

The Coexistence of Hunger and Obesity: Examining the Binary Burden of the Nutrition Paradox and Future Implications

Aleksandra Fedunchak
Department of Anthropology
Bloomsburg University

It is no secret that childhood obesity is pervasive in contemporary North American society. However, a more pressing nutritional issue may be the global "nutrition transition" in the discourse of social and biological/nutritional scientists. The nutrition transition asserts that worldwide populations are suffering from both over- and undernutrition. Consequently, not only are more children becoming obese, but more are suffering from malnutrition and lack the proper nutrients for healthful wellbeing and sustainment

This paper investigates some of the explanations for the nutrition transition, including examining the changes in diets of people in the United States as well as looking at the Westernization of diets across the world. Comparative research from domains such as anthropology, nutrition science, and government publications provides a thorough analysis of the connection between nutritional knowledge, nutritional education, and subsequent patterns of food behaviors in relation to the nutrition paradox. Systematic review of this data illustrates that there are significant cultural and social criteria we must consider in the evaluation of the global food market. This paper also looks at nutrition education programs as potentially ineffective, and contends that other nutritional options and health policies must be designed in order to sufficiently avert this global nutrition disaster. Ultimately, more nutrition promotion programs and collaboration of the populace, businesses, and jurisdictions worldwide are needed to make progress with this health concern.

A Global Health Affair

Globalization is a term that may have many meanings and innumerable effects in our society. Typically, it is characterized by "rapid socioeconomic, demographic, and technological change ... explained by a vast array of shifts in our way of living and doing commerce" (Carolina Population Center). Coupled with the increased world-wide adoption of Western ideals, norms, and ambitions, this combination is a recipe for traditional cultural calamity. In one sense, globalization and Westernization can promote productivity and technological advances. On the other hand, these forces are apt to be responsible for devastating transitions seen in many human processes. Markedly, this paper will examine the contributions of globalization and Westernization to the "patterns of change in dietary and physical activity and nutritional status," also known as the nutrition transition (Carolina Population Center).

The issue of most concern is the global-scale burden of both hunger and obesity. This hardship is not solely seen in the same countries, states, or communities-it is seen-in members of the *same households* in many industrialized *and* developing countries. Although I plan to discuss the issue in detail later, it deserves immediate attention, both in this paper and in a worldwide agency. Researchers from biological and social sciences are becoming increasingly

aware of this previously little acknowledged pattern. The details and health consequences of this issue are to be expanded on shortly, but first, I want to share some details of my own fieldwork and present some reasons I became interested in this topic.

Differences between Fitness and Health

In spring of 2007, I conducted undergraduate research at Bloomsburg University. This research project was a requirement of an upper-level class entitled "Ethnographic Field Methods," taught by Dr. Faith Warner, professor in the Department of Anthropology. At this time, I became very interested in fitness and nutrition. I observed that in American culture, as seen in various popular media venues, such as television and magazines, exercise is often analogous with good health. People who exercise are often perceived as fit and healthy. On the other hand, many college students are often speculated to have adverse health habits and are thus perceived as less healthy in various domains. Along these lines, my research focused on the evaluation and comparison of the actual health habits and behaviors of students who exercise with their opinions of their health. I noted students' self-perception of health, observed patterns of exercise and fitness goals, identified their dietary practices, investigated their health-risk behaviors, and compared gender differences.

My research questions asked whether Bloomsburg University students who attend the Student Recreation Center (SRC) make other healthy lifestyle choices, and what, if any, are the differences in actions and attitudes pertaining to health and fitness between men and women. I hypothesized that there could be a difference between fitness and maintaining a healthy lifestyle for college students. In particular, students who attend the Student Recreation Center may engage in health-risk behaviors despite their efforts to keep fit. Also, I hypothesized there would be a difference between genders in terms of their perception of health, fitness goals, and actual health behaviors.

I conducted my study by acquiring information on the health choices and lifestyles of Bloomsburg University students who attend the Student Recreation Center. Drawing on facets of anthropological methodology, such as participant observation, informal and formal interviewing, surveying, and keeping my own ethnographic documentation, I was able to study the culture of Bloomsburg University 'gym-goers' and remark upon a number of interesting insights. Through analysis of my acquired data, I was able to make a small number of conclusions". I found that overall, more students wanted to change rather than maintain their physical shape and body type. Also, both men and women preferred to exercise with a companion and use the SRC as a setting for social networking. In addition to fitness goals and social aspects of working out, I addressed issues of nutrition and nutritional knowledge. I found that more men consume a much greater amount of alcohol than do women. On average, over 30 percent of men reported drinking 12 or more alcoholic beverages a week compared to about 7 percent of women. In addition, students were more likely to report wanting to expend energy obtained from ingesting high calorie foods than from drinking alcohol; I inferred that this is so because many students may be unaware of the high caloric content and unhealthy substances in alcohol.

In evaluating students' dietary patterns, I found that the majority of students included high-sugar and high-calorie fruit-flavored drinks and juices in their everyday diets. Although these drinks may seem healthier than soda beverages (notably one of the triggers for the nutrition transition) they often contain the same amount or more of sugar and artificial preservatives. Shockingly, during informal interviews and by listening to participants' comments, I unveiled that many students are unaware of the proper dietary recommendations and unsure of adequate

nutrition guidelines, i.e. how many servings of whole grains are recommended daily. This surprised me because I was expecting college-educated students to be more informed about nutrition and food. Conversely, the students studied showed more of an interest in changing physical appearance and fitness than obtaining or maintaining exceptional overall health. Gender differences noted include the finding of men's identification as livery healthy," despite their participation in more health-risk behaviors than females, who tend to identify themselves as "somewhat healthy." Furthermore, more men exhibited a desire for 'bigger bodies' and were more likely to report a desire to consume more protein-dense powders or food substances. More women exhibited a desire for 'smaller bodies' and noted feeling social pressures for weight loss. At first, I concluded that more health promotion is needed to address the gap between fitness and health in a university setting. However, with more research on the topic and investigation into the nutrition transition and problems with nutrition education, I reevaluate my prior understanding". Nutrition education and masses of force-fed nutritional knowledge may not be enough to manage the various forms of health crises around the world.

