



Laurea Nursing Students' Knowledge on a Vegan Diet

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Abstract

Nursing students should have basic knowledge on the possible alternative diets which individuals are eating. One diet which is becoming more popular every year is a vegan diet. Studies have proven the multiple different health benefits for individuals following a vegan diet such as improvement of cardiovascular disease and diabetes as well as delaying antibiotic resistance. Individuals can also follow a vegan diet for ethical reasons and the environmental impact of eating animals. The purpose of this thesis is to describe the knowledge of Laurea nursing students at the Tikkurila Campus. The objective and aim are to increase the knowledge of the students using a PowerPoint lecture which will help understand their level of education on a vegan diet. The research question for this thesis is: What knowledge do Laurea nursing students have on a vegan diet? A PowerPoint lecture and surveys were used to collect data on this topic. Two different surveys were given one prior to the lecture and one after the lecture. The one prior was a basic knowledge test and the one after was an open-ended critical thinking question. Through the analysis of the target group of 15 students, data showed that Laurea nursing students have good knowledge on a vegan diet. Students were more knowledgeable on the nutritional basics of a vegan but lacked knowledge on ethical and environmental impact. Recommendations include students upholding knowledge on alternative diets and exploring other methods to improve health and climate change.

Keywords: Vegan, Diet, Nutrition, Nursing, Students, Knowledge

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1 Introduction

As society becomes more aware of the correlation between health problems and nutrition there has been an increase in alternative diets such as vegan, paleo and keto among many others. In 2014 Forbes (2018) stated that 1% of Americans identified as vegan compared to 2017 which had an increase to 6%. Each new alternative diet provides different pros and cons for those searching to better their health. One diet which has become popular for multiple reasons is a vegan diet or plant-based diet. Although vegan and plant-based diets are not exactly the same, for the purpose of this thesis the terms will be used interchangeably. Vegan and plant-based diets are described as diets including fruits, vegetables, legumes, grains and excluding all animal-derived products such as meat, poultry, seafood, eggs and dairy products states the National Health Service of UK, also known as the NHS (2018). Veganism has attracted many followers for different reasons. One of those reasons are studies and documentaries expressing major changes in overall health and weight loss benefits. Documentaries such as *What the Health* (2017) and *Cowspiracy* (2014) have intrigued audiences to wonder about a vegan diet and the possible benefits. Other reasons for converting to veganism include ethical and environmental impact, religion and cost. Healthcare professionals such as nurses must consider all aspects of health for patients. Nutrition is a big concept not only for health benefits but to a patient's sense of self.

2 Background

Patients can commonly be malnourished on admission to the hospital and throughout hospital treatment their nutritional status declines claims Jefferies, Johnson and Ravens (2010). The hospital food offered during treatment may be the only familiar aspect a patient has control of throughout treatment. During treatment a patient can find comfort in food to relieve the stressful situation. If a patient has an alternative diet their diet must continue throughout the whole hospital visit. Jefferies et al. (2010) have explored the strong correlation between satisfaction of medical treatment and food offered during treatment. The study shows how individuals who enjoyed the hospital food were more satisfied with their treatment than those who did not care for the food.

“Nurses are the first advocates of patients and are the link between the patient and the health care system” says Davoodvand, Abbaszadeh and Ahmadi (2016). Nurses should advocate for their patients' rights during treatment including diet choice. By understanding different alternative diets nurses are able to advocate correctly for their patients. Nurses are also able to guide patients on a healthy and safe way to continue an alternative diet with factual studies and evidence-based knowledge.

“The most common cause for insufficient nutritional practice is lack of nutritional knowledge” says Yalcin, Cihan, Gundogdu and Ocakci (2013). Nursing students and nurses require knowledge and skills about nutrition to prevent deterioration (Yalcin et al. 2013) to a patient's health as well as guide them with possible new alternative diets that are becoming more common. Although a vegan diet seems easy to follow many do not have the proper knowledge on the correct way to eat vegan. Due to social media influencers some people following a vegan diet may not be eating the necessary nutrients that must be considered when consuming a vegan diet. Individuals following a vegan diet should research and educate themselves on the consequences of eating an unbalanced vegan diet. Nurses are good educators and advocates on continuing a vegan diet. Nurses can suggest the diet to patients willing to try a lifestyle change that can improve their health. Through proper education and guidance nursing students and nurses can help individuals use nutrition to aid the improvement of health.

2.1 Veganism

NHS (2018) defines veganism as a diet that excludes all animal products such as meat, poultry, seafood, dairy products, honey and eggs. As a vegan one does not use or wear

products that have animal or animal-derived materials. Animal-derived materials include but are not limited to wool, leather, beeswax, silk, animal oils or fats, feathers and fur according to People for Ethical Treatment of Animals or PETA (n.d) Along with avoiding products with these ingredients vegans also not use products tested on animals. Products tested on animals create great suffering and abuse for the animals. Household products such as dish soaps, detergents, hygiene products, clothing and furniture can have animal ingredients in them. For individuals looking to find products without these ingredients can almost always find an alternative vegan option for many purchases. This style of veganism can be considered as an ethical vegan. Ethical vegans have chosen this lifestyle to stop the suffering of animals worldwide. It is a lifestyle change that can be difficult in the beginning but slowly gets easier with time.

