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The Effects of Nutrition Claims on Consumer Purchasing of Snacks in White Collar and Blue Collar Working Environments

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THE EFFECTS OF NUTRITION CLAIMS ON CONSUMER PURCHASING OF SNACKS IN WHITE COLLAR AND BLUE COLLAR WORKING ENVIRONMENTS

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The purpose of this experimental study was to determine if signage of nutrition claims increased the purchasing of snacks in white collar and blue collar working environments. Additionally, the study also observed if the nutrition claims were more effective in one working class over the other. The prevalence of obesity in employed adults has significantly increased in the last decade. Dietary patterns, including snacking habits, have been found to play a significant role in the decline of working adults' health. The percentage change formula was utilized as the statistical analysis for this study. This analysis evaluated the changes in the sales of snacks before and after implementation of nutrition claims. The findings indicated that after nutrition claims were implemented, sales of snacks increased in both working environments. The blue collar snack purchases increased by 79.8% after the six claims were implemented and the white collar snack purchases increased by 33.2%. Overall, the "mindful" nutrition claim had the most influence on total snack purchases. In conclusion, nutrition claims alone can possibly influence snack purchases in white collar and blue collar working environment.

KEYWORDS: nutrition claims; nutrition marketing; snacking behavior; obesity; working adults

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CHAPTER I: THE EFFECTS OF NUTRITION CLAIMS ON CONSUMER PURCHASING OF SNACKS IN WHITE COLLAR AND BLUE COLLAR WORKING ENVIRONMENTS

Introduction

Obesity in working adults is a major health concern in the United States. More than 140 million people are employed and spend about a quarter of their lives at a worksite (Onufrak et al., 2018). The prevalence of overweight and obesity in adults has been exponentially increasing the last decade (Eriksen, Rosothj, Burr, & Holtermann, 2015). In 2010, Onufrak et al. (2018) carried out a study observing the prevalence of obesity of working adults and its effect on the workforce. Results revealed that 28% of employed adults were obese, 20% of employed adults had hypertension, and 5% had diabetes. The increase in obesity and obesity-related chronic diseases increased the number of people that had a work disability (Onufrak et al., 2018). The rise in health conditions in employed adults has cost employers $93 billion dollars per year based on health insurance claims (Onufrak et al., 2018). The increase in obesity in adults, specifically working adults, has led to the observation that they will encounter other health concerns that are generally accompanied with obesity. Therefore, there should be an incentive for employers to provide opportunities for their employees to improve their health as well as lower their health care costs.

Eriksen et al. (2015) researched how the increasing prevalence of overweight and obesity increases an individual's risk for chronic disease. After evaluating the self-reported data from 3,482 participants, it was found that being obese increases the risk of several diseases, such as diabetes, cancer, and cardiovascular disease (Eriksen et al., 2015). These results indicated that the prevalence of the obesity needs to be reduced in order to decrease the risks of other diseases.

Contributing factors for the rise in obesity in adults need to be identified in order to implement interventions.

According to a study conducted by Chau, Van Der Ploeg, Merom, Chey, & Bauman (2012), jobs have changed in the last 20 years from involving different forms of physical activity to becoming primarily sedentary for a high proportion of the working population. A substantial amount of employed adults have occupations that require long durations of sitting times daily and spend about one third to half of their day sitting down (Chau et al., 2012). Specifically, 42% of men and 47% of women that participated in the study reported that they mostly sit at their job sites. Workers with sitting jobs had a significantly higher obesity risk than workers with mostly standing jobs (Chau et al., 2012). If obesity levels remain unchanged, the growing obesity-related health burden will have large economic consequences including cost to the health system as well as negative impacts on the workforce and decrease in productivity (Chau et al., 2012).

The duration of sitting time in a work environment is not the only factor that increases an individual's likelihood to become overweight or obese. Garza, Ding, Owensby, and Zizza (2016) conducted a study that examined the association between working adults' eating behavior and prevalence of obesity. Their results indicated that employed adults were more likely to participate in impulsivity of food choices due to their value of immediate rewards and disregard of future costs (Garza et al., 2016). Furthermore, the greater impulsivity was associated with more fast-food consumptions and correlated with higher body mass index (BMI) (Garza et al., 2016). Since the study suggested that convenience played a significant role in food purchasing, this current study can be used as a steppingstone to research other contributing factors that increase BMI in adults.

Education level as well as socioeconomic status has been found to play a role in an individual's risk of becoming obese. A study conducted by Zhang, Xu, Song, Pallard-Borg, and Qi (2017), observed 7,351 individuals aged 20 to 79 to determine if education role plays a role in obesity. The socioeconomic status and anthropometrics were obtained from the participants through an interview following a structured questionnaire and standard measuring procedures (Zhang et al., 2017). The data revealed that higher income and education was associated with lower risks for obesity while lower income and education was associated with higher risks for obesity in adults (Zhang, et al., 2017). The results from this study suggest that adults working in white collar occupations are more likely to participate in healthy eating behaviors.