Employing anthropological methodology and theories, I will present a sample of the possible explanations for the nutrition transition, including examining the changes in diets of people in the United States as well as looking at the Westernization of diets across the world. Furthermore, through studying and comparing research from the fields of anthropology, nutrition, and government publications, I hope to elaborate on the nutrition paradox and decipher the relationship between nutritional knowledge, nutritional education, and subsequent patterns of food behaviors. Ultimately, I wish to show that efforts in nutrition education must be modified in order to have any real impact. The reliance on a better nutrition education program is faulty and ineffective; there are significant cultural and social criteria we must consider in the evaluation of the global food market. Cross-cultural issues in food consumption behavior must be analyzed in order to sufficiently avert this global nutritional disaster.

An Anthropological Perspective on Nutrition

In order to understand this issue, we must first understand the ways in which it is studied. In this paper, I am relying on an anthropological perspective to address the previously described issues. Although this topic has widespread interest among many scientific fields of study, the field of anthropology appears to be slowly making the most gains in attending to these emerging health concerns. An anthropological approach is useful because it evokes "a powerful perspective for understanding the evolution of human food use and its consequences for health" (Himmelgreen 2002: 3). Nutritional anthropology, in particular, is a crucial vehicle in the investigation of the nutrition transition seen around the world. Such an approach is holistic in its understanding of the biological, social, and cultural forces behind the shaping of human processes, such as diet and food use. According to Himmelgreen, nutritional anthropologists are capable of focusing on both the cultural and biological processes of nutrition (Himmelgreen 2002).

The anthropology of food "arose in the 1930s with the pioneering and exemplary studies of Audrey Richards" (MacClancy and Macbeth 2004: 2L which focused on insufficient diets of native Southern Bantu and the Bemba of Zambia to show social group responses in times of hunger. Gradually, scholarship in this field moved from "cultural materialist agendas" to "exemplars of a discriminating eclecticism II" (MacClancy and

Macbeth 2004: 3) as concerns with the inconsistencies in the world food system increase. Nutritional anthropology, as a formal subdiscipline, emerged with the organization of the Committee on Nutritional Anthropology formed in 1974 and focused on the increasing interest in the connection between social and human health sciences (Himmelgreen 2002). Later known as the Council on Nutritional Anthropology (CAN), this section of the American Anthropological Association is very involved in promoting the collaboration of social and nutritional scientists to better understand current health crises and concerns (Himmelgreen 2002). Although interest in nutritional anthropology has been at hand since the early 1900s, the 1980s have shown an immense "increase in nutrition research in biological anthropology" due to the "increased prominence of nutrition in public health" and the importance of diet in everyday human processes (Himmelgreen 2002: 5). Two prominent biological anthropologists, Stanley Ulijaszek and Simon Strickland, have defined nutritional anthropology as "the study of human diet and nutrition within a comparative and evolutionary perspective" (MacClancy and Macbeth 2004: 3). Research focuses in nutritional anthropology can vary from studying social epidemiology, to looking at biological adaptations in specific eco-systems, to examining the relationship between nutrition and economic development (Himmelgreen 2002). The latter area offocus will be helpful in addressing this paper's main concerns.

The use of the bio-cultural perspective in nutritional anthropology enables researchers to examine issues with theories and methods from both social and biological sciences. Himmelgreen notes several heuristic models and states that the holistic methods in nutritional anthropology encompass those of the overarching field of anthropology, especially participant observation and ethnography (Himmelgreen 2002). Namely, the political economy of health perspective has been helpful for a range of subfields in anthropology. This perspective stresses the "relationship between class and health" and assists in examining the connections between social factors and "the design, implementation, and evaluation of nutrition education and social marketing programs" (Himmelgreen 2002: 6). However, nutritional anthropology has also borrowed methods from other sciences and innovated techniques into the field⁴ (Himmelgreen 2002). The overall integrated approach lends itself to a more-rounded understanding and conceptualization of nutrition, health, and human processes as studied by anthropological researchers.

Human food use and nutritional health are inherently shaped through cultural context. Attitudes about food and eating are shaped through a lifelong learning process framed by society and culture (MacClancy and Macbeth 2004). In order to address the issues of why people eat the way they do, we must first understand a number of complex circumstances. Straightforwardly, "people do not eat nutrients, they eat food" (Crooks 1999: 1). Many people do not consciously validate every morsel of food they put into their mouths. Reasons for eating are typically embedded in sociocultural contexts, and these contexts are best explored from the anthropological perspective because of the "breadth and flexibility of anthropology's theoretical underpinnings and research methodologies" (Crooks 1999: 2). According to Crooks, people may choose food based on identity issues, economic issues, social relationships, cultural trends, or the any combination of those factors (Crooks 1999). As a result, the use of anthropological perspectives and methods to study the issue of human nutrition and health processes is reasonable and sound.

Paradoxical Food Behaviors

One of the most alarmingly popular areas of nutrition and health is the discourse on the nutrition transition and the nutrition paradox. The nutrition transition is commonly defined as "the changes in diet, food availability, and lifestyle that occur in countries experiencing a socioeconomic and demographic transition" (Caballero 2005: 1). This is a disturbing trend seen in countries all around the world. The nutrition transition recognizes the "increasing prevalence of obesity and non-communicable diseases" coupled with the prevailing "undernourishment and malnutrition in developing countries" in the production of a "widespread double burden of malnutrition" (Schmidhuber and Shetty 2005: 150). This is also regularly referred to as the overweight-underweight paradox and, in simplest terms, is a "consequence of global changes" (Popkin 2007: 6). This type of malnutrition is not simply caused by a lack of food, nor is overweightness an uncomplicated symptom of overeating. Burslem contends that nutritionists previously believed that enough of any form of caloric energy could act as nourishment for populations in developing countries. However, they have come to realize that a "lack of high quality foods such as whole grains, fiber, fruits, and vegetables" has been replaced with an excess of "saturated fat, sodium, and added sugar," proving undoubtedly injurious to health (Burslem 2004: 2).

