of the medical students were de-identified to protect their privacy as well. In addition, the principal investigator of this project will share the results of this data analysis with the Associate Dean of Medical Education from the UCLA medical school, who allowed the assignment to be integrated into the 3<sup>rd</sup> year clerkships.

Analysis and evaluation of this data are expected to support the thesis that the inclusion of nutrition training into medical curriculum in a hands-on patient assignment is beneficial, efficient, and feasible for medical students and developers of medical school curriculum.

### Results:

The answers to the questions “what was the average total number of handouts downloaded”, “is this assignment statistically proven to be an effective way to incorporate nutrition into medical schools considering only 4 handouts were required”, “what was the average number of handouts downloaded per year”, “what was the average total number of students per year/how many total handouts were downloaded per year”, “what were the most frequently downloaded from categories in general”, “what was the most frequently downloaded category per academic year”, and “what age category was downloaded the most frequently” are described in detail below. Overall, it was shown that the tool used by Dr. Ashley was indeed a statistically proven mechanism of incorporating nutrition into medical schools.

#### *Average Number of Handouts Downloaded*

The first and most important question of this thesis was to see whether or not the tool of using patient nutrition handouts would be an effective means of incorporating nutrition education into medical schools. The medical students were only required to distribute 4 handouts, but as demonstrated below, it is shown that the medical students downloaded close to an average of 10 handouts each.

Table 4. The average total number of handouts downloaded.

Mean	9.64
Standard Deviation	9.349
Range	86
Minimum	1
Maximum	87
Median	7.00

Table 4 shows that the average number of handouts was 9.64 and that the standard deviation was 9.349. The typical number of handouts downloaded was about 9 units away from the value of 9.64. The minimum and maximum are separated by a range of 86, showing that there was one medical student who only downloaded one handout and one medical student who downloaded eighty-seven handouts. Having such a large range may appear to contribute to a skewed average, but the median total number of handouts downloaded was close to 7 units, which shows that most medical students downloaded more than the 4 required handouts.

Table 5. T- Test analysis of the average total number of handouts.

One-Sample Test						
	Test Value = 4					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Amount of handouts downloaded	12.555	477	.000	5.688	4.80	6.58

Table 5 shows there is a significant difference from the expected value of handouts downloaded (4), and what the average actually was (9.64). Dr. Ashley expected that medical students would only download the required four handouts, but the results show that the students instead downloaded about 10 handouts. The t-value was 12.55 and the degree of freedom (users) was 477. The significant level of this comparison was 0.000, which is below the accepted value of 0.05. As long as external factors do not discourage the use of this tool, there is a high probability of being able to replicate these results if the tool were to be repeated in other medical schools.

After the initial analysis was done to calculate the average total number of handouts downloaded, several other evaluations were done to discover relationships between the number and nature of handouts downloaded over the 4 years the tool was used at the medical school of UCLA.

***Average Total Number of Handouts per Academic Year***

As is demonstrated by Table 6 and Figure 7, there is no specific trend in the average number of handouts downloaded across the academic years. As was mentioned in previous sections, the academic year 2013-2014 was not included in the analysis of the data due to the assignment not being mandatory for medical students during that year. The drop in handouts from the year 2012-2013 to 2014-2015 was expected, however due to a lack of support from the educational department at UCLA.

Table 6. The average total number of handouts per academic year.

Academic Year	Average Number of Handouts
2011 – 2012	9.47
2012 -2013	10.50
2014-2015	8.63
Total	9.64

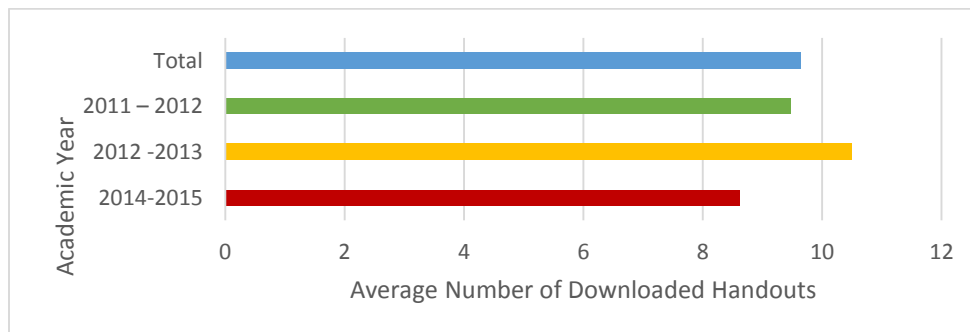


Figure 7. The average total number of handouts per academic year.

### ***Total Number of Medical Students per Academic Year***

Table 7 and Figure 8 show that overall there were a total of 469 participants using the tool developed by Dr. Ashley, and each year had a similar number of medical students. There was an increase in medical students between the academic year of 2011-2012 and 2012-2013, but statistical analysis did not demonstrate a significant difference in the number of medical students compared to the average amount of handouts downloaded. There was a drop in the number of medical students in the year 2014-2015, however, which again may be related to diminished participation secondary to a lack of support of the UCLA faculty.

Table 7. The total number of medical students per academic year.

Academic Year	Number of Medical Students
2011 – 2012	170
2012 -2013	177
2014-2015	122
Total	469

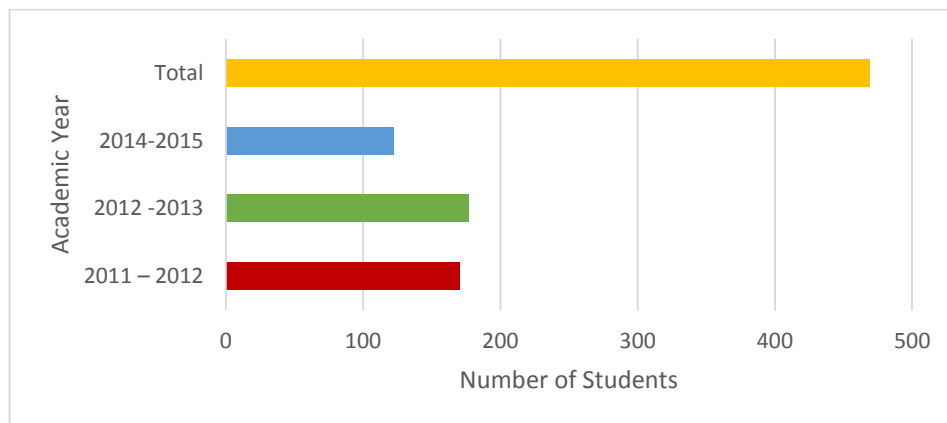


Figure 8. The total number of medical students per academic year.

