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Cover Page Footnote

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GIVING TO THE GIVER: A RESEARCH PROPOSAL ON IMPLEMENTING DONOR NUTRITION EDUCATION TO PROMOTE HEALTHIER OPTIONS IN THE FOOD BANK

By Kirstine Huey, Joana San Luis, Antionette Rivera, Mia Mitnaul, Tavia Hunt, Chelsa Johnson and David Pantangan

ABSTRACT

Objective: To increase the nutritional value of donations given by donor organizations to the Food Bank based on a Red-Yellow-Green (RYG) scale. Background: Food banks have been planted across the Southeastern Virginia region to help with the prevalent issue of food insecurity. The food bank receives various food donations. The goal, however, is to implement education to the donor organizations to improve the nutritional value of the donations based on the Red-Yellow-Green scale. Participants and Methods: A Quasi-Experimental Before-and-After design across multiple groups will be used. Consistent donor groups will be selected for the intervention and baseline donations will be monitored for a month based on health value. After the first month, the one-week education intervention will be implemented. Donations from the donor organizations will, then, be monitored for an additional month. Finally, the nutritional value of the donations will be assessed based on the RYG scale. Analysis: The data will be analyzed using the central tendency method of descriptive statistics. A paired T-test will determine whether there was a statistical difference pre- and post-intervention, which will infer the impact of nutrition education on the quality of donations presented by the organizations. Results: There is an expected increase in the amount of green donations and decrease in the amount of red donations received by donor organizations. Limitations: Limitations of this study include the trial period, season, convenience of items, selected sample size, and finances.

INTRODUCTION

Food insecurity is a prevailing issue in Southeastern Virginia. Approximately one out of seven individuals in Southeastern Virginia suffer from food insecurity (Hunger in Virginia, 2018). Food pantries, such as the Foodbank of Southeastern Virginia, donate millions of meals to the community, but there is a concern about the nutritious quality of these meals (Foodbank of Southeastern Virginia, 2019). Previous studies have shown that there is a correlation between food insecurity and chronic diseases (Canales et. al, 2015). It is suggested that a study is conducted over a nine-week period to assess how the Red-Yellow-Green (RYG) system affects what organizations donate to the Foodbank. The aim of this study is to increase the nutrition quality of donations to the Foodbank based on the Red-Yellow-Green scale. It is hypothesized that the interventional nutrition education for the top regular donor organizations will result in higher amounts of nutrient-rich foods donated to the Foodbank of Southeastern Virginia according to the RYG system.

BACKGROUND

The Foodbank of Southeastern Virginia caters to the food insecure population of the 11 counties in the Tidewater area by annually distributing 18 million meals (Hunger in Virginia, 2018). For the purpose of this study, it is particularly concerning whether these meals are of nutritional value. In order to ensure that nutritious meals are distributed to the Tidewater area, the donations to the food bank must, first, satisfy nutritional standards.

According to a study conducted to implement nutrition interventions within the Food Banks of the Feeding America group, food bank officials deemed improved nutrition policies and profiling as potentially effective interventions (Handforth, Hennink, & Schwartz, 2013).

After implementing nutrition policies in one foodbank, the donor simply withheld the unhealthy donations, such as soda, leaving the donor-foodbank relationship unaltered. Another food bank suggested education on nutritious foods and health conditions as an intervention to prevent losing donors and encourage healthy donations. Furthermore, some participants noted that using a nutritional ranking intervention could show donors and consumers the amount of nutritious foods provided by food banks, encouraging nutritious donor behavior (Handforth, Hennink, & Schwartz, 2013).

The goal of this research design is to effectively implement both interventions from the Feeding America study conducted by Handforth, Hennink, and Schwartz (2013). Improved nutrition policies will be reflected through nutrition education for regular donor organizations of the Foodbank of Southeastern Virginia. Ideally, this intervention will result in donations that are higher in nutritional value. Education has been shown to be effective in a previous study where education was provided to prediabetic patients. After the education, participants showed dietary behavior changes and a difference in food choices (Tippens et al., 2019).