According to literature from fields of health sciences, nutrition, agriculture, and anthropology, there has been an overwhelming shift and increase in food consumption patterns on a global scale. Initially experienced in the industrialized world, Western consumption patterns are escalating into the cultures and peoples of developing countries (Schmidhuber and Shetty 2005). According to Caballero, "being poor in a middle-income country is actually associated with a higher risk of obesity than being richer in the same country" (Caballero 2005: 1). Although the United States may be preoccupied with what has been termed the obesity epidemic, it is vital to recognize the double-edged sword in this circumstance and address the co-existence of undernourishment and overweightness worldwide, including in the United States. This is important to recognize and study because nutritional problems, such as obesity and overweightness, account for countless chronic, non-communicable diseases. This burden, in addition to the persistent hunger and famine, will notably only become worse if not continuously tackled and resolved (Burslem 2004).

Examples of this "economic and human disaster" (Burslem 2004: 2) have been seen in Asia, the Pacific Islands, and Latin America. According to Burslem, in Brazil, 11 percent of households have both underweight and overweight members; in Asia, the numbers reach 15 percent. "Nauru has the most outstanding data on obesity, with as much as 70 percent of the population classified as clinically obese" (Burslem 2004: 1). Even North Africa has a 20 percent rate of overweight children between the ages of four and ten. Of course, neither can the outstanding number of obese and overweight children and adults in the United States be ignored. Although most populations in the developing world follow the trend of underweight children and overweight adults, health consequences are undoubtedly present and we are able to see detrimental effects in all age groups. Ironically, much of the developing world shifted from a state of famine to obesity, almost completely evading dependable good health (Burslem 2004).

Underlying Issues

There are a number of factors that may contribute to this combination of factors. There are no clear-cut and absolute predictors of such a transition, but literature indicates that the effects of globalization cannot be ignored in the nutrition change. The outcome of the globalization of the food market is the "introduction of mass-produced low-cost foods" that is prevailing in domestic marketplaces and stores (Caballero 2005: 2). In addition to globalization, urbanization is a key factor in the development of obesity and persistence of malnutrition. Although urbanization and Western goods may be positively anticipated in the developing world, Caballero states "that the rates of poverty and underweight have actually increased among children younger than five years old in urban areas of countries in socioeconomic transition" (Caballero 2005: 2). Typically, people who move from rural to urban areas discontinue growing their own food and become reliant on the "cash market" (Caballero 2005: 2) for their calories. It follows, that when there is not enough cash to go to the market, these people either starve or rely on cheap, energy-dense, nutrient-lacking foods for substance (Caballero 2005).

Urbanization also impacts the job market, making available more sedentary style jobs that require less physical than rural labor jobs. This decrease of physical activity has a direct effect in the caloric expenditure of the population. Principally, obesity or overweightness occurs when an individual expends fewer calories than they consume, or when one consumes a much greater amount of calories than they physically need or expends. Thus, the increase in energy-dense or calorically-dense foods and decrease in physical activity contribute to obesity in the worldwide populace (Burslem 2004).

Other notable factors in this transition include the changes in traditional preparation as an increasingly high number of women pursue careers outside of the home. Families become more reliant on "convenience food at home or fast food and snacks for outside meals" (Schmidhuber and Shetty 2005: 152). Even more residence in city environments, where calorie rich foods are "aggressively marketed" (Burslem, p 2L promotes unhealthy food consumption. The rapid expansion of supermarkets in the developing world means "an abrupt change in available food supplies with mixed nutritional outcomes" (Schmidhuber and Shetty 2005: 152), typically endorsing and providing a superfluous amount of junk food. Also, farmers from traditional backgrounds in developing countries are "opting now to grow a single, high-yielding cash crop instead of multiple crops that supported their former subsistence livelihoods and that often provided a fairly balanced diet" (Burslem 2004: 3).

Food shifts due to urbanization are observable across the board. Increased processing, hydrogenation, and refined flour are three procedures used in mass food preparation to ensure the quick and easy delivery associated with Westernization and globalization (Schmidhuber and Shetty 2005). The fast food industry also significantly adds to the problems by advertising, producing, and supplying nutritionally inadequate foods to people around the world. Schmidhuber and Shetty note that the most popular fast food items-pizza, hamburgers, baked goods, fried foods-are typically made up of more than 30% in fats and come in enormous serving sizes, resulting in an outstanding and disproportionate caloric intake (Schmidhuber and Shetty 2005). As a result of urbanization, changes in diet and food consumption patterns are seen both within a particular country and in its neighboring countries. Shifts in population growth and economic inequalities are just as important to consider. Recently, the population has rapidly transitioned from high to low growth, which is liable to result in "premature urbanization" and contribute to the "urbanization of poverty" (Schmidhuber

and Shetty 2005: 153). Unequally distributed incomes and gross earning disparities add to concerns of researchers in studying the cultivation of the *double burden of malnutrition* (Schmidhuber and Shetty 2005).

The next topic to address is the possibility of solutions. I previously believed that a deficit of nutritionally-based knowledge was responsible for the increase in childhood obesity, especially in the United States. Conversely, I have come to realize that nutrition education programs, as popularly urged in the U.S., are not effortless or uncomplicated resolutions. Billions of dollars a year are spent on health policy as this topic is gaining awareness in our society. The questions that arise out of this section in the paper, which will be elaborated below, focus on the relevance of nutritional knowledge and nutrition education programs in the prevention or resolution of these health crises. How effective is nutrition knowledge in combating issues of obesity and malnutrition? Is nutrition education enough to make long term impacts in dietary patterns? Who should be targeted, children or adults? Some of the literature contends that we shift our paradigm to focus on healthy choices, instead of distributing nutritional knowledge that may be nonsensical to majority of the target population. Should this be done by opposing current advertising of unhealthy foods and increasing the amount of advertising for healthful, nutritious foods? How do we reach consumers effectively, and can we without underlying social changes? Ultimately, it is important to carefully review these options and questions in order to find the balance between inevitable globalizing, Westernized ideals and a state of health and contentment for the population on a global scale.

Fitness and Healthy Lifestyles in a University Setting

As previously noted, I conducted research on Bloomsburg University students during the spring semester of 2008 of my undergraduate junior year of study. Under my professor's, Dr. Warner, instruction and advisement, each member of the class was encouraged to craft a research design and engage in the anthropological investigation of a topic of interest. The class was educated about various ethnographic methods, both quantitative and qualitative approaches, which were to be utilized in the formation and implementation of our research projects. The final outcome required the presentation our findings in PowerPoint form at the State System Higher Education Anthropology Conference at Mansfield University.