Individuals convert to veganism for many reasons. The main reasons include health, ethical reasons and environmental impact. For health benefits studies by clinical researchers such as the Framingham Heart Study, Dr. Dean Ornish and Dr. Neal Barnard have studied the correlation between nutrition and cardiovascular disease as well as diabetes. Although the studies have not been long-term the results have proven to show the improvement of health for individuals following a mostly vegan diet. Individuals are recommend by the World Health Organisation or the WHO (n.d) to eat mostly plant foods instead of meats and to replace fatty meats with vegetables, beans, legumes and lentils

To ensure individuals are eating a safe and healthy vegan diet UK organisation, the Vegan Society has created a guideline for vegans to follow. The guideline has been approved by the British Dietetic Association as a “well-planned vegan diet that can support healthy living in people of all ages.” (2017). The diet that Vegan Society (n.d) recommends is fruits and vegetables five times a day 80 mg each time. Starchy foods each meal and protein-rich foods at almost each meal. Nuts and seeds should be eaten daily as well as calcium-fortified foods. There are some nutrient deficiencies that may occur during a vegan diet. The most important one is B12, a vitamin that is only found in animal products and must be supplemented. Other nutrient deficiencies include calcium, iron, zinc and healthy fats. All of which can be found in plants but may need to be supplemented for.

2.2 Health Benefits

A main issue with modern diets is the amount of high cholesterol and fats. The combination of high cholesterol and fats is one of main causes for plaque buildup in coronary arteries. Plaque forms on the walls of arteries and obstructs flow of blood to the heart. The abrupt stop of blood flow increases the risk of a heart attack. Heart disease is the number one cause of deaths in the US according to the Centers for Disease Control and Prevention or the CDC (n.d) and about 610,000 people die of heart disease in the United States every year. That is one in every four deaths.

One early study which helped understand the connection between high cholesterol and cardiac problems is the Framingham Heart Study. Farmingham Heart Study started in 1948 in Framingham, Massachusetts. National Heart Institute now known as the National Heart, Lung and Blood Institute or NHLBI and Boston University collaborated together to start the Framingham Heart Study. The goal of the study was to identify the risk factors of cardiac disease. The study was planned as a long-term study for participants who had not yet developed symptoms of cardiac disease. By using participants who had not developed symptoms the study was more accurate to identify the most common risk factors. Approximately 5,000 men and women ranging from ages 30 to 62 from Framingham, MA were recruited for the study. The study began with lifestyle interviews to better understand participants eating and exercise habits. The participants were then tracked for many years and documented on any cardiac problems which occurred. Through the years of data collection researchers were able to pinpoint many high-risk factors such as high blood pressure, high blood cholesterol, smoking, diabetes, obesity, and physical inactivity. The study is still on-going with new generations added every couple of years to steadily track the individuals and the observe new risk factors that may occur.

Using the knowledge from studies such as the Framingham Heart Study other doctors and researchers started their own studies on cardiac disease. One of those doctors was Dean Ornish, who was interested in the correlation of coronary disease and lifestyle changes. Dr. Dean Ornish is a graduate of Harvard Medical School. He began his own study in 1986 with forty-eight participants with moderate to severe coronary diseases. Twenty-eight participants were randomly chosen to follow a five-year lifestyle plan to reverse coronary disease. The other twenty participants were told to continue their usual coronary disease treatment. Participants in the experiment group were instructed to follow a diet of vegetables, fruits, grains, no animal products and 10% fat. Dr. Ornish also instructed for participants to practice various stress management methods such as meditation, breathing exercises and relaxation exercises for a minimum of one hour a day. Along with the stress management practices Dr. Ornish asked participants to exercise a minimum of three hours a week. The experiment group did not use any medications or surgery to treat the participants. The control group continued using lipid lowering drugs and went through necessary surgeries to treat their coronary diseases.

Dr. Ornish came to the result that the experiment group had more improvement than the control group. After five years the experiment group had 25 coronary events compared to the 45 by the control group. Cardiac events (Ornish 1998) included myocardial infarction, coronary artery bypass surgery, coronary angioplasty, cardiac-related hospitalizations and cardiac-related deaths. The experiment group reduced LDL cholesterol levels by 40% after the first year and 20% after the five years mark. The control group reduced LDL cholesterol levels by 6% or less. Although the changes in Dr. Ornish's study were lifestyle changes and not solely about diet, the improvements were great for the experiment group. Ornish (1998) states that "Populations consuming low-fat plant-based diets have low HDL cholesterol levels and low rates of coronary heart disease."

A vegan diet has not only be proven to improve cardiovascular diseases but also diabetes patients. Diabetes affects approximately 422 million people globally and 1.6 million deaths can be directly attributed to diabetes according to the WHO (n.d). Diabetes can cause heart disease, stroke, blindness, amputation and kidney failure. The American Diabetes Association or the ADA (2018) has reported in 2018 the economic toll of diabetes in the US as \$327 billion which has increased greatly from 2012 in which the toll was \$245 billion. The ADA (2018) has calculated the large expenses of diabetes include 30% to hospital inpatient care, 30% to prescription medication to treat complications from diabetes, 15% to anti-diabetic agents and 13% to physician visits. On average a diabetes patient has medical expenditures costing \$16,752 which \$9,601 is for diabetes.

Diabetes has two forms in which it affects individuals. Type 1 diabetes is commonly onset during childhood or adolescence. The CDC (2017) states that type 1 diabetes accounts for 5-10% of diabetics while type 2 accounts for 90-95%. Type 1 diabetics do not produce enough insulin and type 2 diabetes produce insulin which the body cannot use. Type 2 diabetes is considered adult diabetes. Insulin is used in the body to turn sugar or glucose into energy. As a diabetic the body either does not produce enough insulin to convert the glucose or it cannot use the insulin which is produced. Depending on insulin production diabetics inject insulin to control blood glucose levels. Type 1 diabetes can be attributed to genetics while type 2 is due to lifestyle habits. "Type 2 diabetes can be prevented or delayed with healthy lifestyle changes, such as losing weight, eating healthy foods, and being active" states the CDC (2017)

Researchers have become interested between the correlation of diet and diabetes. Type 2 diabetes is attributed partly to lack of exercise and diet choices. Western style diets are becoming normal globally. Myles (2014) classifies the western or standard American diet as "high intake of saturated and omega-6 fatty acids, reduced omega-3 fat intake, an overuse of salt, and too much refined sugar." Western diets can increase inflammation, reduce control of infection, increase rates of cancer and increase risk for allergic and auto-inflammatory disease states Myles (2014).