Nutrition profiling will be used with the Red-Yellow-Green scale, which will determine the effectiveness of the education intervention. The RYG scale helps categorize foods and beverages into three groups. The “Green” group represents food that is high in nutritional value with sources of important nutrients, low saturated fats sugars and/or salts, and higher in fiber. The “Yellow” group exhibits food that contains saturated fats, added sugars, and salts. Foods from the red area of the RYG scale include high saturated fats, added sugars, and salts. “Red” foods are often taken in large portions, leading to obesity or chronic diseases. The RYG scale has been found to be effective in a study that examined the effects of nutrition education on vending machine sales. The study concluded that red and yellow stickered items were reduced while

green stickered options had an increase in sales after the RYG scale was implemented (Brown, Flint & Fuqua, 2014).

SIGNIFICANCE

Many studies have found a correlation between food insecurity and chronic disease stating that approximately one in three adults in the United States who suffer from a chronic disease also report being food insecure (Canales et al., 2015). Nutritional related diseases, such as hypertension, diabetes, and heart disease are among the most common. Lower income families suffer greater disparity resulting in food insecurity, thus increasing their risk for chronic diseases (Canales et al., 2015). According to the Virginia Department of Health (2012), chronic disease in Norfolk resulted in $166,465,881 in hospital fees. Heart disease leads by a significant margin in cost, exceeding the total costs of stroke, diabetes, hypertension, and COPD combined.

Approximately 19% of residents in the greater Hampton Roads area are reportedly living with food insecurity (Data USA, 2016). One of the most modifiable interventions in the prevention of these diseases is improved nutritional intake, which poses a difficult task for lower-income families lacking the means to afford more nutritious foods and the transportation to get to higher quality grocery stores. Unfortunately, local food pantries are limited in their fresh produce selection due to shorter shelf life, seasonal availability, and limited donation variety. Also, the local food pantries are at the mercy of the donor's supply.

The Foodbank of Southeastern Virginia related to this study serves the Southeastern Virginia and Virginia shore areas. This organization provides food through various programs, such as the food pantry and mobile pantry, food rescue program, kids' cafe, backpack program, SNAP, community gardens, and plant a row for the hungry. Resources are provided by various

donors, including both monetary and food donations. Populations that benefit from these programs are not only the food insecure, but also school age children of low income families and families who may rely on Food Stamps and other various programs to subsidize income. It has been found that childhood food insecurity affects children into adulthood, not only in the form of chronic disease, but also mental health issues and poor health behaviors (FRAC, 2017). Additionally, local health care providers would benefit from this study due to numerous hospitalizations from the most common nutritional related chronic diseases in Norfolk.

The Foodbank of Southeastern Virginia and the Eastern Shore provided 14.8 million meals to 94% of its neighbors (893,720) during the years 2017 and 2018 (The Foodbank of Southeastern Virginia and the Eastern Shore, 2018). Their mission statement is “leading the effort to eliminate hunger in our community” with a vision to promote a hunger-free community. It is implied that the food bank's mission is to address hunger, not necessarily health. In the shopping list provided on their website, the food bank asks for items in most of the food groups. However, because the emphasis of non-perishable items is strongly stated, there are not as many options to provide adequate nutritional intake. In addition, the website does not discourage foods such as sodas, snacks, or treats. Because the food bank directly provides food to its communities, it is their donations that contribute to an overall health in the communities. This also holds true for donating organizations, since they are considered the head of the donation process. Altering the initial perspective in favor of improving nutritional standards may alleviate the rate of chronic diseases.

Currently, there are not many studies that focus on educating donors. The concern is focused on establishing that there is an issue between food insecurity and disease prevalence. As more information strengthens the correlation between the two, the focus will shift from "is there