Prior to any data collection, each student was required to complete an Institutional Review Board (IRB) form for approval in order to ethically and professionally conduct research at the university. The IRB form I submitted included a summation of the purpose of the research project, identification of potential benefits of the research results, methodology composition, promise of participant anonymity by the researcher, informed consent form, and copy of the proposed survey materials used for data collection. After the form was approved, I was able to begin my investigation into the health choices and lifestyles of students who exercise at the Bloomsburg University Student Recreation Center.

To reiterate my research goals, I was, in essence, asking if this sample of Bloomsburg University were making healthy lifestyle choices along with exercising and comparing the differences in actions and attitudes pertaining to health and fitness between men and women. The demography of my population can most easily be classified as both men and women who are students at Bloomsburg University, attend the Student Recreation Center (SRC), and are between the ages of 17-23 years. This was my target population because I was interested in studying the behaviors of students who

are already health conscious and physically active, as assumed by their attendance at the SRC. This contrasted with the overall student population at BU, and deterred me from choosing a random student sample, which might not have included health-aware students. My sample size encompassed 123 students, 67 females and 56 males.

Methodologies I employed included participant observation, interviewing, and surveying. I recorded over twenty hours of participant observation at the SRC over a three week period. During this time, I set up a seating arrangement close to the front entrance in order to easily observe those entering and exiting and ask students to participate by completing a survey. During my hours of observation, I frequently walked around the SRC, noting any patterns and my critical reactions to the environment. I recorded all of this data in a log and used it later in placing my findings into my presentation. This qualitative approach was helpful in broadening my research goals. Although I was initially most interested in actual health behavior, through observation and participation at the SRC, I noted that most students came in pairs or small groups, and mostly men occupied the weight rooms and women occupied the fitness aerobic rooms. From these observations I was able to draw other conclusions. For instance, many students attend the SRC in order to fulfill a social pressure; they often looked to their peers for approval and consensus.

I also interviewed two student staff members, the assistant to the SRC director, and the SRC director. The interview questions were open-ended, but mainly focused on student health behaviors and fitness activity trends noted by the staff. Information obtained from each interviewee was utilized in the analysis of my data and a number of quotes from the director and assistant to the director were utilized in my PowerPoint presentation.

My survey included 23 close-ended multiple choice questions assessing the health attitudes and fitness behaviors of my participants. I also included one open-ended question requesting that participants briefly describe what being "fit" meant to them. Lastly, I incorporated an unlabeled food pyramid and asked my participants to identify, to their best knowledge, the amount of servings of each food category they consume each day. Ironically, although I assumed these students to be very health-aware } many struggled to identify what a "food category" was and how much of each they should be or are consuming each day. This revelation helped spark my interest in nutrition education and its importance to health knowledge.

Methodology and Research

In order to accumulate information and obtain a better understanding of the nutrition transition, I performed extensive research of various journal articles and books. Using on-line search programs through Bloomsburg University Harvey A. Andrus Library's website, I browsed innumerable articles to create a foundation for this paper.

Initially, I planned on investigating the relationship between obesity and low socio-economic status in the United States, in addition to examining the effects of nutritional education in young children. I searched through on-line journal databases such as *JSTOR*, *EBSCOhost*, *Google Scholar*, *AnthroSource*, and *Abstracts in Anthropology*. I inserted a number of key words in the search for information and prior research. The words or phrases I used most frequently that produced the most relevant results were *childhood nutrition*, *childhood obesity*, and

nutrition education. Supplementary phrases I used include *learned patterns of childhood eating habits, anthropology and nutrition, and United States*. Other forms of library research included accessing the library catalogue to review any existing relevant books. I was unable to find anything significant in the H.A. Library, but I did retrieve two books from the PALCI E-ZBORROW system, which enabled me to view and order resources from other universities in the Pennsylvania State School Interlibrary Loan organization. Although these key words and phrases were producing results in all of the search engines, my research focus began to shift as I read more and more journal articles and learned of additional nutritional concerns in the field, such as the concept of the nutrition transition.

Consequently, I modified my searches and began to concentrate more heavily on sources obtained from key words such as *nutrition transition, globalization, and Westernization of diet*. These words obviously produced a different set of literature into which I immediately delved and began to review. By shifting my key words and research focus, I was more easily able to connect the epidemic of obesity and the epidemic of malnutrition to the imbalances and inequalities in the global economy. However, I did not disregard my previous searches; they produced ample information which improved my research objectives because I had a better understanding of the knowledge and discourse currently available in the disciplines of nutrition and anthropology.

Ultimately, I obtained the most helpful sources from Google Scholar, an on-line search engine powered by Google that produces academic peer-reviewed sources. Searching the phrase *nutrition and globalization* yielded a large number of results and facilitated greater insight into the modern concern of the nutrition transition. I acquired various articles discussing details of the nutrition transition, examining the availability of nutritional education, assessing the importance of nutritional knowledge, and evaluating patterns of food behaviors in both Westernized and developing countries. Comparing these articles, I hope to decipher the possible reasons for and consequences of the potentially detrimental global shifts in diet.

A Worldwide Concern

Innumerable intricacies concerning both the origins and possible solutions occur when examining the issue of the nutrition transition. Disciplines such as biology, nutrition science, anthropology, and psychology offer a number of explanations for the mutually increasing rates of childhood obesity and malnutrition. Various researchers in these fields also offer potential resolutions or steps of action to take in reducing the prevalence of this worldwide health issue. Although literature exists to support a number of factors in addressing the rising concern of the nutrition paradox, in this paper I will focus on the topic of nutrition education as a potential policy program solution. Food behavior and consumption patterns are based on a multitude of various global factors such as economic status, psychosocial influences, and environmental availability (Popkin 2007). While I cannot address all of these factors in detail, I do plan on examining the literature from several scientific disciplines in order to better understand the role of nutrition education in the expansion of the nutrition transition. However, I assert that, ultimately, it is necessary to make a number of policy changes in various societal areas on a culture-by-culture basis in order to efficiently and wholly address the nutrition transition and its detrimental health consequences.