One researcher who explored diabetes and nutrition is Neal Barnard, M.D, clinical researcher, author and associate professor at George Washington University of Medicine and Health Sciences. In 2004 he started a study which included 99 participants with type 2 diabetes aged 27-82. The participants were randomly assigned to a diet plan. Forty-nine participants were assigned a vegan diet of 10% of energy from fat, 15% protein, and 75% carbohydrates consisting of vegetables, fruits, grains, and legumes. This experiment group was instructed to avoid animal products and added fats and to favour low-glycaemic index foods, such as beans and dark green vegetables. The control group of fifty participants were instructed to follow the recommended diet by the American Diabetes Association (ADA). The ADA diet was 15-20% protein, <7% saturated fat, 60-70% carbohydrates and monounsaturated fats, and cholesterol ≤ 200 mg/day, which was individualized, based on body weight and plasma lipid concentrations. Although the two diets are relatively similar the diets have differences. Proteins from the vegan diet were obtained through plant-based options while the ADA proteins were obtained through animal products. Participants in both groups were also instructed to continue normal exercise habits and continue pre-existing insulin medication. If hypoglycaemia arose participants were to control symptoms with insulin.

Participants were evaluated for twenty-two weeks. After the twenty-two weeks the results showed how 43% (21 of 49) of participants in the vegan group and 26% (13 of 50) of participants in the ADA diet group were able to reduce insulin medication. Body weight was decreased 6.5kg in the vegan group and 3.1kg in the ADA group. The LDL cholesterol levels decreased by 21.2% in the vegan group and 10.7% in the ADA group. In all measurements the vegan diet was approximately double better than the ADA group. This study shows how the vegan diet improved the health of the type 2 diabetics.

Another health problem that can occur with meat consumption is antibiotic resistance. WHO (2018) describes antibiotic resistance as the process of bacteria changing the response of medicines such as antibiotics. The bacteria can completely stop responding to antibiotics which creates difficulty during treatment. Through natural selection antibiotic resistance is a naturally occurring process which happens overtime but with excessive use of antibiotics in humans and animals the process is speeding up. Antibiotic resistance is one of the most threatening issues globally claims the WHO (2018). Diseases such as pneumonia, tuberculosis, gonorrhoea, and salmonellosis are becoming harder to treat due to antibiotic resistance. The increase of antibiotic resistance can partially be contributed to misuse of antibiotics by patients. Patients are prescribed antibiotics for diseases and many stop the use of the antibiotics once symptoms have subsided but the bacteria are still partially alive. Through this practice individuals may need to repeat another dose which slowly builds antibiotic resistance.

A combination of patient error when taking antibiotics and excessive use of antibiotics in animals for consumption is increasing antibiotic resistance. "Scientific evidence demonstrates that overuse of antibiotics in animals can contribute to the emergence of antibiotic resistance," says Dr. Kazuaki Miyagishima, Director of the Department of Food Safety and Zoonoses at WHO. The U.S Food and Drug Administration or the FDA (2011) reports that domestic sales of antibiotics for food-animal use is approximately 13.6 million kilograms in the U.S. Factory farmers use a commercial method of antibiotics on all animals to increase growth and reduce the chance of animals contracting diseases due to unsanitary living conditions. This method is used for all animals even those not requiring antibiotic treatment. The antibiotics remain in the animal's system until human consumption. Individuals consuming the animal meat with antibiotics are in direct risk of consuming antibiotics and becoming more antibiotic resistant.

WHO (2018) suggest for factory farmers to

“only give antibiotics to animals under veterinary supervision. Not use antibiotics for growth promotion or to prevent diseases in healthy animals. Vaccinate animals to reduce the need for antibiotics and use alternatives to antibiotics when available. Promote and apply good practices at all steps of production and processing of foods

from animal and plant sources. Improve biosecurity on farms and prevent infections through improved hygiene and animal welfare.”

Through using these recommendations factory farmers could help protect individuals consuming animals and also provide a healthier product. Consumers can also choose the healthier options by purchasing products which have not been fed antibiotics or by reducing the amount of meat consumption.

2.3 Ethical Reasons

A common reason why individuals convert to veganism is ethical reasons for animals. The living conditions of animals raised for consumption are crowded, unsanitary and inhumane. Animals are forced into cages and raised solely for-profit value. Many animals contract infections and diseases which spread quickly in small confined areas. Factory farmers try to reduce the number of diseased animals by supplying all animals with antibiotics which can easily be transferred to humans through consumption.

The U.S Humane Society (n.d) states that nine billion land animals are slaughtered annually in the U.S alone. This number does not include the 8.8 billion chickens or sea life that are also slaughtered. It also does not include the bycatch that is caught during fishing for sea life for consumption. Bycatch is sea life that cannot be consumed but has been caught accidentally in nets and will be killed due to lack of profit.

Majority of chickens that are consumed are raised in factory farms. The Humane Society (n.d) has documented factory farms as large warehouse like buildings which typically are approximately 122-152 m (400-499 ft) by 12-14 m (40-46 ft). This is about the size of an American football field. The warehouses hold approximately 20,000 chickens in each building and businesses normally have about one to four of these buildings but some have up to 18. The buildings are artificially lit, force-ventilated, completely barren except litter and rows of feeders and drinkers. The chickens become crowded in these living conditions. The crowding commonly results in chickens receiving thigh sores, scabs and scratches which can lead to infection and then to death. Due to small spaces chickens live in wet litter which converts to ammonia and irritates the chickens' skin creating lesions on legs and feet.

