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The Impacts of Sustainable and Industrial Agriculture on Human Health

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How is food grown and processed? Consuming nutrients is a basic human need. Without further investigation, one could assume all is well in agriculture today. This paper outlines how food is grown and produced. Examining research on agriculture will prove industrial agriculture is focused on profit and quantity not human health and food safety. A number of practices are associated with the negative health effects industrial agriculture produces.

Transition of Agriculture

In the past, sustainable agriculture was the principle method of farming. Sustainable agriculture enhances environmental quality and natural resources, using natural biological resources, and finding the most efficient use of nonrenewable resources to enhance the quality of life for society as a whole (USDA, 2009). Since World War II, there has been an industrial revolution, a transition from sustainable into industrial agriculture. The discovery of industrial methods such as chemicals and antibiotics has led technology to develop increased rates of food production. Chemicals, hormones, and preservatives are used to increase food growth and production.

Sustainable agriculture is no longer effectively used among farmers today. Sustainable methods that were effectively used in the past have been replaced with new techniques to produce crops in larger quantities. The main method of food production today is an industrialized system of agriculture and farming. Industrial agriculture involves the production of massive amounts of crops and factory farming is the raising of a massive amount of livestock in a confined area. Industrialized methods were developed to reduce costs spent on production. With the decreased cost, the business owners get a greater profit from their “farm”, but human health suffers.

Industrialized Agriculture and Health

The food one eats is grown, produced, and processed in a number of different ways. Industrialized food production methods may have negative consequences on human health. Food is essential for healthy growth and development. How can one develop in a healthy way if chemicals and unsanitary conditions contaminate the food one eats altering the body’s natural way of functioning?

The common quote “you are what you eat” is a statement society should take seriously when choosing food to eat. Chemicals commonly used in industrial agriculture are pesticides, insecticides, herbicides, fungicides, and antimicrobials. These chemicals are known to cause endocrine disruptions and cancer in humans. The excessive use of antibiotics is another practice used to keep livestock healthy, but it contributes to antibiotic resistance among humans. Antibiotic-resistant microbes cause known treatment methods to be less effective in humans. Synthetic growth hormones given to livestock are used to promote unnaturally fast rates of growth. This in turn alters normal human hormone levels and functions. Preservatives used by manufactures in processed food help lengthen product shelf life but exacerbates asthma symptoms. In addition to the chemicals used to grow food, processed foods often contain unhealthy amounts of sugar, salt, and fat, which cause improper cell metabolism and obesity. Finally, high fructose corn syrup found in almost all processed foods causes fatty tumors and cirrhosis.

Industrial agriculture focuses on the growth of the same crop season after season. Monocrops cause nutrient loss and reduces the soil’s ability to naturally eliminate pests and replenish nutrients. To compensate, industrial agriculture uses heavy doses of chemical pesticides. Likewise, factory farming is contaminating the

world with industrial operations that raise massive quantities of animals (usually cows, pigs, chickens, or turkeys) in overcrowded, confined, and unsanitary conditions (Hatz, D., 2009). The price of food is at a relatively cheap cost, but is actually a cost affecting our health in a significant way.

Food Production and Human Health

Our current food system is failing to support and protect the public's health. What someone eats significantly contributes to his or her health. Where exactly does the food we eat and put in our bodies come from? The staple foods individuals eat such as fruits, vegetables, grains, and meats may contain toxic (poisonous) ingredients. Are pesticides needed for produce to prosper? Is high fructose corn syrup the same as sugar? Are livestock raised in fields as pictures portray and the media leads us to believe? Corn, the crop of America, contaminated with pesticides, is fed to livestock, or turned into high fructose corn syrup to be added to many food products. Corn is found in every convenience food on your grocery store shelf.

Huge farms, poor animal welfare, negative effects toward the environment and huge corporate ownership characterize the industrial food system. The environmental burdens from industrial agriculture are monoculture production, toxic herbicides, insecticides, and chemical fertilizers accumulate in the water and pollute water supplies (Hatz, D., 2009). Massive amounts of fecal waste create toxic chemicals in manure holding pits seeping poisons into the soil and air near our water and food sources. This causes streams, rivers, and groundwater to gather pollutants. Foul odors, dust, and small airborne particles are absorbed affecting human health. Food borne illness is at a high risk due to minimal sanitation methods used in industrial agriculture production (Hatz, D., 2009). The size of these industries are unnatural for not only the animals, but for the land as well. The practices of the industrial food system causes negative long-term effects on the environment and more importantly human health (Horrihan, L., Lawrence, R.S., & Walker, P., 2002).