As discussed above, the nutrition transition developed as more people gained access to less nutritionally adequate food sources. Cheaper food prices on items with higher calories and less nutritional values enabled consumers, especially the populations of poorer, less developed

countries, to easily purchase unhealthful products (Schmidhuber and Shetty 2005). Other factors such as urbanization, an increase in animal-based and fatty foodstuffs, and a decrease in level of physical activity also contributed to the nutrition transition. This transition is producing deleterious consequences on a worldwide scale in human health, population management, and the environment. The combination of the nutrition transition, urbanization, and the shift in diet may produce the most dramatic economic and human toll in the next 30 years, drastically increasing the amount of health risks, obesity, and non-communicable diseases (Schmidhuber and Shetty 2005).

The Role of Nutrition Education

Fighting hunger and obesity requires a great amount of attention by individual nations' policy makers and the international community (Schmidhuber and Shetty 2005). Nutrition education has been identified by scholars in various fields as a necessary measure in addressing this issue. Many scholars argue that food consumption patterns may be efficiently addressed in schools and classrooms to decrease individual poor food choices (Health Policy Guide 2004). Since children spend a considerable amount of time in school, schools have the power to "influence students' eating patterns by what is or is not taught in the classroom and by what is or is not sold and promoted on campus" (Health Policy Guide 2004: 2). I will present a comprehensive understanding of the meaning of nutrition education and provide reasons for and examples of nutrition programs and policies.

Authors, such as Worsley (2002), have asked the fundamental question, "Does nutrition knowledge influence food behaviors?" (Worsley 2002: 579). Before this question can be answered, however, we must review what is meant by "nutrition knowledge" and "nutrition education" and how it is measured. According to Worsley, knowledge is a term that stands for different schemas, belief systems or explanations used to explain the world (Worsley 2002). Knowledge may be influenced by things like experiences, social groups, and biological and physical environments (Worsley 2002). It is important to acknowledge these ideas because they play a vital role in the understanding of the influence and power of nutritional knowledge in people's lives. Nutrition knowledge may be defined as "knowledge of nutrients and nutrition" (Worsley 2002: 581), but this definition alone is not enough to explain how much consumers need to know in order to be healthful and decrease the effects of the nutrition transition. There exist a great number of concerns within the field of nutritional knowledge, and it thus may be impractical to attempt to inform the entire population of every area of nutrition. Nutritional areas of most importance include the energy content of food, the sustainability of various foodstuffs, and the roles of fat, vitamins, and minerals. However, consumer interest ultimately plays the greatest role in deciphering important nutritional knowledge; "the point is that people have knowledge about what they are interested in" (Worsley 2002: 581).

Simply having nutrition knowledge is not enough; it must be coupled with actual performed food behaviors. Different types of food behaviors (such as distinguishing food preparation from food policy decision-making) and factors may influence food behaviors (Worsley 2002). Food behavior related to decision-making is, apparently, not directly influenced by the amount of nutritional knowledge. Other influences such as cooking skills, overall environment, and perceived consequences of a food behavior play a role in diet choice, thus it is difficult to identify a single consumer behaviorist theory (Worsley 2002). Despite the abundance of influences on food behavior, nutritional knowledge may be "a

little" related to "healthful eating" (e.g. consuming more fruits and vegetables) and cites a number of studies showing 'low' levels of evidence linking the quality of diet with nutritional knowledge (Worsley 2002: 583). An interesting find in a national survey showed that "differences in nutrition interest, not education differences, were associated with differences in nutrition knowledge" (Worsley 2002: 583). This poses the question, how do we create interest in the public about nutrition in order to stimulate their food decision-making behaviors to be more mindful and healthful? Also, we are forced to examine levels of nutrition education and nutrition education policies as they currently exist in order to rate the success and sustainability of this method of resolution.

One possible method for creating interest about nutrition in the population is to introduce it via nutritional education classes early on in a child's academic career. Nutrition education in schools can help create a "health literate" society, promote good health, and significantly change students' eating behaviors (Health Policy Guide 2004). Studies have shown changes in children's dietary behaviors which can "last for over two years" following the implementation of nutrition education curriculums (Worsley 2002). An example of a successful program is the Know Your Body program, implemented in New York City schools in the 1980s. Comprehensive evaluation over five years allowed this curriculum to receive approval from the U.S. Department of Education's Program Effectiveness Panel after showing "significant improvements in nutrition knowledge, in intake of total fat and complex carbohydrates, and in total cholesterol" (Health Policy Guide 2004). Other schools across the United States have since launched programs offering fresh produce, student involvement in food policies, nutrition education materials, and other courses that encourage students' participation with the whole food system (Health Policy Guide 2004).

Complexities and Limits of Nutrition Education

Evaluating dietary behavior and food choices is undoubtedly a complex process. There are innumerable factors to take into account in order to address the issue of the nutrition transition; even more complex variables come into play when uncovering potential solutions to this concern. As previously discussed, nutrition education efforts have been pursued in the United States and countries around the world intending to avert mutually high rates obesity and malnutrition. The inconvenience of nutrition education programs lies with the difficulty of meeting culture-specific needs. The United States Department of Agriculture (USDA), named the lead agency for nutrition research, extension, and teaching, produced a report in 2004 on the strengths and weaknesses of nutrition education programs in the United States (USDA 2004). The USDA recognized the necessity of a multi-stage model in implementing successful nutrition education programs; key concerns of the report were "flexibility, multiple approaches, and various contexts in which nutrition education can take place" (USDA 2004: 14).

Although recognition of these actions is key, it is also important to understand the immense difficulty and complexity of creating and implementing nutrition education programs specific not only to each country of the world, but each state, city, community, and socioeconomic type. Identification of each target population would be the first step in "focusing goals and planning efforts appropriately" (USDA 2004: 15). This process follows complicated program design, intense monitoring, evaluation, and recordation of pre- and postprogram data (USDA 2004). Furthermore, nutrition education programs require the "active and sustained participation (of consumers) for a duration that is significantly longer

than what is needed for a gain in nutritional knowledge" (USDA 2004: 15). This entails the distribution of curriculum through multiple channels or sources, further complicating the process.