### ***Average Number of Medical Students and Handouts Downloaded per Block***

Comparison was made between the average number of handouts downloaded per each block schedule as well as the total number of medical students comprising each block (Table 8). The “Block” column below refers to 1 of the 6 blocks the medical

student may have been assigned; the “N” column refers to the number of medical students in the separate blocks across all 4 academic years; the “mean” column gives the average number of handouts downloaded throughout that block over the four academic years; and the minimum and maximum columns note the minimum and maximum number of handouts an individual medical student downloaded over the course of the four academic years. Although blocks 1 and 5 had the highest average of downloaded handouts, these blocks also had some of the highest ranges between the maximum number of handouts a medical student downloaded (79 and 87 respectively) and the minimum number of handouts a medical student downloaded (1). The higher ranges may have accounted for higher averages, although block 1 also had significantly less medical students comprising its block over the four academic years. In spite of these minor differences, there is not a significant difference between the means and number of medical students across the 6 block periods.

Table 8. The average number of medical students and handouts downloaded per block.

BLOCK	Mean	N	Std. Deviation	Minimum	Maximum
1	11.13	61	12.560	1	79
2	9.19	93	7.999	1	43
3	9.75	79	11.131	1	84
4	8.90	81	9.224	1	64
5	10.05	97	11.009	1	87
6	9.42	67	6.885	1	30
Total	9.69	478	9.906	1	87

### ***Top 10 Most Frequently Downloaded Categories***

The medical students were able to select handouts from a variety of different categories, but the top 10 most frequently downloaded categories are shown below. Table 9 and Figure 9 highlight the top 10 most frequently downloaded categories from the total

amount of academic handouts over all three academic years. The categories downloaded from the most frequently were diabetes, cardiovascular disease, and weight management and correspond to three major topics of concern to health professionals today. There is a gap of about 650 handout downloads between the fourth highest category, physical activity, but the remaining categories are fairly similar in distribution.

Table 9. Top 10 most frequently downloaded from categories.

Diabetes	1191
Cardiovascular Disease	1137
Weight Management	890
Physical Activity	238
Anemia	148
Diet Types	148
Digestive Orders	138
Bone Health	105
General Nutrition	89
Nutrients	81

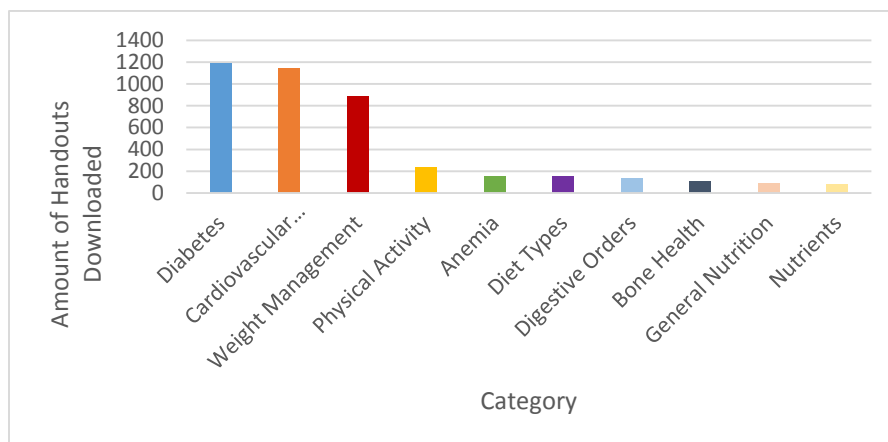


Figure 9. The top 10 most frequently downloaded from categories.

### ***Trends in Top 5 Most Frequently Downloaded Handouts Over Three Academic Years***

Continuing the discussion on the most frequently downloaded handouts, comparison was made among the top five most frequently downloaded handouts over three academic years (Table 10 and Figure 10). The same three major categories,

diabetes, cardiovascular disease and weight management were downloaded more often than their counterparts over the three academic years. The year 2012-2013 had the most total downloads and the most downloaded handouts per category for every subject. This trend may be related to an increased understanding of the use of the assignment, and a large amount of involvement and support from the academic faculty at UCLA. The year 2014-2015 has the lowest total number of handouts downloaded as well as the lowest number of downloads in nearly every category. This trend suggests a lack of support from some of the University faculty at UCLA, as well as possible lack of communication about the assignment. Figure 10 gives a visual representation of these numbers, demonstrating the percent composition of each handout downloaded over the three academic years.

Table 10. Trends in the top 5 most frequently downloaded handouts over three academic years.

	2011-2012	2012-2013	2014-2015
Total	1614	1861	1079
Diabetes	445	498	248
Cardiovascular Disease	403	435	299
Weight Management	283	391	216
Physical Activity	94	96	48
Anemia	30	66	52

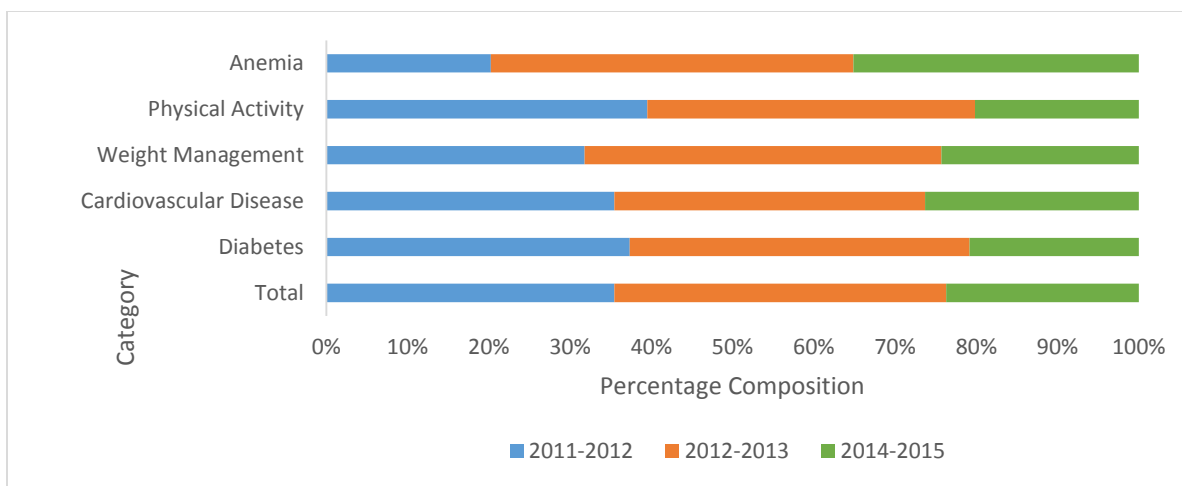


Figure 10. Percent composition of the top 5 most frequently downloaded handouts over three academic years.

### ***Titles and Frequency of Handouts in the Top 3 Most Frequently Downloaded From Categories***

Tables 11-13 show a list of the names of the handouts from the top 3 most frequently downloaded categories – diabetes, cardiovascular disease, and weight management. Examples of the most frequently downloaded handouts are found in Appendix B. Table 11 specifically shows the names of handouts in the Cardiovascular Disease category. The most commonly downloaded handouts include titles such as Cardiovascular Disease and Diet, the DASH diet, and Hypertension and Diet.