Although the living conditions of factory farm chicken seems inhumane the chickens endure physiological issues as well. Chickens have been modified to grow faster or lay more eggs faster in shorter amounts of time. This method increases the profit per animal. Chickens are grown for two forms of profits: one is broilers which is for meat consumption and the other is layers who solely lay eggs. In 1920 chickens raised for meat reached 1 kg (2.2 lb.) in sixteen weeks compared to modern chickens which grow to 2.6 kg (5.7 lb.) in six weeks according to the Humane Society (n.d). Chickens laying eggs known as layers or breeders are manipulated to lay eggs year-round. Factory farmers use lighting to simulate winter and spring. Protein levels in chicken feed are also tampered with to encourage chickens to lay more eggs during the simulated spring time. Layers in factory farms produce approximately 300 eggs a year which is two to three times more than a chicken would in nature. The average kill age for broiler chickens is 47 days while a breeder hen is about 1-2 years before they are slaughtered states the Humane Society (n.d).

Of the nine billion land animals that are slaughtered annually cows and pigs are the biggest percentage. The American Society for Prevention of Cruelty to Animals also known as the ASPCA (n.d) has documented the complete treatment of cows as being forced into pregnancy very frequently to create more animals to sell as meat or dairy products. Cows are artificially inseminated once a year with a nine-month gestation period. After calves are born they are removed from their mothers the same day or the next day to ensure the mother can't feed her calf. Factory farmers want to collect milk quickly after birth to increase profit per cow. Male calves can be used for veal or raised to be different beef products. Females are raised to be the next dairy cow. Once the calf is taken away he or she is fed a milk substitute until able to eat solid feed. The mother cow is then milked until her milk dries which then leads to

impregnating the cow again. As the calves grow they are forced into the same lifestyle of their parents. After a couple years of birthing calves mother cows are then slaughtered to sell as meat. Female cows produce approximately 100 pounds of milk per day which is an increase of ten times compared to years ago.

Cows raised for meat consumption are commonly raised outdoors only for the first six months and then moved to crowded indoor feedlots until scheduled for slaughter. Cows are branded, castrated, and may have horns removed without pain relief. Feedlots are designated areas for cattle to live while they are fattened up for consumption. Cattle are normally held at feedlots for 60-200 days. Once the cow has reached the prime weight they are sent to slaughterhouses.

Similar to cows, female pigs or sows are artificially inseminated and forced into gestation cages where they are only allowed to stand or lie on one side or the other. ASPCA (n.d) has also documented the treatment of sows which are kept in gestation cages until a couple days before birth when they are moved to a similar size cage to give birth called a farrowing crate. After birth the sow nurses her young for a couple weeks and then the piglets are taken away. The sow is then returned to the gestation cage and inseminated again. While in farrowing crates sows get sores on boney provinces due to laying on one position for long periods of time. The short nursing process also produces many injuries for piglets who are stepped on while the mother turns or stands in the farrowing cages. Jonathan Safer Foer, author of *Eating Animals* (2009, 187-88) explains how injured piglets or runts of the litter are killed through a method slaughterhouse workers call "thumping". "Thumping" is an action where industry farm workers grab piglets by their hind legs and forcefully slam them into concrete to kill them. The reasoning behind this practice is a runt or injured piglet does not have the same potential profit as a healthy full-grown piglet. After the nursing process healthy piglets are placed in windowless stalls with no fresh air and fed until ready for slaughter. Females are kept until ready to become sows and produce piglets. A continuous cycle of insemination and birth is the life of a sow until they are sent to a slaughterhouse.

Majority of modern slaughtering methods are similar in all animals. The Food and Agriculture Organization of the United Nations or the FAO has requirements for the slaughter of animals. Many of these requirements do are not followed. Chickens are caught, thrown in cages and transported to slaughterhouses. Through requirements of the FAO (n.d) animals should be provided water or feed if needed during long holding times but many times no water or feed are provided on rides which may take many hours or even days. Once in slaughterhouses chickens are shackled upside down from their feet which can be very painful since many chickens have deformities due to poor and crowded living conditions. The shackled chickens are then dunked in an electrified water bath alive to stun them unconscious and immobilize them says the FAO (n.d). After immobilized the chicken gets their neck sliced and bleed out while they travel down the assembly line. Once the chicken bleeds out they are mechanically plucked of feathers and continue to be cut and packaged for consumption. In many cases the chickens are not struck unconscious in the first step and will continue through the assembly line alive and suffering. The slaughter of cows and pigs is similar to that of chickens. Animals are forced into rooms where they are stunned with an electric bolt shot between their eyes to rid them unconscious or to kill them. Next they are shackled and hung upside from their feet. Once they are upside down a blade comes and slices the animal's throat. "This state should last for long enough for bleeding to be carried out so that the animal dies from cerebral anoxia" states the FAO (n.d). In some cases, the first shock fails and "the animal becomes paralyzed and unable to vocalize but remains fully conscious" explains the FAO (n.d). The animals are stressed before and during the slaughter.