While life in general is complex, this route (centering on nutrition education as a solution to the nutrition transition) seems too crowded with complexities. Even the USDA notes conventional factors such as "food advertising, lack of support from family members, and easy access to unhealthful foods" that may make choosing the "healthy choices presented in their nutrition education classes" more difficult for target audiences of these kinds of programs (USDA 2004: 17). The solution that attempts to teach people to control their diets is often "narrow and short-term," and ignores the "vast social, technological and structural changes that are pushing millions of people" into the nutrition transition (Popkin 2007: 6).

Furthermore, citing Beydoun and Wang's thorough examination of socio-economic status factors on diet quality, nutrition education is expensive. Positive relationships between higher socio-economic statuses and consumption of a more healthful diet found in many previous studies lead us to believe that "spending more money to achieve a particularly healthy diet" is necessary (Beydoun and Wang 2007: 10). Foods that are more natural, organic, and local or farm-produced are typically more expensive because they take more time to generate. Processed foods with more calories and less nutritional value are often cheaper because they take less time to mass produce. It follows, then, that people with more money to spend on food are more apt to purchase and consume healthier food; people with less money are apt to buy cheaper, energy-dense and nutritionally inadequate food products (Beydoun and Wang 2007). What types of programs must be implemented in these different socio-economic environments? Should people earning less and thus spending less on groceries participate in a nutrition education program that teaches them to choose the finest quality of the cheapest food products, given what they can afford? Many policymakers lack the necessary detailed local information to gauge the effectiveness of such a program (Burslem 2004). Conceptualizing programs based on every variance in socio-economic statuses across not only the United States, but every nation, is a task in which many policymakers do not want to invest (Beydoun and Wang 2007). Current global income and wealth disparities make the process of streamlining nutrition education programs even more challenging-again, supporting the notion that the fixation on nutrition education should shift to other solutions.

A fundamental limit of nutrition education is the concept that "people eat food not nutrients, and that they do so for a variety of reasons that are embedded in sociocultural contexts" (Crooks 1999: 3). Thus, merely diet instruction and knowledge of the food pyramid may not be enough to guide food choices for people who are living in poorer communities or lack interest in nutritional data (Crooks 1999). The data exists detailing the requirements for an adequate and healthful diet, however, enticing people to make healthful food choices when tempted "in a sea of abundance" is a difficult task (Edge 2004: 829). Oftentimes, "consumers are drowning in nutrition information" and are unable to separate the practical from the useless (Edge 2004: 829). Although nutritional knowledge is important, more attention must be paid to people's food-related goals. Nutrition knowledge may be taught to consumers, but only the consumers have the power to "translate that knowledge and do what they like with it" (Worsley 2002: 584). In essence, healthful dietary behavior cannot simply be instructed to the masses; the plethora of conflicting factors and abundance of financial support needed to establish a wholly-thriving program is beyond the reaches of implementation.

Policy and Paradigm Shifts

Researchers from various academic and scientific fields have proposed numerous approaches to reduce the prevalence of obesity and malnutrition across the world. While many methods have been considered, it is important to step back and regard the nutrition transition from a holistic research perspective—a view that an anthropological perspective can offer. Currently, many health officials and policymakers focus exclusively on undernutrition in developing countries and obesity issues in more affluent countries (Burslem 2004). However, an investment in "studies on causal relations between food intakes and disease" and to increase "large-scale community-based intervention studies" would help reverse the trends of the global nutrition transition (Burslem 2004: 4). As I have discussed above, nutrition education is not enough; "an integrated approach is needed that incorporates national food, agricultural, industrial, and healthcare policies, as well as the family, civic institutions, and the community" (Burslem 2004: 4).

This challenge must not be underestimated. Social changes will most likely result from necessary policy amendments in response to this health concern (Burslem 2004). Some areas that need more attention in reducing the prevalence of the nutrition transition include, but are not limited to, food labeling and advertising, food assistance programs, health care and training, urban development, and food sales taxation (Nestle and Jacobson, 2000). The ultimate aim is to shift "to a new paradigm that is founded on people being able to choose healthful diets for themselves and their families" (Edge 2004: 831). In order to achieve population-wide behavior change, "substantial involvement of and investment by government at all levels" is needed (Nestle and Jacobson 2000: 19). In general, a much wider range of approaches that are both politically and economically realistic must be discussed to help people on either side of the nutrition paradox, afflicted by either obesity or undernutrition (Nestle and Jacobson 2000).

A Sense of Balance

Popkin presents several policy interventions that may reduce the pace of the nutrition transition (Popkin 2007). He suggests reassessing government expenditure on agricultural subsidies. The basis for this comes from "the underlying problem of overconsumption [due to] the overabundance of calories from agricultural overproduction" (Seiders and Petty 2004: 162). Directing more money to fruit and vegetable farming and spending less on the production of meat, poultry and dairy productions is one way to increase healthy food choices in markets. Also, making meat food products and vegetables and fruits cheaper would make a more healthful diet more affordable, especially for the population with lower socio-economic standing (Popkin 2007). These efforts would be futile without actively "discouraging the consumption of sweetened foods and beverages," perhaps through higher sales taxation on products containing an identifiable amount of caloric sweeteners (Popkin 2007: 7).

In many cases, junk food is consumed more often than healthy foods because of two factors: convenience and cost. Technological advances and growing desires for time-efficient solutions encourage consumers to spend less time preparing home-cooked meals and consuming more prepackaged meals, or eating outside of the home (Popkin 2007). When people choose to eat at home and prepare their own meals, it is not uncommon for them to choose the *cheaper* ingredient. Although the economy is slumping, food prices are on the rise; many people simply cannot afford to eat a healthy diet. Studies show that in supermarkets across the United States, high-calorie, low-nutrient foods are far less expensive than healthy alternatives such as fresh fruits and vegetables (Parker-Pope 2008). The prices of healthy foods actually increased by

almost 20 percent in the last two years, while junk food prices dropped almost two percent (Parker-Pope 2008). Many researchers are concerned that these prices alone contribute to the increasing rates of obesity and poor nutrition around the world. Cheap energy-dense foods that are convenient are even worse; microwavable or processed foods often contain very high levels of sodium and other preservatives that have a negative effect on individuals' overall wellbeing (Parker-Pope 2008). According to World Bank statistics, approximately a billion people worldwide live on a single dollar or less a day—such limited funds leave little to no selections when purchasing healthy groceries or food (Parker-Pope 2008).