Table 11. Titles and Frequency of Handouts from the “Cardiovascular Disease” Category

<b>Name of Handout</b>	<b>Category</b>	<b>Frequency</b>
Hypertension and Diet	Cardiovascular Disease	290
DASH Diet	Cardiovascular Disease	257
Cardiovascular Disease and Diet	Cardiovascular Disease	232
High Blood Cholesterol	Cardiovascular Disease	91
Fat Facts	Cardiovascular Disease	63
Sodium in Your Diet	Cardiovascular Disease	53
High Blood Triglycerides	Cardiovascular Disease	42
Hypertension and Dietary Supplements	Cardiovascular Disease	24
Cholesterol and Dietary Supplements	Cardiovascular Disease	23

Low Sodium Flavorings	Cardiovascular Disease	16
Metabolic Syndrome	Cardiovascular Disease	16
TLC Diet	Cardiovascular Disease	14
Vitamin K and Anticoagulants	Cardiovascular Disease	9
Vitamin K in Foods	Cardiovascular Disease	9
Hypertension	Cardiovascular Disease	8
Saturated Fat	Cardiovascular Disease	8

Table 12 specifically shows the names of handouts in the Diabetes category and the most commonly downloaded handouts include titles such as Diabetes and Healthy Diet, Snacks for Diabetes, and Carbohydrate Counting.

Table 12. Titles and Frequency of Handouts from the “Diabetes” Category

<b>Name of Handout</b>	<b>Category</b>	<b>Frequency</b>
Diabetes and Healthy Diet	Diabetes	603
Snacks for Diabetes	Diabetes	156
Carbohydrate Counting	Diabetes	144
Type 2 Diabetes and Dietary Supplements	Diabetes	62
Metabolic Syndrome	Diabetes	59
Food List for Carbohydrate Counting	Diabetes	52
Exchange List for Meal Plans	Diabetes	40
Hypoglycemia	Diabetes	40
Reactive Hypoglycemia	Diabetes	14
Gestational Diabetes	Diabetes	12
PA and Food Adjustments - T1 DM	Diabetes	12
Physical Activity Tips, Type 1 Diabetes	Diabetes	2

Table 13 shows the names of handouts in the Weight Management category and the most commonly downloaded handouts include titles such as Starting on Weight Loss, Smart Snacking, and Ready to Lose Weight.

Table 13. Titles and Frequency of Handouts from the “Weight Management” Category

<b>Name of Handout</b>	<b>Category</b>	<b>Frequency</b>
Starting on Weight Loss	Weight Management	271
Smart Snacking	Weight Management	108
Ready to Lose Weight	Weight Management	96
Weight Maintenance	Weight Management	68

Recipe Substitutions	Weight Management	59
BMI	Weight Management	52
Recipe Tips	Weight Management	51
Exchange List For Meal Plans	Weight Management	48
Diet Plan Safe and Effective?	Weight Management	35
Metabolic Syndrome	Weight Management	32
Weight Gain	Weight Management	31
Overweight	Weight Management	23
Eating Tips for Weight and Health	Weight Management	13
Diet Safe and Effective	Weight Management	8
Extra Calories	Weight Management	3
PA Tips for Weight and Health	Weight Management	3

### ***Frequency of Downloaded Handouts per Age Category***

The final analysis evaluated the total number of handouts downloaded per age category. Handouts were available for adults, adolescents, seniors, and infants, but as demonstrated by Table 14 and Figure 11, it was most common for medical students to select handouts that were especially pertinent to adults. Nearly 86% of all of the handouts, (or 3903 out of 4554 total handouts) were subjects relating to adults, 7% (300 out of 4554) were related to seniors, 4% (198 out of 4554) related to adolescents, 2% (99 out of 4554) related to children, and 1% (54 out of 4554) were related to infants. These results may have been related to the fact that many of the clinical sites that the medical students completed their rotations primarily served adults, or that adult related handouts were the most easily accessible and/or pertinent to the education the medical student was seeking to portray to his/her patient. Examples for each age category are found in Appendix C.

Table 14. The frequency of handouts downloaded based on age category over three academic years.

**A YEAR \* AgeCategory Crosstabulation**

			AgeCategory					Total
			Senior	Infant	Child	Adult	Adolescent	
A YEAR	11 to 12	Count	89	24	38	1381	82	1614
		% within A YEAR	5.5%	1.5%	2.4%	85.6%	5.1%	100.0%
	12 to 13	Count	168	16	34	1578	65	1861
		% within A YEAR	9.0%	0.9%	1.8%	84.8%	3.5%	100.0%
	14 to 15	Count	43	14	27	944	51	1079
		% within A YEAR	4.0%	1.3%	2.5%	87.5%	4.7%	100.0%
Total	Count	300	54	99	3903	198	4554	
	% within A YEAR	6.6%	1.2%	2.2%	85.7%	4.3%	100.0%	

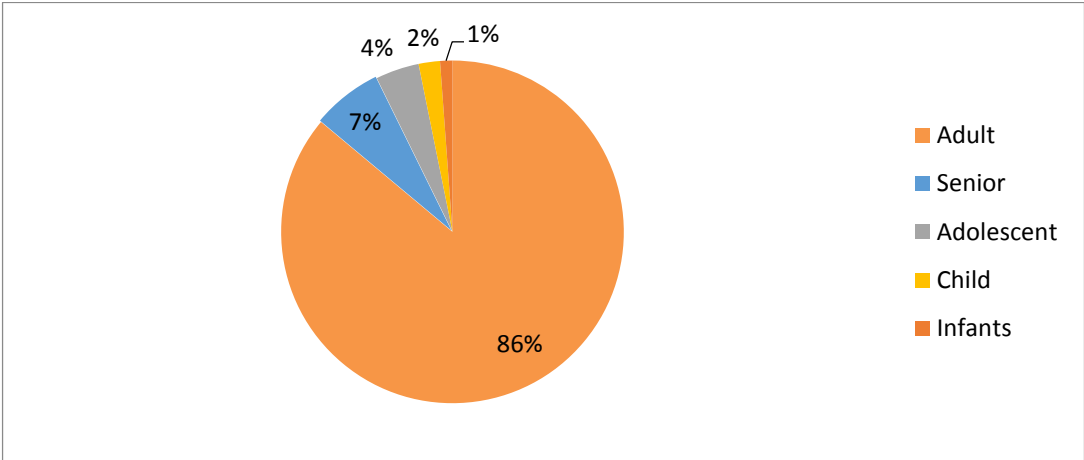


Figure 11. The total frequency of handouts downloaded based on age category.

## Conclusion

Overall, the results of this pilot study support the tool developed by Dr. Ashley as a feasible and effective mechanism of including nutrition into medical school education, considering students downloaded more handouts than requires and that the assignment requires minimal extra effort on the part of the medical students or staff at UCLA. The assignment to download the handouts was incorporated as a requirement during the medical student's clerkships. It was important that the assignment be easily accessible and easy to perform in order to ensure the assignment would not burden the teaching staff or the medical students with more course work. As the data demonstrates students often downloaded far more handouts than the required amount of 4. The tool is a effective way of incorporating nutrition into medical schools without having to supplant other classes or previously scheduled curriculum.