Diet exposure to pesticides

The purpose of a pesticide is to kill, repel, or mitigate a pest. Pesticides are composed of chemical and biological substances used industrially. Pesticides are found in the fields where crops grow and on the farms where animals are raised. "Currently, over 400 chemicals can be regularly used in conventional farming as biocides to kill weeds and insects. For example, apples can be sprayed up to 16 times with 36 different pesticides" (Minowa, 2009, p.1). In the span of the five-month growing season, chemicals are penetrating the air, soil, water, and food we eat.

The short-term health impacts of pesticide drift--the movement of pesticides through erosion, migration, volatility, or windblown soil particles on any unintended area-- are too many to count. Eye, nose, throat, and skin irritation, difficulty breathing, skin rashes, headaches, stomachaches, diarrhea, nausea, vomiting, dizziness, tremors, muscle weakness, blurred vision, excessive sweating, or fever can occur a few minutes to a few days after exposure to pesticides (Panna, 2008). Long-term (chronic) health impacts of pesticide exposure include brain cancer, birth defects, Parkinson's disease, leukemia, miscarriage, non-Hodgkin's lymphoma, infertility, asthma, and sterility (Panna, 2008). Individuals who work with pesticides have a significantly elevated risk for all short and long-term health effects because they are working closely with these chemicals on a daily basis. Chemicals still seep into their skin and they inhale more particles even though they take precautionary protective measures. People who live near farms using pesticides get exposure secondhand by the drift of the pesticides through the contaminated air and are at an increased risk to the short and long-term health effects as well (Panna, 2008). The United Nations has estimated two million poisonings and 100,000 deaths occur each year in developing countries from pesticides. The immune, endocrine, and nervous systems are affected (Horrihan, L., Lawrence, R. S., & Walker, P., 2002).

"Human exposure to pesticides can come through residues in food - either on or within fruits and vegetables, or in the tissues of fish and animals we eat" (Horrihan, L., Lawrence, R. S., & Walker, P., 2002, p. 451). It is estimated 70% of fruits and vegetables consumed contain one or more pesticide residues (Greene, A., 2006). In drinking water, there are four or more pesticides and/or metabolites present (Greene, A., 2006). Pesticide residue does not fully wash off fruits and vegetables one prepares to eat. During the growing process, the chemicals first soak into the roots of the plant, then into the skin, and finally entering into the food we eat (National Resources Defense Council, 2008). Washing produce before preparation may help

remove some of the residue but depending on the food variety purchased, it is very difficult to remove effectively (National Resources Defense Council, 2008). Dietary intake of pesticides is major source of exposure to humans. Urine samples taken from participants on conventional and organic diets were used to determine levels of pesticides in the human body. The participants on the conventional diet had high levels of pesticide residue in their urine and the participants following an organic diet immediately had significantly decreased amounts of pesticides in their urine (Lu, C., Toepel, K., Irish, R., Fenske, R. A., Barr, D.B., & Bravo, R., 2006).

Health Effects Linked to Pesticides

Pesticides affect how the human body is able to develop and reproduce. Pesticides injure the nervous and reproductive systems, cause obesity, diabetes, miscarriages, birth defects, and cancers (Benbrook, C., 2009). Other environmental associated health risks of pesticides include solid tumors, autism, neuroblastoma, reduced testosterone concentrations, reduced sexual organ growth, childhood cancers, brain cancer, non-Hodgkin's lymphoma, Wilms' tumor, and Ewing's sarcoma (McCullum-Gomez, C., 2009).