In order to balance the market, one method of addressing this issue has been termed the "fat tax" or "snack tax" (Seiders and Petty 2004: 162). This is a proposition for an additional small tax on foods that are likely contributing to the obesity epidemic and nutrition transition. Such foods would include items such as soft drinks, chips, candy, and other processed or prepackaged snack foods (Seiders and Petty 2004). This tax could potentially act as a disincentive to unhealthy eating and decrease consumption of junk foods while encouraging a healthier diet (Jacobson and Brownell 2000). Even small tax rates could generate revenue for funding health programs, such as promoting healthy eating or increasing physical activity (Nestle and Jacobson, 2000). Almost \$2 billion a year could be generated from a mere one cent tax per 12-oz soft drink, pound of candy, chips, and similar snack foods.

Although such a small tax may not have an immensely significant effect on "price or consumption of food, they probably would not be strongly opposed by consumers," which would make their transition into the marketplace easier (Jacobson and Brownell 2000: 856). In fact, a national poll in the United States showed an approval rate from 45% of surveyed adults if a tax on junk food was applied and revenue was allocated for health relevant causes (Jacobson and Brownell 2000). Such taxes are likely to help lower costs of health care if a significant improvement in the population's health ensues (Jacobson and Brownell 2000). However, this "fat tax," in addition to any other financial incentive remedies, would require significant political and public support in order to be successful and sustainable (Seiders and Petty 2004).

Many researchers argue that providing education or information is not enough to counteract against the nutrition transition. Conversely, we need to consider "market restraint remedies" to curb overconsumption of unhealthy foods and address unhealthy diet behaviors in the population (Seiders and Petty 2004). An additional proposal by Popkin, supported by much of the literature I've reviewed, suggests the banning of advertisements for sweetened foods and beverages from media, particularly from children's television. Decreasing the amount of visual stimulation for unhealthy foods may decrease the desire of some of the population to consume these foods (Popkin 2007).

This matter is complicated by a number of factors. Primarily, although children are direct viewers of food advertising, typically the parental behavior and food purchases truly affect a child's nutritional status (Seiders and Petty 2004). Secondly, in the United States, food advertisements are supported by the First Amendment, which creates difficulty in prohibiting or restricting particular market systems (Seiders and Petty 2004). Lastly, it would be problematical to explicitly determine which types of food advertisements have the most negative effect on children's nutritional statuses and how to enforce the elimination of those media content (Seiders and Petty 2004).

Efforts to reduce unhealthy food choices must be taken in caution, so as not to hurt the available food sources for the undernourished. Nevertheless, it is clear that healthy food choices and the overall increased availability of nutrient-packed foods could alleviate both obesity and

hunger (Popkin, 2007). Various multifaceted policies have been proposed by numerous of development experts. Still, the design of any program or policy must consider the specific needs of the country or people it is implemented to serve. This requires not only "relevant research, capacity building, and individual and political will" (Burslem 2004: 4), but also "collaboration across federal, state, and local jurisdictions" (Seiders and Petty 2004: 164) in order to ensure success and sustainability.

Discussion

In this paper, I have reviewed various explanations for the nutrition transition by examining the global shifts in diet toward high-calorie, low-nutrient foods for reasons such as cost, convenience, and availability. This diet shift has generated a binary health threat, increasing rates of both obesity and malnutrition in populations worldwide. Although this nutrition paradox is very concerning, there has been little attention paid to the issue by policy makers and governments. Reviewing the discourse on this concern, I have shown and come to agree with the notion that nutrition education efforts currently imposed by policy makers are generally ineffective alone. There are additional social and cultural principles affecting global food behaviors; these principles must be addressed in formulating policies and promoting healthier lifestyles. This was exemplified by my own research of undergraduate students who were pursuing a healthier-looking and fitter physique. However, as I have shown, the students were engaging in health risk behaviors and some lacked nutritional knowledge. My study, although significantly small in size, helps to show that even college-educated adults may face challenges with nutritional knowledge; thus, nutrition education alone cannot regulate global health crises.

An anthropological perspective and a holistic review of the literature from various scientific and social disciplines have shed light on a few alternative solutions. I have focused on two methods to potentially avert the nutrition transition. One route is to levy a "fat tax" on energy-dense foods such as soft-drinks, candy, chips, and other processed fare that is high in calorie and low in nutrients. Such a tax would expectantly lower consumption of junk food, increase consumption of healthier food (which would be cheaper or relatively more affordable when tax on junk food is imposed), and produce revenue for the promotion and sustainment of health relevant programs (Jacobson and Brownell 2000). Ultimately, I believe this is the best method to ensue. As previously stated, almost half of the American public surveyed would be willing to comply and concur that this tax amendment is necessary to fight the obesity epidemic (Jacobson and Brownell 2000); many people realize the nutritional crises we face worldwide and are willing to do something about it. Although increasing prices on certain foods may have initial disproportionate effects on some (for instance, the poor, who rely on cheap, energy-dense foods for every meal), the shift to healthier lifestyles is crucial. We must make shifts in policies and food patterns at this time, before health concerns spiral even further out of control.

Another approach involves the management of marketing food. As stated above, however, this area is complicated by a number of factors that would require significant societal and cultural changes, i.e. banning certain television advertisements or setting strict school district dietary guidelines when dealing with food marketing to children (Seiders and Petty 2004). Although I contend that junk food advertising coupled with insufficient nutrition labeling and poor public nutritional comprehension is indeed a problem, to eliminate conglomerate influences and advertisements are goals too great for the topic of this paper.

Conclusion

The need for more promotion of healthful diets and increased physical activity programs in many parts of the world is undisputable. Nutrition education is not completely ineffectual when partnered with other nutritional approaches. Other approaches must involve improving child nutrition and food patterns and providing affordable healthful options in homes and marketplaces (Edge 2004). Overall, we need more research in human nutrition and we must "reevaluate where nutrition research dollars go" (Edge 2004: 830). This research then has to translate into nutrition interventions and programs in order to provide the safest and most secure food supply to populations across the world.