In order to get the results described above, data analysis and de-identifying of the data was performed twice. The first time medical students were given more than one ID number when he/she downloaded handouts outside the assigned block, leading to an over-estimation of participating medical students during the assigned clerkship blocks. When the de-identification was redone each student was given only one ID number and handouts downloaded outside the assigned blocks were not counted. In the second analysis, the overall average number of handouts downloaded between the two de-identifications was similar. In addition, in the second de-identification careful procedures were followed to ensure that the number of medical students in each block and year was correct. Once the data set was exported from the secure website the medical students were organized in alphabetical order based on their user name. Block assignments were

administered according to the academic calendars provided by the school of medicine at UCLA, and each medical student received a single ID. For the instances in which medical students downloaded several handouts outside of their assigned blocks. Dr. Ashley approved each by eliminating the entries of downloaded handouts outside of the students' original block assignment. It is possible that these medical students dropped the course, took leave of absences, or had to repeat the block. However, considering the rigors of medical school, these scenarios are considered to be very unlikely and it is more likely that the repeat entries in later blocks were cases in which medical students were using the handouts for their own clinical and/or personal use because they found them useful.

Nevertheless, it is interesting to see that the average number of downloaded handouts was more than double of what was required. This again implies that this is an effective tool that can be used in medical schools to include nutrition in their curriculum. Another interesting result of the statistical analysis showed that the top three categories medical students decided to download from--Diabetes, Cardiovascular Disease, and Weight Management--directly correlate to some of the major chronic conditions physicians and health professionals are struggling with among their patients. Thus, if physicians were given access to these patient nutrition handouts, they would be provided an excellent tool to equip their patients with proper education on these topics. This patient education could possibly in turn lead to a reduction in the rates of some of these major chronic conditions.

As previously discussed, literature demonstrates that physicians often do not feel adequately prepared to counsel their patients in nutrition. But if more physicians had access to these handouts they could both obtain a basic knowledge of nutrition concepts,

and provide that information to their patient in an easily transferrable manner. The format of these handouts would allow medical schools to teach their students the foundations of nutrition and would allow them to use what they have been learning with their patients. At the same time, the already crowded medical education would not need to add another class to cover nutrition education, but could use this assignment as a small addition to what is already in place. This assignment is also a great addition to medical school curriculum because it will not threaten the job security of Registered Dietitians or other nutrition professionals, considering it is difficult to find the balance between how much nutrition knowledge physicians are required to have. This assignment works well because it gives the medical student/physician a great foundation to work with when counseling his/her patient, but also leaves room for referrals to nutrition specialists to further evaluate the patient and develop specific treatment plans catered for their particular situations.

To improve the assignment in the future it would be interesting to attach a voluntary evaluation survey to the assignment to be completed by medical students at the end of their rotation and again after they have established their own practice. The survey would be short and simple, and would ask questions to evaluate how helpful the students found the nutrition assignment and/or if they tried to use a similar form of patient education in their own practice. It would also be beneficial to include information on which clinics the medical students attended to see if there was a correlation between certain handout types and socio-economic classes.

Some of these improvements will be incorporated in the medical school at the University of Nevada Reno (UNSOM) in the Fall of 2016. The use of handouts will be

similar to the tool used by Dr. Ashley for the medical students at UCLA in that handout distribution will be a required assignment for third year medical students in their internal medicine rotations. A pre and post questionnaire approved by IRB will also be included as part of this assignment to better gauge how medical students perceived the assignment. If the tool yields similar success to that of the students at UCLA, the tool can be proposed to other medical schools as a way of meeting their nutrition curriculum requirements as well as the health needs of the nation.

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## APPENDIX B: Most Popular Adult Handouts



### DASH Diet%



#### WHAT IS THE DASH DIET?

The DASH diet is an eating and lifestyle plan that has been shown to prevent and reduce high blood pressure and risk of heart disease. DASH stands for: **D**ietary **A**pproaches to **S**top **H**ypertension. The diet is rich in fruits, vegetables and low fat or fat-free milk and milk products (dairy). It also emphasizes whole grains, nuts, fish, and poultry, and minimizes red meat, fats, and sugar, including sweets and sugar-containing beverages.

#### HOW DOES IT REDUCE YOUR BLOOD PRESSURE?

The DASH diet is high in potassium, magnesium, calcium and fiber. It is believed that these nutrients play a role in lowering your long-term risk of heart attack and regulating blood pressure. If you follow a low sodium (salt) diet along with the DASH diet, you will have a better chance of preventing and controlling your blood pressure.

#### WHAT FOODS ARE INCLUDED IN THE DASH DIET?

Food Group	Daily Servings for 1,600 Calorie Diet	Daily Servings for 2,000 Calorie Diet	Examples of Serving Sizes
Grains & grain products (Mostly whole grains)	6	7-8	1 slice whole grain bread, 1 oz whole grain cereal, ½ cup brown rice or whole wheat pasta
Vegetables	3-4	4-5	1 cup raw leafy vegetable, ½ cup cooked vegetable, ½ cup vegetable juice
Fruits	4	4-5	1 medium fruit, ¼ cup dried fruit, ½ cup fresh, frozen, or canned fruit, ½ cup fruit juice
Low fat or fat-free dairy	2-3	2-3	8 oz milk, 1 cup yogurt, 1½ oz cheese
Lean meats, poultry, & fish	3-6 oz	6 oz or less	1 oz cooked meats, poultry, fish, or 1 egg
Nuts, seeds, beans, & legumes	3 per week	4-5 per week	1/3 cup or 1 ½ oz nuts, 2 Tbsp peanut butter, 2 Tbsp or ½ oz seeds, ½ cup cooked beans, lentils, split peas
Fats & oils	2	2-3	1 tsp margarine, 1 tsp vegetable oil, 1 Tbsp mayonnaise, 2 Tbsp salad dressing
Sweets	0	5 or less per week	1 Tbsp sugar, 1 Tbsp jelly or jam, ½ cup sorbet or ices, ½ cup fruit-flavored gelatin, 1 cup lemonade

#### TIPS:

- Replace white rice with brown rice
- Try whole grain pasta instead of regular pasta
- Add some of your favorite vegetables to sauces in pasta dishes
- Serve fresh fruit on your cereal or low-fat yogurt
- Have a piece of fruit for dessert
- Include dried fruit and unsalted nuts in your salads
- Make homemade salad dressings using olive oil as the base
- Use beans instead of meats in cooked meals and salads
- Read food labels to compare the amount of sodium in different products

For more information: **Your Guide to Lowering Your Blood Pressure with DASH**  
[http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new\\_dash.pdf](http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf)



## Getting Started on Successful Weight Loss!



Adults

**You are ready to start losing weight** and have found a diet plan that you think will work for you. The key is for you to work the plan. Use the following guidelines to set your plan into action.