a problem?" to "how can it be fixed?" According to a recent study carried out by Mousa and Freeland-Graves (2019) in Texas, food donations count for more than half of the participants' intake of various vital nutrients. When compared to the DRI provided by the United States Dietary guidelines, the participants fell short of carbohydrates, fats, fiber, and other vitamins and electrolytes (Mousa & Freeland-Graves, 2019). Because the pantry is a vital resource for low-income populations, the study recognizes its significance but also points out its shortcomings. Dan Remley and his team (2019) orchestrated a study that focused on the desires of patrons who utilize the food pantry with chronic conditions. This particular study took place in a rural setting targeting low-income families. It found that clients would like to have more options and preferences, especially in dairy and produce along with an increased percentage of negative comments (Remley et. al, 2019). Lastly, a study lead by Bryan (2019) in New York aimed to explore the access and nutritional quality of 50 food banks. Nutritional quality was determined using the NuVal® score. A balanced basket based on NuVal® criteria has a mean of 98.8% for client-choice pantries and 96.6% for traditional pre-bagged pantries (Bryan et. al, 2019). Of the sampled food banks, 29 of them were closed or had no food in stock, leaving 21 accessible pantries. The average NuVal® score from client-choice pantries was 69.3% and 57.4% for traditional pantries (Bryan et. al, 2019). The study encourages opportunities for efficient pantry operation, client and staff education, and nutritional donations improvements.

Food insecurity and chronic diseases are interrelated in the United States. As a result of our intervention, we would expect to see an increase in the amount of "green" and "yellow" donations based on the RYG system. By implementing an education based method, we hope to pinpoint crucial evidence to our target population. It is our aspiration that the knowledge will resonate with them so much so that it will positively impact future donations. As a result, it will

stimulate more nutritious options for the patrons. This study will provide insight into the relationship between nutritious value and the prevalence of chronic diseases. Again, there is little knowledge focused on this aspect of the application, so this study will open a new realm of discussion and opportunities.

METHODS

The study will be conducted over a 9-week trial to allow for one-month pre-interventional assessment, one week educational implementation, and one month post-interventional assessment. A list of consistent donor groups will be obtained from the Downtown Norfolk Food Bank administration. Groups that fit the following criteria will be asked to participate in the study: consistently donates at least 100 lbs of food per month, donations are deposited at the food bank on a weekly basis, the individuals of the group are participants by membership, and are willing and able to gather members to listen to an educational lecture/presentation during the interventional week. These requirements aim to ensure there will be adequate trackable data throughout the study, reduce the amount of outlier data produced by one-time donors who may not be present throughout the trial, and maintaining internal validity by selecting groups comparable in function. Ten of these groups willing to participate will be selected as a convenience sample. More groups will be welcomed into the study provided their availability.

Informed consent for the study will be obtained from the Food Bank and the participating groups. Demographic information on the groups and their members will be obtained and recorded (see Appendix B for the demographic survey). The donations from each of these groups will be monitored for one month. The donations will be categorized and assessed for their health value according to the Red-Yellow-Green (RYG) scale (see Appendix A for the referenced

Healthy Choices Traffic Light System). The weight and number of units will be recorded on a weekly basis. After this, one week will be used to give health education lectures on the RYG scale, healthy food choices, and the need for healthier donations will be presented to each of the participating groups. Instructors will present from a standardized script. Each presentation will be 15 minutes long followed by a 15 minute interactive question and answer segment to catalyze a change in each group's behavior as predicted by Lewin's Change Theory. One week will be allocated to assist in accommodating each group preferred schedule in hopes of maximizing member turnout. It may be possible to standardize the educational lecture if given to all groups simultaneously. However, a venue large enough to hold all participants at once may not be accessible. The next month, each group's donations will be categorized and assessed for their health value based on the RYG scale. The weight and number of units will be recorded on a weekly basis. Statistical and data analysis will be performed on the data collected for pre- and post-intervention data sets. From this, conclusion will be drawn.

Due to the pilot nature of the study, a Quasi-Experimental Before-and-After design across multiple groups will be used to assess the quantity of donations in each of the three health categories before and after the educational intervention. This design is indicated by the inability to randomize the sample set and the lack of a control group while still maintaining a predictable and measurable outcome (Fain, 2017). The data collected pre-interventionally will serve as the baseline data, the educational lecture will serve as the intervention, and the post-interventional data will be the dependent variable. Possible confounding variables within the groups include participation in lectures, average wealth, size, retainment, transportational access, and geographical location. Other confounding variables include the time and day of the lecture, food prices, availability, and economic variables. These will be considered when drawing conclusions

from the data. Expected resources for this study will be demographic questionnaires, food sorting, and collection bins, meeting rooms or gathering locations for educational intervention, informative pamphlets for the RYG scale, informed educators to present the lecture, and volunteers to sort, count, and move collected donations.