Malnutrition and obesity are driving the nutrition transition into extraordinary rates in nearly every nation or region in the world (Popkin 2007). There is no single solution or remedy that can eliminate unhealthy diets and reduce health problems. However, a multifaceted approach that addresses nutrition issues by a committed collectivity of the public, businesses, and governmental institutions can help us make progress (Edge 2004). Private and public costs will be required in producing a cohesive framework that incorporates both indirect, or informational, and direct, or financial/market solutions (Seiders and Petty 2004). Unquestionably, unless we commit to "effective new approaches to making the environment more favorable to maintaining healthy weight," current trends of the nutrition transition will not be reversed (Nestle and Jacobson 2000: 23). Failure to address this in public policy at this time will affect Americans and populations worldwide today and in the near future (Edge 2004).

Endnotes

1. I would like to acknowledge and thank all of the people who have contributed to this paper: Dr. Dee Anne Wymer for conducting the class in an inspiring and motivating manner, and for all of the suggestions and revisions provided throughout the semester; Dr. Faith Warner for helping me establish initial interest in the topic and for assistance with my own research in Spring 2008; all of my classmates for their peer reviews and feedback during the semester.
2. Although I present some of my conclusions here, I have made further contributions and generated additional conclusions from my research. These deductions were organized into a poster and discussed at the annual American Anthropological Association conference in San Francisco in November 2008.
3. The additional research conducted on the issue was primarily library research; I did not conduct more of my own hands-on research with Bloomsburg University students at the Student Recreation Center during the Fall 2008 semester.
4. According to Himmelgreen, nutritional anthropology uses techniques such as anthropometric measurements from the discipline of physical anthropology, and biochemical and food intake techniques from nutritional sciences. Another innovative method of data collection in the field is the Rapid Assessment Procedure. This method enables nutritional anthropologists to document food and nutrition patterns of people in various cultural groups, while accessing specific socio-cultural factors.
5. Typically, the average person requires between 1,500-2,500 calories a day, depending on activity level. Calorie dense foods are often deceiving, providing a surplus of calories per meal and offering little in the extent of volume or size of the actual food portion. The unrepresentative ratio of portion size to nutrient value is one potential explanation for why people are consuming more food, but not obtaining proper nourishment.

References

Beydoun, May A. and Wang, Youfa

- 2007 Do Nutrition Knowledge and Beliefs Modify the Association of Socio-economic Factors and Diet Quality among u.s. Adults? *Preventative Medicine* 46(2):145-153.

Burselm, Chris

- 2004 Obesity in Developing Countries: People are Overweight but Still Not Well Nourished. *World Hunger Notes*, Electronic document, <http://worldhunger.org/articles/04/global/burslem.htm>. accessed October 8, 2008.

Caballero, Benjamin

- 2005 A Nutrition Paradox-Underweight and Obesity in Developing Countries. *The New England Journal of Medicine* 352(15):1514-1516.

Carolina Population Center

- 2007 What is the Nutrition Transition? University of North Carolina CPC, Electronic document, <http://www.cpc.unc.edu/projects/nutrans/whatis.html>. accessed October 8, 2008.

Center for Health Improvement

- 2004 Addressing Childhood Obesity: Nutrition Education and Policies in Schools. *Healthy Policy Guide*, Electronic document, <http://www.healthpolicyguide.org/doc.asp?id=6450>, accessed October 8, 2008.

Crooks, Deborah L.

- 1999 Understanding Children's Nutritional Status: Combining Anthropological Approaches in Poverty Research. *Nutritional Anthropology* 22(2):1-4.

De Garine, Igor

- 2004 Anthropology of Food and Pluridisciplinarity. *In* *Researching Food Habits: Methods and Problems*. Jeremy MacClancy and Helen Macbeth, eds. Pp. 15-28. New York: Berghahn Books.

Edge, Marianne S.

- 2004 Promoting Healthful Diets from a Public Perspective. *Journal of the American Dietetic Association* 104(5):827-831.

Himmelgreen, David A.

- 2002 You Are What You Eat and You Eat What You Are: The Role of Nutritional Anthropology in Public Health Nutrition and Nutrition Education. *Nutritional Anthropology* 25(1):2-10.

Jacobson, Michael F. and Brownell, Kelly D.

2000 Small taxes on Soft Drinks and Snack Foods to Promote Health.
American Journal of Public Health 90(6):.854-857.

Macbeth, Helen and MacClancy, Jeremy, eds.

2004 Researching Food Habits: Methods and Problems. New York: Berghahn Books.

Nestle, Marion and Jacobson, Michael F.

2000 Halting the Obesity Epidemic: A Public Health Policy
Approach. Public Health Reports 115:12-23.

Parker-Pope, Tara

2008 Money Is Tight, and Junk Food Beckons. New York Times, November 4: D6

Pelto, Gretel H. and Freake, Hedley C.

2003 Social Research in an Integrated Science of Nutrition: Future Directions.
The Journal of Nutrition 133:1231-1234.

Popkin, Barry M.

2007 The World Is Fat. Scientific American 297(3):1-10.

Schmidhuber, Josef and Shetty, Prakash

2005 The Nutrition Transition to 2030: Why Developing Countries Are Likely to
Bear the Major Burden. Economic and Social Department, Food and
Agriculture Organization of the United Nations, Rome, Italy. Acta
Agriculture Scand Section C 2:150-166.

Seiders, Kathleen and Petty, Ross D.

2004 Obesity and the Role of Food Marketing: A Policy Analysis of Issues and
Remedies.
Journal of Public Policy and Marketing 23(2):153-169.

United States General Accounting Office

2004 Nutrition Education: USDA Provides Services through Multiple Programs, but
Stronger Linkages among Efforts are Needed, 1-52. U.s. Senate Report to the
Committee on Agriculture, Nutrition and Forestry, 528. Electronic document,
<http://www.gao.gov/new.items/d04528.pdf>, accessed October 8,2008.

Worsley, Anthony

2002 Nutrition Knowledge and Food Consumption: Can Nutrition
Knowledge Change Food Behavior? Asia Pacific Journal of Clinical
Nutrition 11(Suppl):S579-S585