### 7 STEPS FOR EFFECTIVE WEIGHT LOSS

1. **Make a commitment to yourself.** You may find it helpful to write a contract with yourself including the following points. Putting your plan into writing is more of a commitment than just thinking about what you will do.
2. **Make a list of all your benefits of weight loss.** What are the positive results you are seeking? Health benefits? Appearance? More energy? There will be times down the road that will bring you challenges. Refer to the list to remind you why weight loss is important to you.
3. **Set a date to start.** Think about what is going on in your life: now, next week, next month. Think about the timing if you are planning a vacation, a major life changing event, or the holidays are just around the corner. If you decide that it is best to wait a bit, your goal is to maintain your current weight and not let these events add more pounds.
4. **Set realistic goals.** There are short-term and long-term goals. It is best to have some of each. Your goals need to be more than how many pounds you want to lose. Focus on two or three goals at a time. Start with a short-term goal of what you will accomplish the first week, such as "I will eat my dinner at the table." Make sure your goals include changing an eating habit, adding physical activity, and changing a food in your daily plan.
5. **Look for obstacles.** Your weight loss road will include obstacles and detours. Write down what you think may get in your way. Is it time? Work? Family? Social events? Think about your past weight loss efforts to identify problem areas. Problem-solve these challenges before they happen instead of waiting until they happen.
6. **Monitor your progress.** Keep track of how you are doing with your goals. People who monitor their efforts to change behaviors are more successful than those who do no self-monitoring. You can keep a food and activity journal. You can track your goals on a daily basis in your planner or on a calendar. Write down your weight each time you weigh.
7. **Enlist support.** Find someone who will be a positive support person and share your commitment and goals. This can be a family member, a friend, or a coworker. Check in every week with your buddy. This will help hold you accountable to more than just yourself.

**Remember this is a journey. Not all changes can be made in the first few weeks. Some days will be easier than others. What is important is that you keep sight of your goals and the commitment to yourself. You can do this!**

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## Nutrition Education

### Diabetes (and a Healthy Diet)



Adults

#### WHAT IS DIABETES?

Diabetes is a disease that causes glucose (sugar) to build up in your blood. Glucose comes from the food you eat. An organ called the pancreas makes insulin which is needed to move glucose from your blood into your cells. The cells then use the glucose for energy. The most common type of diabetes is type 2 diabetes.

#### WHAT ARE THE SYMPTOMS OF DIABETES?

Symptoms of type 2 diabetes come from having high blood glucose. These include: frequent urination, excessive thirst and hunger, unexplained weight loss, fatigue, tingling or numbness, blurred vision, itchy skin, and infections or cuts that take a long time to heal.

#### WHAT CAUSES DIABETES?

There are factors that increase your risk of getting type 2 diabetes. These include: older age, being overweight, having a sedentary lifestyle, having a family history of diabetes, or giving birth to a baby weighing more than 9 pounds. Most people with type 2 diabetes are overweight.

#### ARE THERE HEALTH RISKS ASSOCIATED WITH DIABETES?

If you do not treat your diabetes properly, it can lead to health problems such as heart disease, kidney failure, nerve damage, and blindness.

#### HOW IS DIABETES MANAGED?

You can live a long and healthy life if you manage your diabetes properly. This means you will need to take your **medications**, check your **blood glucose**, increase your **physical activity**, **AND** eat a **healthy diet** that will keep your blood glucose and weight at desired levels.

#### WHAT IS A "HEALTHY DIET"?

A healthy diet includes a variety of nutritious food choices. It is also low in foods with a lot of sugar, salt, and fat. Healthy food choices include:

<b>Vegetables</b>	Most vegetables do not need to be limited because they are nutritious and low in calories. Examples are broccoli, cabbage, carrots, celery, chilies, cucumber, lettuce, green beans, greens, peppers, spinach, and tomatoes. Vegetables with starch (potatoes, yams, corn, and peas), should be limited because they can raise your blood glucose if you eat too much. Eat your vegetables mostly raw or lightly cooked with little fat, sauce, or dressing.
<b>Fruit</b>	Fresh fruits are nutritious but be careful not to eat large amounts of fruit because even the natural fruit sugars can raise your blood glucose. Examples are apples, bananas, berries, grapefruit, guava, mango, oranges, melon, papaya, peaches, pineapple, plums, and tangerines. Limit <i>fruit juices</i> and <i>dried fruits</i> because these foods are concentrated and can raise your blood glucose too much.
<b>Protein</b>	Protein foods include meats, fish, chicken, turkey, beans, tofu, soy products, milk, cheese, yogurt, eggs, and nuts. Choose your protein foods with little fat and additives. You should have a small amount of protein with each meal.
<b>Grains</b>	Natural, whole grains are more nutritious than refined (white) grains. Examples of whole grains are brown rice, bulgur, whole wheat breads, whole grain cereals, whole wheat pasta and tortillas, oatmeal, and popcorn. You should have a small amount of grains with each meal. Too much will raise your blood glucose.

**Limit** the amount of *sweets* and *fats* you eat such as candies, cakes, cookies, pie, jam, syrup, honey, butter, oil, mayonnaise, dressings, bacon, cream cheese, and fried foods. Avoiding these foods will help you lose weight and keep your blood sugar and blood fats under control.

## Hypertension and Diet!



Adults

### WHAT IS HYPERTENSION?

Hypertension is high blood pressure. Blood pressure is the force of blood against the artery walls. Blood pressure is measured with two numbers, called systolic and diastolic. The systolic pressure is the force as the *heart beats* and the diastolic pressure is the force as the *heart relaxes*. The measurement is written with systolic number on the top and the diastolic number on the bottom.

### IS IT A PROBLEM IF YOU HAVE HIGH BLOOD PRESSURE?

High blood pressure causes your heart to work too hard and can lead to atherosclerosis (hardening of the arteries). It increases your chances of getting heart disease, kidney disease, and having a stroke. It can also cause blindness. Hypertension is dangerous because it usually has no symptoms or warning signs. About one out of every four adults in the U.S. has high blood pressure.

### HOW IS HYPERTENSION TREATED?

Making healthy lifestyle changes is the first step in treating high blood pressure. If these lifestyle changes are not enough, then your healthcare professional may put you on blood pressure medications. Ask your healthcare professional how often you should have your blood pressure checked.

### WHAT LIFESTYLE CHANGES SHOULD YOU MAKE?

- **Lose weight if you are overweight**
- **Exercise regularly (check with your healthcare professional about what is safe for you)**
- **Eat a healthy diet that is low in sodium (salt)**
- **Limit alcoholic drinks**
- **Quit smoking**

### WHAT IS THE DASH DIET?

The DASH diet is an eating plan that has been shown to reduce high blood pressure. DASH stands for "Dietary Approaches to Stop Hypertension". You should be able to help reduce your high blood pressure by following the healthy lifestyle changes above along with the DASH diet.

**Increase** these in your diet:

- Fruits and vegetables
- Low fat dairy foods
- Whole grains
- Lean poultry and fish
- Nuts

**Decrease** these in your diet:

- Fatty and fried foods
- Red meats
- Saturated fat, total fat, and cholesterol
- Sugar and sweet foods and beverages

## Cardiovascular,Disease,and,Diet,



Adults

### WHAT IS CARDIOVASCULAR DISEASE?

Cardiovascular disease is a term that refers to many diseases that affect your heart or blood vessels (arteries and veins). Examples are heart attack, stroke, congestive heart failure, and high blood pressure. It is the leading cause of death in the world for both men and women and also a major cause of disability. Cardiovascular disease is also called “heart disease”.