Evidence indicates the biggest risk to a fetus is the amount of pesticides and herbicides the mother consumes. The Environmental Protection Agency has noted children receive half of their lifetime cancer risk in the first two years of life (Minowa, 2009, p.1). Scientists have found exposure to pesticides increased the risk of spontaneous abortions and exposures to pesticides during pregnancy and early life increases the risk of a child developing leukemia and non-Hodgkin's lymphoma (Greene, A., 2006). Pesticides interfere with the normal development of the endocrine system, which aids in regulating metabolism and tissue function (Clement, C., 2009). With a healthy endocrine system, the child's body is able to manage their weight and blood sugar levels effectively (Clement, C., 2009).

A specific type of pesticide, organophosphate insecticide (OP) poses the most significant developmental risks. OPs are specifically associated with increased risks of reproductive problems, childhood abnormalities, and developmental changes that can last multiple generations (Greene, A., 2006). OPs are known to cause neurologic defects, impair insulin sensitivity and increase the risk of diabetes mellitus 2 (Benbrook, C., 2009). Infants exposed to one OP, chlorpyrifos experiences significant mental and motor skill development delays and adverse impacts of neurological development, and by age three were likely to be diagnosed as having ADHD or Pervasive Developmental Disorder. (Whyatt, R., Rauh, V., Barr, D., Camann, D., Andrews, H., Garfinkel, R., et al., 2004). A study conducted on fetal and neonatal rats had concluded excessive weight gain and leptin dysfunction are side effects when exposed to chlorpyrifos, another type of OP (Benbrook, C., 2009). The Environmental and Protection Agency (EPA) has been monitoring OPs for over a decade on risk assessment and management due to their health effects (Greene, A., 2006). Exposure to these pesticides weakens the respiratory muscles and functioning, causes broncho-constriction, wheezing, and distress (Glaser, A., 2006).

Vinclozolin, a fungicide used by the wine industry, blocks cell receptors normally activated by the hormone androgen (Kaiser, J., 2005). Fungicides decrease sperm counts and mobility in males when exposed *in utero* for three subsequent generations (Greene, A., 2006). If a pregnant woman is exposed to chlorobenzene, another fungicide, her child has a higher risk of being overweight by age six (Benbrook, C., 2009).

Herbicides cause multiple types of cancers, reproduction and respiratory problems, as well as neurological dysfunction form learning disabilities to Parkinson's disease. Herbicides are a main source of chemicals farmers use in their fields to produce crops (Chart, N., 2009). Atrazine is one of the most widely used herbicides in the United States commonly applied to corn, sugarcane, pineapple, and sorghum. Atrazine is created synthetically in a laboratory as a white odor-less powder that dissolves in water which is applied as a spray.

Pesticides and Asthma

Pesticide exposure in the first year of life was associated with a significantly higher risk for asthma. There is an increased risk for asthma when there is exposure to farm animals, crops, or dust (Salam, M., Yu-Fen, L., Langholz, B., & Gilliland, F., 2004). "Researchers at John Hopkins University believe that pesticides

alter the nerve function controlling the smooth muscle lining of the airway, causing the airway to contract and restrain airflow, which is exactly what occurs during an asthma attack. Pesticides can also trigger asthma attacks by damaging lung epithelial cells directly” (Glaser, A., 2006, p.20).

Asthma and LV

Asthma is the most common chronic disease in U.S. children. It is also the leading cause of childhood morbidity. Asthma is a condition present in young children of the Lehigh Valley. The Bethlehem Partnership for a Healthy Community was created to improve the health quality of residents. Throughout the 2006-2007 school year a study was conducted on the prevalence of asthma among the students from the surrounding school districts. The prevalence of asthma found was 23.6% which is significantly higher than the national averages. This survey also concluded families living in poverty have increased risks of asthma (Bethlehem Partnership for a Healthy Community, 2007) Although this study did not compare the incidence of asthma occurrence with environmental and diet exposure, the increased incidences of asthma associated with poverty could be an indication of the food a family is able to purchase. With a reduced income, families may choose to purchase more industrialized food products to feed their family.

Food Additives and Asthma

There are over 300 food additives allowed in conventional foods (Minowa, 2009, p.1). Compared to environmental exposures food additives such as sulfites, monosodium glutamate, tartrazine, and benzoates cause allergic responses contributing to asthma. Food-triggered asthma is less common but occurs among six to eight percent of children and less than two percent of adults. Reactions range from mild symptoms to severe anaphylaxis in which multiple parts of the body experience hives, swelling, and difficulty breathing.