2.4 Environmental Impact

Animal agriculture is one of the leading causes of global warming states Climate Nexus (n.d). The excessive amount of animal growth for consumption is slowly deteriorating the planet. As of October 2018, the UN (2018) has warned the world that the population has 12 years to decrease the amount of climate change that is occurring. After 12 years the damages will be

difficult to reverse. Intergovernmental Panel on Climate Change also known as IPCC (2018) is the climate change panel for the UN and has stated that sea levels are increasing along with extreme heat that is increasing the risk of wildfires in certain areas and decreasing the eligibility for growth of crops in others. With this warning from the UN they are pleading for others to take actions to decrease the damaging of the environment. According to Climate Nexus (n.d), animal agriculture is the second largest factor of human-produced greenhouse gases. This means animal agriculture has a large impact on deforestation, water and air pollution, and biodiversity loss. Annually approximately 70 billion animals are raised for human consumption worldwide explains Climate Nexus (n.d). To provide for this large number of animals, animal agriculture uses about sixteen percent of global freshwater. A third of the world's grain production is used for feeding these 70 billion animals for consumption. With the same amount of grain used for feeding animals for consumption the grain could feed 3.5 billion people claims Global Agriculture (n.d).

Cattle is the highest source of gas emissions from animal agriculture. If individuals switched from a beef diet to a plant-based diet it could reduce the amount of gas emissions by 96% (Climate Nexus n.d). Annually cattle create approximately 900 kg CO₂ or gas emissions per one cattle. A plant diet creates 33 kg of gas emissions. When gas emissions are created they travel into the atmosphere and trap heat from escaping. This heat then warms the planet creating extreme heat and sudden change in weather. IPCC explained in their 2018 report that the current temperature of the planet is between 0.8 and 1.2 Celsius and researchers fear that once the planet reaches 1.5 Celsius planet temperature the damages will be irreversible. The planet will experience droughts, floods, hurricanes and earthquakes. All of these are natural disasters that can cause harm to the environment and living beings.

2.5 Nursing Competence in Nutrition

The holistic care of a patient must include nutrition and nurses are one of the best tools to use. "Considering nurse role as primary care providers, nurses are in the best position to ensure good nutrition for a patient" states Yalcin et al. (2013). Nurses are responsible for observing food intake, assessing a patient's nutritional status and giving education on nutrition (Yalcin et al. 2013). During hospital visits nurses document how a patient is eating and if there are any issues with possible malnourishment. Nurses are also one of the only health care providers who can observe a patient eating food. When mealtime is starting nurses are responsible to ensure the patient is comfortable and ready to eat. This means the patient should be positioned correctly, used the bathroom if necessary, assisting the patient to eat or opening packages the patient cannot open themselves. By preparing the patient to eat it creates an environment for the patient to enjoy their food.

3 Purpose, Aim, Research Question

The purpose of this thesis was to describe what Laurea nursing students know about a vegan diet. By understanding the basic knowledge of the vegan diet we can better assess if education of alternative diets is necessary for nursing students. The aim is to increase the knowledge of these diets for Laurea nursing students. A PowerPoint and lecture were used to increase the knowledge of the students. The research question for this thesis is what kind of knowledge do Laurea nursing students have on a vegan diet?

4 Methods

The form of this thesis is a functional thesis with a focus on a survey approach. The written thesis briefly explains the background of a vegan diet and the lifestyle. The functional portion of the thesis was a PowerPoint lecture given to a group of Laurea nursing students at the Tikkurila Campus on April 29th, 2019. The target group was 15 nursing students with one to two years of nursing studies.

4.1 Data Collection

The key part of quantitative research is data collection. Data collection is the main method that explains the association between the research question and the target group states University of Southern California or USC (2019). Data collection is the action of gathering information to understand a theory or question. The data collected in this thesis are the answers of the surveys. Each survey question has a specific reason why it is asked. The questions will help understand the knowledge of the students. The data collected will be checked for right or wrong answers on the knowledge portion of the survey and will be interpreted for the open-ended question at the end. The questions for the survey were chosen to test different areas of knowledge such as nutritional, health benefits, ethical and environmental impact. Questions were based on research collected during the background portion of the thesis.

Polls, questionnaires and surveys are commonly used to collect data. The data collected can be shown through percentages, charts and statistics to display results of the analysis. According to USC Libguides (2019) two designs of quantitative research are descriptive and experimental data collection. Descriptive data collection is focused on the association between two variables while an experimental data collection is about the causality of a phenomenon occurring. A descriptive data collection measures the knowledge once and is applied to a larger population compared to experimental measuring before and after the treatment which in this thesis is the PowerPoint lecture on a vegan diet (USC Libguides 2019).

The first survey was presented prior to the PowerPoint lecture. The first survey was a general knowledge test about the vegan diet. The survey was a structured survey on paper and included eleven questions. Students were expected to answer the survey alone although this did not truly happen. Students sat close together and spoke when taking the first survey. The survey was collected after completion.

Each question was asked to test a certain amount of knowledge about the vegan diet. An attachment of the survey is included with the written thesis. A breakdown of each question follows:

Number one: Which diet excludes all animal products, including dairy and eggs? This was asked to know if students are able to differentiate between the different diets. Nurses should know the difference between vegan and vegetarian. Although vegan and vegetarian are similar they have big differences. Vegans do not consume any animal products while vegetarians only exclude animal meats. The other options, paleo and keto are also popular diets trending currently in society. Keto is dairy free and gluten free but still includes animal meats and seafoods. Keto is low-carb and high fat and includes animal products. Correct Answer: C Vegan Diet

Number two: Which of these plant-based foods has the most protein? Question two test the knowledge of plant-based proteins and the amount of protein in each option. The question asks for the most protein in the plant-based options. Two answers have similar amounts of protein, but one has more than the another. While oats have a good amount of protein lentils have the most. Correct Answer: A Lentils

Number three: Do vegans get enough protein? This question tests the knowledge of plant-based proteins. Many individuals are concerned that vegans and vegetarians do not consume enough protein. A student familiar with the multiple plant-based proteins would know that vegans do receive protein if they are eating a well-balanced vegan diet. Correct Answer: A True