### WHAT ARE THE SYMPTOMS OF CARDIOVASCULAR DISEASE?

You may have no symptoms of cardiovascular disease, so you should see your healthcare professional if you think you may have heart disease. Symptoms of a heart attack include chest pain that can move to the shoulders, arms, throat or jaw, sweating, dizziness, nausea, and shortness of breath. Stroke symptoms can include sudden loss of feeling in a part of the body, sudden loss of vision in one eye, difficulty speaking, and severe headache.

### WHAT CAUSES CARDIOVASCULAR DISEASE?

Factors such as having diabetes, smoking, lack of exercise, poor diet, and overweight all increase the risk for developing heart disease.

### WHAT LIFESTYLE CHANGES SHOULD YOU MAKE?

The good news is that you can prevent heart disease. If you already have it, you can control it by making some changes in your lifestyle. The American Heart Association recommends:

- ✓ **Consume an overall healthy diet**
- ✓ **Aim for a healthy body weight**
- ✓ **Aim for healthy blood cholesterol and triglyceride levels**
- ✓ **Aim for a normal blood pressure**
- ✓ **Aim for a normal blood glucose level**
- ✓ **Be physically active**
- ✓ **Avoid use of and exposure to tobacco products**

### WHAT DIET CHANGES SHOULD YOU MAKE?

- ✓ **Don't eat more calories than you know you can burn up every day**
  - ✓ **Consume more fresh vegetables and fruit**
  - ✓ **Consume whole grain products rather than “white” grains**
  - ✓ **Include low fat or nonfat dairy products, beans, peas, lean poultry, lean meats, and vegetarian meat substitutes**
  - ✓ **Eat fish twice a week**
  - ✓ **Limit high calorie foods or foods with low nutrient quality (high sugar and high fat). This means avoiding high fat red meats, processed foods, poultry skin, whole fat dairy foods, fried foods, desserts, and sweet beverages.**
  - ✓ **Limit salt**
  - ✓ **Limit alcohol**
-

## APPENDIX C: Sample handouts from Each Age Group/Language



### Breastfeeding Your Baby



#### WHY SHOULD YOU BREASTFEED YOUR BABY?

Breastfeeding is one of the best things that you can do for your baby for many reasons. Breastfeeding provides benefits for your baby, for you, and also for society.

#### HOW DOES BREASTFEEDING BENEFIT YOUR BABY?

- Breastfeeding provides your baby with the most complete form of nutrition possible.
- Breast milk has antibodies that help protect your baby from getting sick.
- Breast milk is easier for most babies to digest than commercial formulas.
- Your breastfed baby will be less likely to become overweight as he or she grows up.
- Your baby may score higher on IQ (intelligence) tests when he or she grows up.

#### HOW DOES BREASTFEEDING BENEFIT YOU?

- Nursing your baby uses extra calories. This makes it easier to lose the weight you gained during pregnancy.
- Breastfeeding decreases your risk of getting breast or ovarian cancer.
- Breastfeeding saves money and time, so it makes your life easier.
- Nursing will help you bond with your baby and increase your self-confidence as a mother.

#### HOW CAN BREASTFEEDING BENEFIT SOCIETY?

- Breastfed babies need less medical care than formula-fed babies. So, total health care costs for the nation are lower.
- Breastfeeding can increase productivity in the workforce. Mothers who breastfeed miss less work because their babies are sick less often. This also can reduce employer medical insurance costs.
- Breastfeeding helps our environment by producing less trash and plastic waste than formula cans and bottle supplies.



#### HOW LONG SHOULD YOU BREASTFEED YOUR BABY?

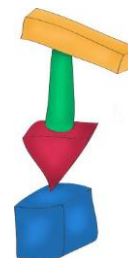
Ideally, you should breastfeed your baby for one year. If you are only able to breastfeed your baby for a short time, your baby will still get some of the benefits.

#### IS IT SAFE TO TAKE MEDICATIONS WHILE YOU ARE BREASTFEEDING?

- Always talk to your healthcare professional before taking any medications. Some medications are safe during pregnancy, but many are not.
- If you smoke tobacco, it is best for you and your baby if you try to quit as soon as possible. If you have not quit smoking, it is still better to breastfeed.
- You should limit drinking alcohol. An occasional drink is OK, but you should avoid breastfeeding for two hours after the drink.



## Iron Deficiency and Your Child



children

### WHAT IS IRON DEFICIENCY?

Iron deficiency is a condition of having too little iron in the body. It can be a problem for some children, especially toddlers and teens. When it continues over time and the body can not build healthy red blood cells, it can lead to *iron deficiency anemia*. A child who has *iron deficiency anemia* may have growth and learning problems.

### SHOULD YOU BE CONCERNED?

Your child may be at a higher risk for iron deficiency by: not eating enough iron in the diet, drinking too much cow's milk (more than 24 oz/day), going through a growth spurt, or a teen athlete. Some common symptoms include:

- ✓ **Feeling tired**
- ✓ **Rapid heartbeat**
- ✓ **Dizziness or feeling lightheaded**
- ✓ **Pale skin**
- ✓ **Slowed growth and development**
- ✓ **Fussiness**
- ✓ **Decreased appetite**
- ✓ **Headache**

### WHAT ARE SOME GOOD SOURCES OF IRON?

#### ANIMAL SOURCES

**Red meat, such as beef or lamb**  
**Poultry, such as turkey or chicken**  
**Fish, such as salmon or tuna**  
**Shellfish, such as clams or oysters**  
**Eggs**

#### PLANT SOURCES

**Iron-fortified cereals**  
**Beans and peas**  
**Tofu**  
**Leafy green vegetables, such as spinach or greens**  
**Peanut butter**  
**Dried fruit, such as raisins and apricots**

### TIPS FOR MAKING SURE YOUR CHILD GETS ENOUGH IRON

**Limit your child's milk intake** to around 16-24oz/day to prevent your child from filling up before meal times.

**Iron-fortified hot or cold cereals** are encouraged to have in your child's diet.

**Stock up on iron-rich foods** for meals and snacks to give your child.

**Avoid tea or tea beverage at mealtime**, these can reduce iron absorption in your child.

**Add vitamin C** (such as oranges or tomatoes) when serving a plant source of iron to your child's diet.



**Variety is important** when serving foods to your child, try to get a source of iron each day for your child.

**Always consult with a healthcare professional before adding iron supplements to your child's diet.**

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## Nutrition Education

### Nutrition Facts Food Label

The Nutrition Facts food label provides you with information that can help you make healthier choices when purchasing foods.

- ❖ **Serving Size:** Figure out how much is a serving size. It is often listed in cups or pieces, such as a cup of milk or 5 crackers.
- ❖ **Calories:** Check the amount of calories per serving. This information can be helpful if you are monitoring your intake. You can also find how many of a single serving's calories are coming from fat.
- ❖ **Limit these nutrients:** Nutrients including **total fat**, **saturated fat**, **trans fat**, **cholesterol**, and **sodium** may negatively affect your health if eaten in excess.