Sulfites (sulfur dioxide, sodium sulfite, sodium, or potassium bisulfite) are used for freshness and to control microbial growth, but exacerbate asthma within 20 minutes in 5-10% of patients. These sulfites are commonly present in alcoholic beverages, some dried fruits, frozen french fries, seafood, jams/jellies, and bottled fruit juices (Gordon, S. & Tarlo, S., 1993).

Monosodium glutamate (MSG) is added to Chinese meals, soups, stews, and other foods to enhance flavor. Tartrazine (yellow dye used in food, drinks, and medications) and benzoates (preservatives for jams/jellies, soft drinks, and pickles) exacerbate asthma when ingested (Gordon, S. & Tarlo, S., 1993).

High Fructose Corn Syrup in Our Diet

Corn is nearly unavoidable in the human diet. Due to cheap production of corn, high fructose corn syrup is the chosen sweetener used in food and drink manufacturing. The average United States individual consumes more than 66 pounds of sucrose and more than 83 pounds of fructose each year (Sanda, B., 2003). Twenty-five percent of an American’s caloric intake comes from sugar, a significant increase from 1994 when it was nineteen percent (Sanda, B., 2004). Our society has become dependent on the convenience and cheapness of processed foods and drinks.

High fructose corn syrup is used as a cheap replacement for sugar since the 1970’s, but this less expensive version of sugar is much worse for our bodies. Sugar and high fructose corn syrup are similar pure carbohydrates that have comparable amounts of calories and the same addictive quality; however, glucose is transported to the brain causing a satiety, where as fructose does not, thus contributing to the addiction (Morell, S.F., Nagel, R., 2009). In addition, fructose does not break down into glucose and sucrose and does not get stored in the body as glycogen needed for energy; instead, it rapidly turns into fatty acids stored as fat or gets released into the bloodstream as triglycerides.

Fructose can elevate blood pressure, increase lactic acid formation, cause metabolic acidosis, elevate plasma uric acid, and increase the risk of coronary disease (Morell, S.F., Nagel, R., 2009). High fructose corn syrup alters intracellular metabolism and in an 8-month study, high fructose corn syrup impaired the spatial learning ability also reducing function of the hippocampus impairing cognitive function in humans. Excessive fructose intake leads to liver inflammation, hardening of the arteries, cardiovascular disease, and obesity (Morell, S.F., Nagel, R., 2009).

Since the 1970's, fructose consumption has increased over thirty percent. Research concludes that fructose promotes disease more readily than glucose because glucose is metabolized in every cell of the body and only the liver metabolizes fructose. In studies using animals, the animals fed large amounts of fructose developed fatty deposits and cirrhosis (Sanda, B., 2004). Studies have also found that fructose leads to mineral loss such as iron, magnesium, and calcium (Sanda, B., 2004).

Livestock and Antibiotic Resistance

Antibiotics are widely used for livestock health today as insurance against disease and overuse of antibiotics in animals is now causing antibiotic-resistance concerns in the human population. Too often, antibiotics are administered as a preventative measure to an entire flock or herd of farm animals when only a few to none might be sick. Animals raised in factory farms are fed “same species meat, diseased animals, feathers, hair, skin, hooves, blood, manure, other animal waste, plastics, drugs, chemicals, and unhealthy amounts of grain” (UCS, 2006). These unsanitary and unhealthy diets require massive amounts of antibiotics to keep the livestock healthy and prevent disease.

The World Health Organization noted, “There is clear evidence of the human health consequences due to resistant organisms resulting from non-human usage of antimicrobials” (Harvie, J., 2008, p.6). Antibiotic resistant bacteria are transmitted into the community through food, water, direct animal contact, and other pathways (Harvie, J., 2008). It is estimated more than 75% of the antibiotics used in livestock pass through the animal undigested through their waste carrying the resistant bacteria and genes (Harvie, J., 2008). The major transmission route of resistant bacteria to humans is through animal fecal waste. The waste applied to crops as fertilizer contaminates ground soil and water (Sayre, L. 2009). “Confined livestock operations in the United States produce three times as much waste each year as our country’s entire human population—and yet all that manure is much more loosely regulated and handled than human waste” (Sayre, L. 2009). The resistant microbes and antibiotics are widely present as environmental contaminants with unknown consequences.