LEWIN'S CHANGE THEORY

Kurt Lewin's Change Theory consists of three distinct stages known as the unfreezing-change-refreeze model (Burke, 2018, p. 177). This model uses a planned change guide that helps identify motivations for change, interventions to put into action and ways to manage the transition. The study will utilize these three vital stages which include the unfreezing, changing and refreezing stage, to focus on behavior modification by donor organizations. It will serve as a guide to prove that nutritional education of regular donor organizations will yield higher quality food donations and options to the Southeastern food backs following to the RYG system. The unfreezing stage is recognizing that there is a need for change and the readiness for change. During this stage, it is crucial that the issue is addressed to facilitate the urgency for change towards the desired direction. The driving force is that the Hampton Roads area is included in the worst 25% of the U.S counties that are food insecure and that food insecure populations are at a higher risk for chronic diseases. The driving forces of this study must be constructive to have a clear direction towards the desired goal. The shift will be specifically for the donor organizations extent of knowledge of which foods are considered "Green" in the RYG scale. The change stage is where the focus is on the resolution of uncertainties and implement methods towards the desired outcome. The shift from the unfreezing stage to change stage may happen over a period of time but for this 9-week study trial; it is expected to cause a change in donation behavior after the

one-week long education implementation. Food donor organizations must proactively participate to embrace the new proposed changes. Communication is the key to allow concerns and questions to be addressed because an early understanding of the changes may represent an earlier adaptation to the transition. The refreezing stage is setting the change as the new norm or is now that the organization's standard protocol. This stage serves to solidify the new implementations introduced during the whole process of change. The goal is that the food donor organizations supplying the Foodbank of Southeastern Virginia will acknowledge the RYG scale with full knowledge of its purpose and benefits. An increase in primarily "Green" food donations will indicate that the education of donors was successful.

DATA ANALYSIS

The data collected before and after the educational intervention will utilize descriptive and inferential statistics for analysis. Prior to the intervention, demographics of the participating organizations and members will be collected. Some demographic criteria will include gender, age, ethnicity, type of organization, number of locations, length of time the organization has donated to the Food Bank, and average amount of donations per month. This data will be analyzed using the central tendency method of descriptive statistics. The mean of the answers will be used. The amount and quality of donations will, also, be analyzed using descriptive statistics before and after the intervention. Nominal measurements will track the amount of units and ordinal measurements will rank the donations according to nutritional value based on the Red-Yellow-Green ranking tool. Finally, the desired outcomes from the educational intervention will be analyzed using inferential statistics. A paired T-test will determine whether there was a

statistical difference pre- and post-intervention, which will infer the impact of nutrition education on the quality of donations presented by the organizations.

PROTECTION OF HUMAN RIGHTS

The subjects component of this research will be limited to the regular donor organizations that donate to the food bank of Southeastern Virginia. These subjects will be actively involved during the 9-week trial to allow for pre-interventional assessment, educational implementation, and post-interventional assessment. Informed consent will be obtained from each donor organization per protocol. The informed consent form will consist of the information of the study and the consent certificate. It includes risks, benefits, and subject rights that are useful as a document of reference. There will be minimal risk in this food bank insecurity research project, including the potential risk of loss of confidentiality and anonymity. Donor organization's names, contact information and all related identifiers will be removed in the data analysis. Only the research team will have access to information pertaining to the subjects. Researchers will not be collecting information that is not relevant to the study protocol. The study will ensure that the release of data will not be connected or tied to the subjects that participated in the study to decrease the risk of harm to these organizations. Monetary compensation will not be involved between the food donor organizations or the researchers. This is to prevent any distortion or skewing of the data collected.