Number four: Which vitamin does a vegan diet lack? Question four is basic knowledge of a vegan diet. It also questions the understanding of B12 and where B12 can be consumed from. B12 is only found in animal products and one of the only supplements all vegans must take since it cannot be found in plant foods. Correct Answer: B Vitamin B-12

Number five: A vegan diet is low in LDL cholesterol? This was a test to see if students know that LDL is low-density lipoprotein or “bad cholesterol”. If students knew what LDL meant then they could come to the answer that a vegan diet is low in LDL cholesterol due to the consumption of whole plant foods which are naturally low in LDL cholesterol. If students did not know the term LDL then it could result in them answering wrong. Correct Answer: A True

Number six: Individuals convert to a vegan diet for? This is a test to see if individuals know or understand why people convert to veganism. All four options are correct in this question. There are many reasons why people convert but the options given are some of the main reasons. Even though selecting any of the answers would technically be correct, the last option proves that the student knows that all reasons are correct. Correct Answer: D All of the Above

Number seven: A vegan diet has been proven through studies to help? Question seven is a test to see the understanding of the health benefits of a vegan diet. Cardiovascular disease is the only disease of the answers which has been proven through extensive studies to improve with a vegan diet. The other options can also improve from a vegan diet but those do not have as extensive studies as cardiovascular disease. Correct Answer: C Cardiovascular Disease

Number eight: Overtime eating meat can increase antibiotic resistance? Question eight tests the student’s knowledge on excessive use of antibiotics in animal meats and the understanding of antibiotic resistance. Antibiotic resistance is a naturally-occurring phenomenon but over time the consumption of meat will slowly increase antibiotic resistance. The combination of patient error while taking prescribed antibiotics and antibiotics transferred directly from meat will slowly increase antibiotic resistance in humans. WHO (2018) fears that antibiotic resistance will become a threat to society if antibiotics are used with such a high demand. Correct Answer: A True

Number nine: Approximately 6 billion land animals are killed annually in the U.S? This is a general question to see if students know how many animals are killed each year for consumption. This question is geared more to ethical impact of animal consumption. The question suggests 6 billion animals which is much less than the actual amount. One of the reasons individuals convert to veganism can be ethical reasons on animal treatment and slaughter. Correct Answer: B False

Number ten: How much of the world’s grain is produced for animal consumption? Question ten is asked to see if students understand and know the amount of grain that is used for raising animals for consumption. The question is geared towards environmental impact and the realization of people starving from poverty or lack of aid. Global agriculture (n.d) claims that the amount of grain that is used for raising animals could feed 3.5 billion people. There are many people who are malnourished and could be helped with the grain that is used for animal consumption. Correct Answer: C 1/3

Number eleven: Animal agriculture is one of the leading causes of global warming? This is an environmental impact question. This question tests to see if students know the impact of eating meat. As animal agriculture is necessary for meat consumption the amount of pollution factory farms create has a big impact on the earth and global warming. Cattle create methane gasses that warm the planet. A combination of animal agriculture and pollution created by humans is warming the planet to temperatures that will begin to cause irreversible damage to the planet according to the IPCC (2018). Correct Answer: A True

The second survey was given after the PowerPoint lecture. It was an open-ended question asking students how they would apply the information presented to them during the lecture to nursing. The survey was given on a blank paper with only the question and space for students to openly write their response. The survey was collected after completion. The end survey was given to understand if students felt that the information provided could be applied to nursing. It also encouraged students to critically think about the information. “The main critical thinking skills in which nursing students should be exercised during their studies are

critical analysis, introductory and concluding justification, valid conclusion, distinguish of facts and opinions, evaluation the credibility of information sources, clarification of concepts and recognition of conditions” states Papathanasiou, Kleisiaris, Fradelos, Kakou and Kourkouta (2014). Through critical thinking nursing students and nurses are able to obtain information and make an evidence-based decision in the best interest of the patient. “The nursing education programs should adopt attitudes that promote critical thinking and mobilize the skills of critical reasoning” says Papathanasiou et al. (2014)

4.2 Data Analysis

The Association for Educational Communications and Technology or the AECT (2001) states that a quantitative method is a common research method that uses numerical values to analyse data. This method is used when a research question requires classifying, exploring, comparison and explanation. By using numerical values, a researcher can use data to connect two variables together (AECT 2001). The answers connect to the original research question which is: what knowledge do Laurea nursing students have on a vegan diet.

The survey answers were analysed by the presenter of the lecture. A simple table and tally method were used to document all answers. The open-ended questions were written down on paper exactly how they were written on the survey paper. No answers were changed to uphold integrity. The answers were not shared with anyone and no information of the students was given away.

5 Results

The target group of the lecture included 15 students. Two students had studies of one year, twelve had studies of two years and one individual left the question unanswered. The purpose of asking study years is to better consider the target group’s knowledge on nutrition and the possible nursing considerations with a vegan diet. Eleven of the 15 students identified as female, three as male and one individual left the question unanswered. The sex of the students was asked to better account for diversity of the group. The survey also included animal product intake. The possible options were daily, weekly, monthly and never. This question was asked to understand if the target group included vegetarians or vegans and how often they consumed meat. Of the 15 students, eleven consumed animal products daily, four consumed weekly and zero consumed monthly or never.

The answers for the knowledge test were correct on majority of the basic vegan diet questions. The answers which were incorrect were testing the knowledge of ethical vegan questions and environmental impact. This can mean that students are more aware of the dietary needs for a vegan diet than the other possible reasons individuals convert to veganism. As nurses the nutritional aspect of patients is important to understand and through this knowledge test it seems the students know the basics to assist patients. The percentage results of the knowledge test are presented in Table 1.