In the United States, it is estimated 11.2 million kg of antibiotics used annually are administered to livestock. It is estimated 1.4 million kg are used for human medical use. That statement indicates over 87% of antibiotics are used for nonhuman use and 13% are used for human use (Gilchrist, M., Greko, C., Wallinga, D., Beran, G., Riley, D., & Thorne, P., 2007). Meat consumption poses a risk to one’s health because antibiotics are administered at unnatural levels and the resistant bacteria remain in the meat one consumes (Sayre, L. 2009).

The overuse of antibiotics is affecting treatment methods previously established as cures for bacterial infections. Public health experts found a link between infections that are food related due to the overuse of antibiotics in animal agriculture (Sayre, L. 2009). “Some strains of human pathogens, including *Enterococcus faecalis*, *Mycobacterium tuberculosis*, and *Pseudomonas aeruginosa*, are now resistant to more than 100 drugs. Meanwhile, diseases once thought to be nearly eradicated—tuberculosis, for instance—are making a troubling return due to antibiotic resistance” (Schmidt, 2002, p. 400). Medical science faces challenges to find alternative treatments to once curable disease.

Growth Hormones in Milk

Cows raised in industrial dairies are injected with artificial growth hormones to increase the cows’ milk yield. The most common hormone is recombinant bovine growth hormone (rBGH). However, this often causes their udders to become infected and swollen due to the unnatural amount of milk produced. This leads to more antibiotics administered to help the cow fight off its newly developed infection (Food and Water Watch, 2008). Use of rBGH increases the growth hormone IGF-1 which is resistant to pasteurization of milk and has a link to breast and prostate cancer in humans (Food and Water Watch, 2008).

Transition to Sustainability

If the industrialized food one eats has unhealthy effects on their bodies, how is it possible to avoid infection, disease, and other morbidities? Compromised health affects the human population’s wellbeing. Are pesticides, chemical fertilizers, antibiotics, and food additives the only way to grow and raise the food we eat?

There is a healthier approach than the industrial food system. Sustainable is the key word. Many food industry practices need to be changed to improve health. Sustainable farming does not use unnecessary amounts of chemical pesticides and avoids antibiotic use at all costs. Sustainable agriculture comes from local farmers who are devoted to selling quality meat and produce instead of only producing quantity for profit. Nutritional value of food takes priority in sustainability.

Sustainability can provide plenty of food for humans and without destroying the environment. An alternative to the destructive monocrop theory is crop rotation, which allows the soil to replenish naturally and support healthy plants that can fight off diseases and naturally control weeds and pests without the use of chemical pesticides or fertilizers (UCS, 2007). Sustainable farming uses practices that have lower impact and fewer contaminating effects on the environment.

Applying manure and organic soil fertility to crops has few negative health effects in ready-to-eat-vegetables. Yields and proteins are increased by putting quality additives such as improved cultivar choice and fertility management promoting nitrogen fixation (Tamm, L., 2009). Pesticides and diseases are controlled through crop rotation. Another method of protecting plants from diseases is to activate their defense mechanism by using special elicitors. For example, B-amino acids are proved efficient in controlling mildew in lettuce up to 50-90 percent. Companion plants can help to build the population of beneficial insects that help to protect and promote growth of crops (Tamm, L., 2009).

Local and Sustainable

Sustainability also means buying food as locally as possible. As soon as a plant is harvested it starts to lose nutrients, therefore, buying locally allows you to eat the freshest food possible. Many farmers today have adapted their farming methods to grow raw materials to sell to industrialized business rather than grow crops for local sale. Reeducation of the farmer and the consumer will aid in reestablishing purchases from local farmers. Creating a relationship with the farm one buys their food from is of great benefit to the consumer because they are able to ask questions of how their food was raised and produced. This will restore a need for farmers to return to produce and livestock farming methods to support the community needs.