Sample label for Macaroni & Cheese

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
<b>Calories</b> 250	Calories from Fat 110
% Daily Value*	
<b>Total Fat</b> 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	10%
<b>Cholesterol</b> 90mg	20%
<b>Sodium</b> 470mg	10%
<b>Total Carbohydrate</b> 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
<b>Protein</b> 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

\* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories: 2,000	2,500
Total Fat	Less than 65g	80g
Sat Fat	Less than 20g	25g
Cholesterol	Less than 300mg	300mg
Sodium	Less than 2,400mg	2,400mg
Total Carbohydrate	300g	375g
Dietary Fiber	25g	30g

Quick Guide to % DV

- \* 5% or less is Low
- \* 20% or more is High

- ❖ **Get enough of these nutrients:** Nutrients that may provide you with health benefits and may reduce the risk of some diseases and health conditions include: **dietary fiber**, **vitamin A**, **vitamin C**, **calcium**, and **iron**.
- ❖ **Footnote:** The footnote is not added to all food labels but it a useful piece of information. A food label is based on a 2,000-calorie diet but the footnote provides %DV (Daily Value) for 2,000 and 2,500 calorie diets. Some of the nutrients do not change based on calorie amount; such as sodium and cholesterol. The requirements of these two nutrients are the same no matter how many calories a person eats. Other nutrients, such as carbohydrates and fat, do not change.
- ❖ **%DV:** This stands for percent Daily Value and is found on the right side of the food label. They are recommendations based on a 2,000-calorie diet. These percentages will help you determine if a food is high or low in a certain nutrient.

Teens





## Rheumatoid Arthritis and Diet



### WHAT IS RHEUMATOID ARTHRITIS?



Rheumatoid Arthritis (RA) is a chronic disease that causes inflammation of the joints, the place where 2 bones connect. It is an autoimmune disease, which means that the immune system mistakenly attacks its own body. While RA affects the joints, commonly the wrists and fingers, it can also affect the whole body, including the eyes, lungs, and mouth. Usual symptoms of RA are pain, stiffness, swelling, fatigue, difficulty with sleep, lack of appetite, weight loss, and fever. RA is more frequent in women than men and often starts between the ages of 25-55. You could have a mild form that may come and go or a severe form that can last a lifetime. The causes of RA are not presently known.

### HOW IS RA TREATED?

Your healthcare professional may prescribe medications to reduce pain, swelling and damage to your joints. Other treatments may include physical therapy and equipment such as canes and special shoes. Benefits can also be seen with lifestyle changes such as healthy diet, adequate rest, and reducing stress. You may see a rheumatologist to treat your RA. A rheumatologist is a healthcare professional who treats arthritis and other rheumatic diseases. You may also consider alternative or complementary therapies to help manage your symptoms. Some of these treatments can include massage therapy, acupuncture, acupressure, and supplements. Not all people will respond the same to treatments. Make sure you tell your healthcare professional if you are trying any alternative or complementary therapies.

### CAN DIET HELP?

There is no specific diet for RA, however what you eat can affect your condition. An overall balanced diet can improve your health. Certain types of foods may increase inflammation while others may reduce inflammation. The following suggestions may improve your symptoms by reducing inflammation:

<p><b><u>Increase</u></b> these foods:</p> <p><b>Omega-3 fatty acids</b> (cold water oily fish such as anchovies, herring, mackerel, salmon and sardines, walnuts, flax seeds, and pumpkin seeds)</p> <p><b>Monounsaturated fats</b> (olive oil, canola oil, and avocado)—oils are high in calories, so don't overdo it!</p> <p><b>Phytochemicals and anti-oxidants</b> (berries and other brightly colored fruits and vegetables)</p> 	<p><b><u>Decrease</u></b> these foods:</p> <p><b>Sugars</b> (candies, desserts, sweetened cereals and soft drinks)</p> <p><b>Saturated fats</b> (high fat meats and cheeses, butter, lard, shortening, and foods made with these ingredients)</p> <p><b>Trans fats</b> (fast foods, packaged snacks and baked goods made with partially hydrogenated oils)</p> <p><b>Omega-6 fatty acids</b> (corn oil, sesame oil, soybean oil, and sunflower oil)</p> 
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### MORE DIET RECOMMENDATIONS:

- Make sure you get enough protein to build healthy body tissues. Good sources include fish, lean poultry, nuts, seeds, beans, and soy products.
- Choose healthy forms of carbohydrates, such as whole grains, fruits and vegetables, and beans.
- Extra calcium and vitamin D may be needed, especially if you are taking corticosteroids like prednisone. Check with your physician if you should be taking supplements. Vitamin D comes mainly from sun exposure, fish, and fortified foods. Good sources of calcium include milk, cheese, yogurt, fortified orange juice, beans, tofu, and green leafy vegetables.
- If you are on a medication called methotrexate, be sure to get enough folic acid. Food sources of folic acid include green leafy vegetables, orange juice, fortified cereals, and beans.
- If you are overweight, strive to lose weight. This can benefit your joints and your overall health.

## Nutrition Education

### Dieta DASH/EDIH (DASH Diet)



Adults

#### ¿QUÉ ES LA DIETA DASH?

La dieta DASH (mejor conocida en español como EDIH) es un plan de alimentación que ha demostrado prevenir y reducir la presión arterial alta y el riesgo a enfermedades cardíacas. DASH o en español EDIH, significa **E**nfoques **D**ietéticos para **I**mpedir la **H**ipertensión. La dieta es rica en frutas, vegetales y leche baja en grasa o descremada, y productos lácteos. También pone énfasis en granos enteros, frutos secos, pescado y carnes de ave, y minimiza las carnes rojas, grasas, y el azúcar, incluyendo los dulces y bebidas que contengan azúcar.

#### ¿CÓMO REDUCE SU PRESION ARTERIAL?

La dieta DASH/EDIH es alta en potasio, magnesio, calcio y fibra. Se cree que estos nutrientes cumplen un rol importante en disminuir su riesgo a largo plazo de ataques al corazón y controlar la presión arterial. Si usted sigue una dieta baja en sodio (sal) junto con la dieta DASH/EDIH, usted tendrá mejores chances de prevenir y controlar su presión sanguínea.