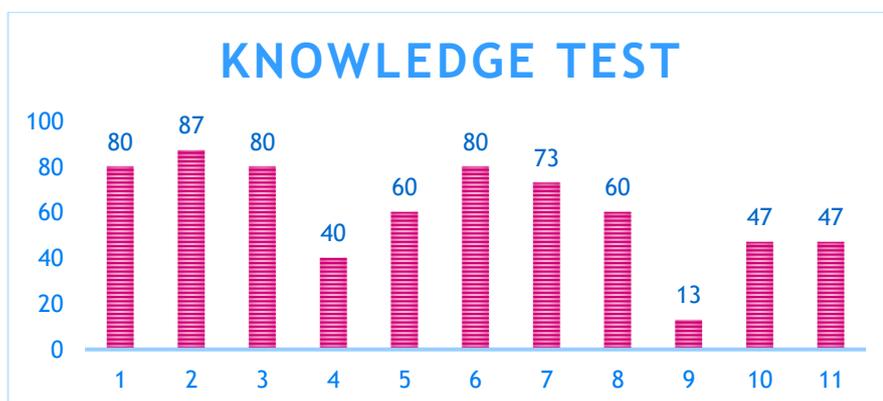


Table 1: Results as percentages for the Knowledge Test

The second survey with the open-ended questions had very positive answers. Majority of responses suggested the possibility of nurses guiding patients to practice a healthy vegan diet. The responses fell into three different types of answers. First type was guidance for patients who want to follow a vegan diet, second was recommendations for patients who have a specific disease that could improve through a vegan diet and the last type was students applying the lecture information to their own lives.

Ten students responded with guidance-based answers. Their answers are as follows:

- Nurses responsibility to inform patients and other individuals of the population, but also respect their choices. Encourage individuals to practice consuming less meat and more consumption of vegetables and fruits.
- Nurses do a lot of nursing interventions (teachings), the information can be a good addition on how to give nutritional teachings.
- Guidance to way of healthy vegan diet as most start diet without knowing about vegan diet.
- Explain people about healthy diet and nutrition. Useful to explain someone who wants to be vegan don't have better understanding on vegan diet.
- Planning nutrition for patients.
- Able to give the patient some vital information about eating healthy. Small changes can have a huge impact on overall health and being an advocate as a nurse.
- Respect all patients in any case regardless of what their preference of their food. Provide alternative nutritional information.
- Giving guidance about lack of vitamins. From where they get enough vitamins and protein and guide them about healthy diet. How can they do safe vegan diet.
- Informing the patient about different diets.
- Informing the patient about the different diet choices.

Three students responded with recommendations for patients with specific diseases. Their answers are as follows:

- Take supplements like B-12, vitamin D. Advise patients with cardiovascular disease to start eating vegan diet.
- Recommend to patients especially patients who has heart and lung surgery
- Suggest this (veganism) as an option to patients with obesity, diabetes and cholesterol.

Two students responded with applying the diet to their own lives. Their answers are as follows:

- Become a vegan again. Even though was vegan in the U.S. Limited resources, food in Finland
- First implement the vegan diet in personal diet. Then can be confident enough to apply findings in health promotion on healthy eating.

The three types of responses show how students can use the information in multiple ways and they were able to obtain the information and apply it to nursing. Students were able to easily and clearly state how the information presented could be applied in their future nursing careers. Based on the results Laurea nursing students have a good understanding on a basic vegan diet. They understand the basics and can help guide patients who want to follow a vegan diet.

6 Discussion

The students had very good basic knowledge on a vegan diet and were able to apply the knowledge received from the PowerPoint lecture. Although the lecture was focused on the vegan diet it would be important for students and nurses to understand the basics of other alternative diets such as keto, paleo and Mediterranean. By understanding the basics of other diets nurses can better guide patients to eat healthy diets that work for patients. One concept which can better be educated on is the environmental impact of eating a vegan diet.

Through eating a vegan diet, individuals can make a small impact which will help the planet over time.

Another thesis could explore the impact of antibiotics used in animal consumption and antibiotic resistance in humans. Antibiotics have a large impact on the healthcare field and if they are no longer useful then healthcare could become more difficult. The use of antibiotics in animal consumption meats is excessive and should be greatly reduced. A possible research question could be how can individuals protect themselves against antibiotic resistance?

A discussion idea and continued thesis could be the role that nurses have in nutrition. "Nurses are less focused on their patient's nutritional status and/or their patient's ability to feed themselves" says Jefferies et al. (2011). This attitude towards nutrition introduces the risk of malnourishment for patients which will prolong hospital visits. New methods and practices should be taught and enforced for nurses. Nutrition plays a big role in healing a patient. Jefferies et al. (2011) suggests eight new standards for nurses to follow that will decrease the amount of malnourishment in patients. The standards suggest nutritional screening on admission, individualized nutritional care plans, assessment of patient's eating abilities, focus on patient mealtime, outside support for patients who require assistance, encouragement for patients to maintain oral care, dedicated nutritional care resource nurse and management of periods of prolonged repeated fasting. These standards can be applied to different hospital settings to see if there is a decrease in malnourishment. Nurses can also use nutrition as a preventive method. A recommendation about a vegan diet to a patient showing symptoms of cardiovascular disease could possibly delay the disease. It could change nursing practice from treatment to preventive and promotion of health.

7 Ethical Considerations

There are many ethical considerations that must be included during the survey portion of this thesis. The target group was emailed an invitation letter written by the presenter which briefly explained the lecture topic, background and lecture breakdown. The letter was sent a week prior to the lecture. The target group was informed through the letter about the surveys they would be asked to answer. All survey data was kept confidential to protect the identity of all the students. The student's name or study year will not be released for any reason. The target group's class code will not be mentioned. This upholds the integrity (TENK 2012, 30) of the target group and reduces the possible harm that could come to the group. According to TENK (2012, 33) the falsification of results is a major concern in a research study. To ensure no falsified results are included the presenter personally analyzed all results. A research permit was applied for through Laurea UAS and permission for the research was permitted.