CONCLUSION

Through this intervention, it is anticipated that there will be an increase in green and yellow donations within the RYG scale. It is also expected that there will be an inverse relationship between the education implementation and prevalence of red level donations. Due to these expectations, it is recommended that the RYG scale is used instead of the current arrangement, which does not involve a strategic guideline for donors to follow.

Limitations for this experiment include the trial period, season, convenience of items, selected sample size, and donor finances. The biggest of these is cost. Fresh produce is often picked by hand. Human labor is much more costly than having a machine harvest crops; this difference in labor, marks up the price for fresh fruits and vegetables. In addition, the USDA does not subsidize fresh produce as it does wheat, corn, and soy, allowing foods with these products in them to be lower in price. Depending on the season of this experiment, some nutritious foods may not be available. Also, many of these donors choose items based off of what is easily accessible to them. It is recommended to take these limitations into account for future studies.

REFERENCES

Brown, M. V., Flint, M., & Fuqua, J. (2014). The effects of a nutrition education intervention on vending machine sales on a university campus. *Journal of American College Health*, *62*(7), 512–516. https://doi-org.proxy.lib.odu.edu/10.1080/07448481.2014.920337

Bryan, A. D., Ginsburg, Z. A., Rubinstein, E. B., Frankel, H. J., Maroko, A. R., Schechter, C. B., … Lucan, S. C. (2019). Foods and drinks available from urban food pantries: Nutritional quality by item type, sourcing, and distribution method. *Journal of Community Health*, *44*(2), 339–364. https://doi-org.proxy.lib.odu.edu/10.1007/s10900-018-0592-z

Burke, W. W. (2018). *Organization change: Theory and practice*. Los Angeles: SAGE.

Canales, M. K., Coffey, N., & Moore, E. (2015). Exploring health implications of disparities associated with food insecurity among low-income populations. *Nursing Clinics of North America*, *50*(3), 465–481. https://doi-org.proxy.lib.odu.edu/10.1016/j.cnur.2015.05.003

Data USA. (2016). Norfolk, VA. Retrieved March 18, 2019, from https://datausa.io/profile/geo/norfolk-va/

Fain, J. A. (2017). *Reading, Understanding, and Applying Nursing Research* (Fifth ed.). Davis Company, F.A.

Foodbank of Southeastern Virginia. (2019). Retrieved March 31, 2019 from https://foodbankonline.org/about-us/

Food Research and Action Center. (Ed.). (2017). The impact of poverty, food insecurity, and poor nutrition on health and well-being. Retrieved March 25, 2019, from http://frac.org/wp-content/uploads/hunger-health-impact-poverty-food-insecurity-health-well-being.pdf

Handforth, B., Hennink, M., & Schwartz, M. (2013). A qualitative study of nutrition-based initiatives at selected food banks in the feeding america network. *Journal of the Academy of Nutrition and Dietetics, 113*(3), 411-415.

Healthy Eating Advisory Service. (2019). Traffic light system. Retrieved from https://heas.health.vic.gov.au/healthy-choices/guidelines/traffic-light-system

Hunger in Virginia. (2018). Retrieved April 3, 2019, from https://www.feedingamerica.org/hunger-in-america/virginia

Mousa, T. Y., & Freeland-Graves, J. H. (2019). Impact of food pantry donations on diet of a low-income population. *International Journal of Food Sciences & Nutrition*, *70*(1), 78–87. https://doi-org.proxy.lib.odu.edu/10.1080/09637486.2018.1466271

Remley, D., Franzen-Castle, L., McCormack, L., & Eicher-Miller, H. A. (2019). Chronic health condition influences on client perceptions of limited or non-choice food pantries in low-income, rural communities. *American Journal of Health Behavior*, *43*(1), 105–118. https://doi-org.proxy.lib.odu.edu/10.5993/AJHB.43.1.9

The Foodbank of Southeastern Virginia. (2018). *Hunger Pains to Community Gains Annual Report: Fiscal Year 2017-2018* (pp. 1-16, Rep.). Norfolk, VA: The Foodbank of Southeastern Virginia.