#### ¿QUÉ ALIMENTOS ESTAN INCLUIDOS EN LA DIETA DASH/EDIH?

Grupos Alimenticios	Porciones Diarias para una Dieta de 1.600 Calorías	Porciones Diarias para una Dieta de 2.000 Calorías	Ejemplos de tamaño de porciones
Granos & productos de granos (Mayoritariamente granos enteros)	6	7-8	1 rodaja de pan de integral de granos enteros, 1 oz de cereal de granos enteros, ½ taza de arroz integral o pasta integral
Vegetales	3-4	4-5	1 taza de vegetales crudos de hoja, ½ taza de vegetales cocidos, ½ taza de jugo de vegetales
Frutas	4	4-5	1 fruta mediana, ¼ taza de fruta secas, ½ taza de fruta fresca, congelada o enlatada, ½ taza de jugo de frutas
Lácteos bajos en grasa o sin grasa	2-3	2-3	8 oz de leche, 1 taza de yogur, 1½ oz de queso
Carnes magras, carne de aves y pescados	3-6 oz	6 oz o menos	1 oz carnes cocidas, carne de ave, pescado o 1 huevo
Frutos secos, semillas, frijoles y legumbres	3 por semana	4-5 por semana	1/3 taza o 1 ½ oz de frutos secos, 2 Cdas. De mantequilla de maní, 2 Cdas. o ½ oz de semillas, ½ taza de frijoles cocidos, lentejas y arvejas
Grasas y aceites	2	2-3	1 Cda. De margarina, 1 Cda. de aceite vegetal, 1 Cda. de mayonesa, 2 Cdas. De aderezo para ensalada
Dulces	0	5 o menos por semana	1 Cda de azúcar, 1 Cda. De jalea o mermelada, ½ taza de helado de agua o hielos, ½ taza de gelatina con sabor a fruta, 1 taza de limonada

#### SUGERENCIAS:

- Reemplace el arroz blanco por arroz integral
- Pruebe pasta integral en lugar de pasta regular
- Agregue algunos de sus vegetales favoritos a salsas en los platos de pasta
- Sirva frutas frescas en su cereal o yogur bajo en grasa
- Coma un trozo de fruta como postre
- Incluya frutas secas o frutos secos sin salar a sus ensaladas
- Haga aderezo para ensaladas casero usando aceite de oliva como base
- Use frijoles en lugar de carnes en comidas cocinadas y ensaladas
- Lea las etiquetas de los alimentos y compare la cantidad de sodio en los diferentes productos



Para más información: Su Guía para Disminuir Su Presión Arterial con DASH/EDIH  
[http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new\\_dash.pdf](http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/new_dash.pdf)

## **APPENDIX D: De-Identifying Manual**

1. Once data file has been opened, using the web links below, assign block numbers based on the information that there are two 24 week rotations per academic year, each comprised of 8 weeks. In other words, assign the block in 8 week intervals based on the start and end dates of each rotation according to the calendar designations.
  - a. 2011 -2012
    - i. 1<sup>st</sup> 24 week block rotations Mon July 11 2011 - Dec.23
    - ii. 2<sup>nd</sup> 24 week block rotations Jan 9 – July 6 2012  
<https://www.medstudent.ucla.edu/offices/sao/administration/pdf/1112calendar.pdf>
  - b. 2012-2013
    - i. 1<sup>st</sup> 24 week block rotations Mon July 9 2012 - Dec.21
    - ii. 2<sup>nd</sup> 24 week block rotations Jan 7 – July 5 2013
  - c. 2013-2014  
[https://www.medstudent.ucla.edu/offices/sao/calendars/2013\\_2014Calendar\\_Final.pdf](https://www.medstudent.ucla.edu/offices/sao/calendars/2013_2014Calendar_Final.pdf)
    - i. 1<sup>st</sup> 24 week block rotations Mon July 8 2013 - Fri Dec.20 2013  
 Winter Break: Dec 21 2013 – Jan 5 2015
    - ii. 2<sup>nd</sup> 24 week block rotations Mon Jan 6 – Fri May 30 2014 July 3 2014  
 Spring Break: Mon Mar 31 2014– Sun Apr 13 2014
  - d. 2014-2015  
[https://www.medstudent.ucla.edu/offices/sao/clinical/documents/2014\\_2015HBDCalendar.pdf](https://www.medstudent.ucla.edu/offices/sao/clinical/documents/2014_2015HBDCalendar.pdf)
    - i. 1<sup>st</sup> 24 week block rotations Mon July 7 - Fri Dec 19 2014  
 Winter Break: Dec 20 2014 – Jan 4 2015
    - ii. 2<sup>nd</sup> 24 week block rotations Mon Jan 5 2015 – Thur July 2 2015  
 Spring Break: Mon Mar 30 2015 – Sun Apr 12 2015
2. There should be six blocks per academic year, according to the schedule below. Assign each block with numbers 1-6 in the data set corresponding to the dates below.
  - a. 2011-2012
    - i. Block 1: July 11 –Sun Sept 4
    - ii. Block 2: Sept 5 – Sun Oct 30
    - iii. Block 3: Oct 31 – Dec 23
    - iv. Block 4: Jan. 9 – Sun March 4
    - v. Block 5: Mar 5 – Sun May 13
    - vi. Block 6: May 14 – Fri July 6
  - b. 2012-2013
    - i. Block 1: July 9 – Sun Sept 2
    - ii. Block 2: Sept 3 – Sun Oct 28
    - iii. Block 3: Oct 29 – Fri Dec. 21

- iv. Block 4: Jan 7 – Sun Mar 3
    - v. Block 5: Mar 4 – Sun May 12
    - vi. Block 6: May 13 – Fri July 5
  - c. 2013-2014
    - i. Block 1: July 8 – Sun Sept 1
    - ii. Block 2: Sept 2 – Sun Oct 27
    - iii. Block 3: Oct 28 – Fri Dec 20
    - iv. Block 4: Jan 6<sup>th</sup> – Sun Mar 2
    - v. Block 5: Mar 3 – Sun May 11
    - vi. Block 6: May 12 – July 3<sup>rd</sup>
  - d. 2014-2015
    - i. Block 1: July 7 – Sun Aug 31
    - ii. Block 2: Sept 1 – Sun Oct 26
    - iii. Block 3: Oct 27 – Fri Dec 19
    - iv. Block 4: Jan 5 – Sun Mar. 1
    - v. Block 5: Mar 2 – May 10
    - vi. Block 6: May 10 – Fri July 3
- 3. Once the blocks have been assigned, user de-identification can begin. In order to accomplish this, each user should generally receive one code. For example, user onetwothree@ucla would receive code U001 whenever he/she appears throughout the data set and user fourfivesix@ucla would receive code U002 whenever he/she appears throughout the data set.
- 4. In spite of students possibly downloading handouts in later years or blocks, each student should receive the same ID. However, it is important to keep track of where these later students are found and how many entries they account for in later sections. This should be noted and reviewed with Dr. Ashley. Specifically,
  - a. The data will be sorted alphabetically and each user will receive their own code
  - b. In cases where students appear in multiple blocks, after permission/review from Dr. Ashley the entries in the first block the student appears in will be highlighted in blue and will be retained, and subsequent entries will be highlighted in yellow and will omitted because the student is outside of his/her initial block assignment
  - c. If students have similar user names they will be highlighted in yellow for review by Dr. Ashley to determine if they are the same student.
  - d. There may be times in which a student appears in more than one academic year; if a significant amount occurs in their original block, these entries will be highlighted in blue and retained, while the later entries will be highlighted and omitted with permission from Dr. Ashley. If other cases occur, consultation with Dr. Ashley will be needed, but ensure to highlight and note the rows in which possible discrepancy may occur.