“More local or regional food commerce is going to benefit local and state economies” (DeWeerd, S., 2009, p.20-1). Iowa State University estimates that if consumers purchase a quarter of their produce from local farmers, it would create \$140 million in new economic output and 2000 additional jobs for the state. In addition, spending 20% of food dollars at local food business such as farmers markets and locally owned restaurants, would add an extra billion dollars to the region’s economy each year (DeWeerd, S., 2009). This reinforces the importance of local spending and its multiplier effect. The more money a person spends within their own community the more likely the money will remain and change hands many times in the same area.

Health Effects of Sustainable Practices

Grass fed cattle produce meat lower in fat than industrially raised beef. Grass fed beef has higher levels of omega-3 fatty acids (Harvie, J., 2008). Pasture raised beef also produce milk with higher levels of essential fatty acids than factory farmed, grain fed beef do. This proves that grass fed beef can benefit the cardiovascular system, enhance brain function, and may help prevent cancer (Harvie, J., 2008). Sustainable animals are raised without the use of antibiotics and hormones; if an animal gets sick it is pulled from the herd and treated individually. The United States agriculture needs to follow its neighboring countries who have utilized non-therapeutic methods in commercial farming (Sayre, L., 2009). Scandinavian producers readapted how to raise livestock when the country banned non-therapeutic antibiotic use. They are still able to run profitable operations without antibiotics (Sayre, L., 2009). Sweden and Denmark have led the way over the past twenty years developing sustainable practices including; minimizing antibiotic use, improving animal diets, cleaning facilities thoroughly, and avoiding mixing animals coming from different locations (Sayre, L., 2009). “Organic farmers in many parts of the world have also shown that livestock can be raised profitably and humanely without the use of antibiotics” (Sayre, L. p.83).

Pesticides are avoidable in agriculture and can be nearly eliminated from the human diet. There alternative methods include soil preservation, crop rotation, cover-cropping, no-till or low-till farming, soil management, diversity, nutrient management, rotational grazing methods, and biological control (Horrihan,

L., Lawrence, R., S., & Walker, P., 2009). Rotating crops and using cover crops reduces pests so there is less need for fertilizers because each crop is providing nutrients to the soil, preventing erosion, and minimizing weeds. Decreasing tillage allows for greater water retention and nutrients to remain in the ground (Horrigan, L., Lawrence, R., S., & Walker, P., 2009). Soil management and diversity decrease ecological problems; organic matter in the soil allows for healthy vigorous plant growth and plant diversity creates more function for beneficial insects (Horrigan, L., Lawrence, R., S., & Walker, P., 2009). Nutrient management allows for proper nitrogen and carbon levels for plant growth. Rotating animal grazing areas prevents soil erosion and allows the farmer to spend less money on feed (Horrigan, L., Lawrence, R., S., & Walker, P., 2009). Pest control can be achieved naturally by implementing biological control. This type of pest control uses an insect's natural predator to eliminate the pest.

Sustainable organic farming will also improve soil quality. Organic soil has increased levels of organic carbon and total nitrogen that promote a healthy life cycle for plants. Soil with high levels of organic matter is proven to decrease surface runoff and retain needed nutrients in the topsoil (McCullom-Gomez, C., 2009). Crop rotation and cover cropping has reduced erosion rates with "healthier more robust roots, higher levels of available micronutrients, water infiltration and retention, and below ground microbial activity that can help increase crop nutrient density" (McCullom-Gomez, C., 2009, p. 5).

The United States Department of Agriculture's Pesticide Data Program "concluded that converting the nation's eight million acres of produce farms to organic-coupled with buying imported organic produce, would reduce risks associated with exposure to pesticide by 97%" (McCullom-Gomez, C., 2009, p. 3). Organic produce has been voted to have better taste when compared to conventional food (Organic Center, 2009). Increased taste is due to reduced levels of nitrogen in the soil and higher levels of antioxidants in the produce (Organic Center, 2009). Organic food has higher levels of 11 nutrients based on scientific comparisons (Organic Center, 2009). Organic red grapes are shown to have higher levels of resveratrol. This phytochemical has been shown to prevent aging and preserve sensitivity to insulin (Benbrook, C., 2009). There are higher levels of essential fatty acids in organic milk and meat. This is the result of the animals being able to graze in a pasture and feed on grass (Organic Center, 2009). Children who consumed organic products are less likely to develop eczema. Organic food has the potential to decrease obesity and diabetes (Organic Center, 2009). Eating organic food promotes healthy patterns of cell division, creating a healthy endocrine system, immune system, and other metabolic developments (Organic Center, 2009).