TENK (2012, 30) requires for researchers to obtain consent from participants in any research studies. Consent was obtained from students by their completion of the survey. Individuals refusing to participate were allowed to opt out. The surveys were completed prior to the presentation and returned to the presenter after completion to reduce the chance of inaccurate results. Although this method was used to reduce the chance of students using each other to answer the survey, it was difficult to stop the students from talking to each other. This could sway the accuracy of the study. After the presentation was finished an open-ended question was presented and collected after completion. The second survey also had the same difficulty as the first survey of possible inaccuracy due to talking between students.

To uphold honesty in this thesis the presenter feels necessary to disclose that they have been following a plant-based diet for a couple years. This introduces the possibility of more opinion and value-based arguments during the lecture portion, but the information presented to the students and throughout the thesis is factual and evidence based. The aim of this thesis was not to change the target group's mind or convert them to veganism but to bring factual evidence that can be used in nursing.

8 Limitations

The target group size was a big limitation in this thesis. The target group size was much smaller than anticipated. The presenter had expected approximately twenty to twenty-five students for the target group. The target group size was fifteen students. Due to the target group size being smaller than expected it can possibly skew the results and cannot accurately represent the knowledge of all Laurea nursing students on a vegan diet. The lecture was only held at one Laurea campus while strengthens the claim that the thesis cannot be applied for all Laurea nursing students. The lack of education on vegan diets can skew results as well. Although nutrition is a topic in Laurea nursing degree program, the specifics of a vegan diet may not have been included.

A major limitation is the newness of the vegan diet which lacks long-term evidence-based studies. There are studies discussed in the thesis that have been completed but the studies have not lasted for multiple years. The studies are evidence based but long-term studies that have lasted for decades are hard to find. Many articles suggesting a vegan diet are written from the opinion, value or belief perspective and may not have factual evidence. Due to the lack of factual evidence these articles could not be used. Hopefully long-term studies will become more common since veganism is starting to increase globally.

9 Conclusion

A vegan diet is a good option for individuals looking for a diet that has many benefits when practiced correctly. Studies have proven an improvement in patients with cardiovascular disease and diabetes. Antibiotic resistance is a growing threat to the medical field and the excessive use of antibiotics in animals for meat is increasing the speed that individuals become resistant to antibiotics. For ethical reasons a vegan diet protects animals from living a life of cruelty and abuse. It holds factory farmers accountable for the treatment of animals and also forces them to think about the use of antibiotics in the animals. Consumers have the power to vote with their purchases. Through consuming less meat or consuming meat that has no antibiotics it may change factory farmers' way of working. The planet will also benefit from individuals eating less meat. Animal agriculture is one of the largest contributors to climate change. The excessive amount of animal waste which is created through raising animals is increasing the warmth of the planet. A combination of animal agriculture and pollution created by humans is slowly damaging the planet beyond the point of salvaging the planet.

The nursing students at Laurea UAS have a good level of knowledge for a vegan diet. The surveys proved that students have the basic knowledge to help guide patients who are interested in a vegan diet. Many students understand the multiple possible reasons an individual may convert to veganism along with the factual evidence behind a vegan diet. Nurses must be able to advocate for patients but also provide factual evidence on a diet that many may follow in the future. As the future generation of nurses it is important to be open-minded and supportive as individuals begin to understand health more. Nurses work closely with patients in time of need and nurses should be able to comfort the patient in those times. Although a vegan diet can seem simple and easy there are considerations that must be taken to ensure a healthy diet. Nurses and nursing students can be the key concept to ensure patients are well-educated on a well-balanced vegan diet. Through good education and knowledge nurses can start taking a preventive step to treating diseases and also helping the planet. There is only one planet Earth and society should start taking steps to help it.

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11 Pre-Survey Knowledge Test

Pre-survey**Background**

Years of nursing studies _____

Sex _____

Animal Product Intake:

- a. Daily
- b. Weekly
- c. Monthly
- d. Never

Knowledge Test

1. Which diet excludes all animal products, including dairy and eggs?
 - a. Paleo Diet
 - b. Vegetarian Diet
 - c. Vegan Diet
 - d. Keto Diet
2. Which of these plant-based foods has the most protein?
 - a. Lentils
 - b. Celery
 - c. Oats
 - d. Rice
3. Do Vegans get enough protein?
 - a. True
 - b. False
4. Which Vitamin does a vegan diet lack?
 - a. Vitamin A
 - b. Vitamin B12
 - c. Vitamin C
 - d. Vitamin D
5. A vegan diet is low in LDL cholesterol?
 - a. True
 - b. False
6. Individuals convert to a vegan diet for?
 - a. The animals
 - b. Their health
 - c. Environmental impact
 - d. All of the above
7. A vegan diet has been proven through studies to help?
 - a. Brain Cancer
 - b. Kidney Failure
 - c. Cardiovascular Disease
 - d. Irritable Bowel Syndrome
8. Overtime eating meat can increase antibiotic resistance?
 - a. True
 - b. False
9. Approximately 6 billion land animals are killed annually in the U.S?
 - a. True
 - b. False
10. How much of the world's grain is produced for animal consumption?
 - a. 3/4

- b. 1/2
- c. 1/3
- d. 1/4

11. Animal agriculture is one of the leading causes of global warming?
- a. True
 - b. False

12 Post-Survey Open-Ended Questions

Post-survey open-ended question

How would you apply the information presented in the lecture to nursing?