Tippens, K. M., Erlandsen, A., Hanes, D. A., Graybill, R., Jackson, C., Briley, J., & Zwickey, H. (2019). Impact of a short-term naturopathic whole-foods-based nutrition education intervention on dietary behavior and diabetes risk markers: a pilot study. *Journal of Alternative & Complementary Medicine, 25*(2), 234–240. https://doi-org.proxy.lib.odu.edu/10.1089/acm.2018.002

Virginia Department of Health. (2012) Retrieved March 18, 2019, from http://www.vdh.virginia.gov/collaborative/data-and-statistics/

Appendix A

Healthy Choices Traffic Light System

The Healthy Choices Traffic Light System is similar to the Red-Yellow-Green scale. The traffic light system promotes nutritious options for retail, vending machines, and catering. The GREEN category represents the healthiest choices for nutrition, including nutrients, low fat, salt, and sugar, and high fiber. The YELLOW/AMBER category represents nutrition that should be selected in moderation, including saturated fat, added sugar, and salt. The RED category represents non-essential nutrition, including high amounts of saturated fat, added sugar, and salt and low in nutrients. The Healthy Choices traffic light ranking system was adopted from Healthy Eating Advisory Service (2019) traffic light system which serves as a reference for the RYG scale to be used at the foodbank. Figure A1 displays food examples for each category.

Figure A1

Healthy Choices Traffic Light System

GREEN – best choices	YELLOW/AMBER – choose carefully	RED – limit
Bread	Some savory breads and crackers	Sugary drinks (e.g. soft drinks, sports drinks)
High fibre breakfast cereals	Some whole-meal muffins or scones with added fruit and vegetables	Confectionery
Reduced fat milk, cheese and yoghurt	Dried fruit	Ice creams and dairy desserts

Lean meat	Fish canned in brine or oil	Biscuits, cakes, slices and sweet pastries
Fish	Salted nuts and seeds	Saturated fats and oils (e.g. butter, cream)
Eggs	Some oven baked potato products	Deep fried foods
Plain nuts and seeds	Regular fat milk, cheese, yoghurt and custard	Crisps and chips
Tofu	Some flavored milk	Pies, sausage rolls
Fruit (fresh, frozen)	99% fruit juice	Devon, salami, Strasburg
Vegetables	Artificially sweetened drinks	Sausages, saveloys
Legumes and beans		
Water		

Appendix B

Donor Organization Demographic Questionnaire

The Donor Organization Demographic Questionnaire is a tool that will be utilized to categorize our sample population. The questionnaire is separated into two parts. The first part addresses personal demographics as an individual, while the second part addresses the individual's donor organization. With this tool, we will be able to assess trends, identify limitations, and correlations. It provides some insight in reliability and validity to the study. It is acknowledged that the questionnaire can be skewed due to limitations such as the environment it is taken in and whether or not surveillance is present. Figure B1 displays the created Donor Organization Demographic Questionnaire.

Figure B1

Donor Organization Demographic Questionnaire

Personal Demographic Questions:

What is your gender?

- ❑ Male
- ❑ Female
- ❑ Other
- ❑ Prefer not to answer

What is your age?

- ❑ 18-20
- ❑ 21-29
- ❑ 30-39
- ❑ 40-49
- ❑ 50-59
- ❑ 60 or older
- ❑ Prefer not to answer

Are you Hispanic or Latino?

- ❑ Yes
- ❑ No

What is your race/ethnicity?

- ❑ White
- ❑ Black or African American
- ❑ American Indian or Alaskan Native
- ❑ Asian
- ❑ Native Hawaiian or other Pacific Islander
- ❑ More than one race
- ❑ Other

Donor Demographic Questions:

What type of organization is your affiliating donor organization?

_____

How long has your organization donated to the Foodbank of Southeastern Virginia?

_____

On a monthly basis, what do you regularly donate and how much?

_____

_____

Why do you donate?

_____

On a scale of 1-5 (1 being the lowest, 5 being the highest), how much of an impact do you think your donor organization has on the benefitting community?

- ❑ 1 - lowest impact
- ❑ 2
- ❑ 3
- ❑ 4
- ❑ 5 - highest impact

Thank you for participating in the demographic survey for the nutrition education intervention project at the Foodbank of Southeastern Virginia!