Reducing or eliminating preservatives and high fructose corn syrup will allow for healthy development and weight management. Removing high fructose corn syrup from ones diet can decrease the risk of obesity and diabetes. It is known fructose increases cravings that lead to increased food consumption. Glucose on the other hand, regular sugar, sends a signal to the brain that the energy needs are covered. With soft drinks and prepackaged snacks containing preservatives and high fructose corn syrup satiety will not be met increasing the odds of obesity (Benbrook, C., 2009). The change needs to be made in industrial food production and consumers need to stop purchasing these products.

Hospitals Setting the Example

Poor nutrition is a risk factor for heart disease, stroke, diabetes, and cancer. Poor nutrition is a leading cause of death in the United States. Having widespread health conditions puts a burden on the health care system as well as affecting the quality of life and human productivity (Harvie, J., 2008, p.3). Our hospitals should pursue the quest for a better food system in our country. "The Healthy Food In Health Care Pledge was introduced as a means to aggregate this clarion call for change and to demonstrate to society at large healthcare's willingness and commitment to build models for change" (Harvie, J., 2008, p.3).

By May 2008, 122 hospitals were taking part in this pledge. The food a hospital supplies to its patients, employees, and visitors will set a standard model for individuals and the community. By offering more local fruits and vegetables, fewer amounts of processed food and high fructose corn syrup will be consumed (Harvie, J., 2008, p.15).

In some hospitals, vending machine products have been replaced with organic dinners, dried fruits and nuts, and low-fat/sugar snacks to avoid over consumption of high-sugar/fat products. A few hospitals have gone as far as eliminating vending machines (Harvie, J., 2008).

Food waste is also another concern for hospitals. By initiating composting, the excess food allows it to become beneficial organic matter and increases the quality of soil where food is grown. Another initiative is to donate leftover food from the cafeteria line and canned foods whose expiration dates are near (Harvie, J., 2008, p. 16).

The Healthy Food and Healthcare Pledge is empowering hospitals to buy more nutritious and local sustainable foods to increase their patients health. Many hospitals have gotten rid of their deep fryers, dairy products that contain rBGH, and refined grains. These nutrient lacking foods are replaced with fresh local fruits and vegetables, rBGH free milk, and antibiotic free meat choices. (Harvie, J., 2008, p.3) Increased fair trade and organic products are used along with obtaining their whole grains from local bakeries. Organic cereals, nuts, dried fruits, canned goods, and healthy beverages are served to patients and sold to visitors/staff.

Conclusion

Nourishing the body with sustainable organic food is a viable alternative to destructive health effects caused from consuming industrialized food. Consumers should take a better look at the way their food is grown and produced, getting back to the basics of food for health. Change will start when consumers no longer accept the use of chemicals, hormones, antibiotics, and preservatives in their environment and food sources. The negative health effects of industrialized food are proven by research.

The facts are evident, so why do companies sell this food and why do consumers buy it? Why do schools, colleges, and hospitals choose to serve food that contributes to poor health? The truthful facts should be on the ingredient label so the consumer knows exactly what they are purchasing.

Healthcare providers are leaders and need to demonstrate the most healthful way for a patient to live (Harvie, J., 2008, p.30). This sustainable initiative needs to start with knowledge of the food one is consuming because food and health is the framework to one's existence. From the research cited unhealthy food is the main cause of negative health effects in our country. Promoting local and sustainable food with its many known health benefits will positively affect the health of the public and create a better understanding for positive change in society. Is it a basic human right to have access to high quality and nutritional food at all times?

As a consumer, one can promote sustainable and local agriculture. There are simple steps to improve health and to create sustainability. Eat sustainably by buying food from a local farm. This ensures the freshness and the amount of nutrients remaining in the food and it tastes better. Buy sustainably raised animal meats that were treated humanely and benefit your nutrition. Buying from local merchants benefits the community by circulating money within a community. Buying from a local sustainable farmer will improve the lives of all involved.

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