Studies have indicated that nutrition claims have been a major contributor to the purchasing process as well as helping customers choose healthier food choices (Kaur, Scarborough, & Rayner, 2017; Talati, Pettigrew, Dixon, Ball, & Hughes, 2016). Kaur et al. (2017) found that nutrition claims overall, increase purchasing/consumption and concluded that health-related claims have a substantial effect on dietary choices. The data revealed that nutrition claims on front of package labels can potentially lead to more positive evaluations of products compared to no front of packaging labels (Talati, et al., 2016). These findings indicate how persuasive claims and marketing can be to the average consumer, specifically, the average working adult in the United States.

A cross-sectional study performed by Franco-Arellano, Bernstein, Norsen, Schermel, and Abbe (2017), evaluated the proportions of foods carrying claims and the types and prevalence of nutrition claims in the food supply. Overall, 49% of products displayed any type of nutrition claims. Out of those products, the majority of those that had a claim were meal replacement items (Franco-Arellano et al., 2017). Interestingly, general health claims, specifically front-of-

pack claims, were carried on 20% of foods compared to 18.9% three years prior (Franco-Arellano et al., 2017). Since almost half of products in the food supply have nutrition claims and front-of-pack claims are increasingly being utilized, it can be inferred that claims are a marketing tool to not only help customers identify healthy food choices but also a strategy to increase purchasing.

Although nutrition claims are more abundant in the food supply than ever before, it raises the question on whether one nutrition claim is more effective than another on purchasing. A study was conducted to evaluate how consumers interpret nutrition claims. The results from this study suggest that a consumer's ability to process nutrition claims is influenced by whether the substance or nutrient is recognizable to them as important to their health (Hodgkins et al., 2019). This can suggest that if a claim refers to an unfamiliar nutrient to the consumer, the less effective the claim will be in informing the food product's benefit. This can be due to disparities in education and in nutrition knowledge. The results suggest that the effect nutrition claims have on purchasing can differ in white collar and blue collar environments.

A research experiment was performed to evaluate whether nutrition claims influenced a person's perception and portion size. Participants of the study completed a survey on perceived healthiness, tastiness, how filling a product was, and the portion size they consume. Out of the 1039 participants, it was found that tastiness and healthiness of the foods were the same regardless of a nutrition claim (Benson et al., 2018). However, some foods were perceived more filling than others without a claim (Benson et al., 2018). Therefore, data suggest that nutrition claims could help aid in portion sizing. If a food item is perceived as more filling due to a nutrition claim, then it would be less likely they will overconsume. Researchers Benson et al. (2018) mentioned that psychological facts such as belief in a claim was the most consistent

predictors of perception and portion size selection. Based on the previous studies mentioned, nutrition claims not only have an effect on purchasing but also consumption.

Literature has identified how the prevalence of obesity is increasing in employed adults and how influential nutrition claims can be on food purchasing and consumption. However, past literature does not explain how effective nutrition claims are on snack perceptions and how it affects consumer purchases in work environments. These deficiencies may exist because the effects of nutrition claims have not been explored specifically with snacks in a corporate environment. This lack of literature is an opportunity for researchers to form a study that will gather data to fill this gap.

The purpose of this experimental study was to evaluate how nutrition claims targeting snacks influenced consumer food purchasing by corporate employees at various corporate accounts. This was evaluated by comparing purchases of chosen snacks 30 days before and 30 days after the implementation of several different health claims. The independent variables were the snack nutrition claims. The dependent variable was defined as the purchases of snacks per day for 60 days at the various corporate accounts to determine if nutrition claims altered consumer purchasing patterns.

The objective of this study was to determine if nutrition claims altered working adults' purchases of snacks in a corporate work setting. It was hypothesized that there would be an increase in sales of snacks with nutrition claims compared to snacks without claims offered in blue collar and white collar environments. It was also hypothesized that there will be a larger increase in sales of snacks with nutrition claims in white collar settings compared to blue collar settings.

The significance of this study was to identify how employers can improve employee's health by highlighting healthier options in a work setting. This would be beneficial in the future because it would identify how nutrition claims could be implemented in corporate settings and aid in decreasing obesity in working adults. This study would also seek to fill the gap in literature on nutrition claims and consumer purchasing of snacks and the association it has on obesity in the corporate working environment in the United States.

Methodology

Sample

In this study, four corporate operations with employees that purchase food items from the corporate foodservice operations, snacks specifically, were included. In total, two white collar and two blue collar locations agreed to participate in the study in the implementation and evaluation of sales of snacks with and without nutrition claims. White collar is defined as a person who performs professional, managerial, or administrative work in an office or other administrative environment (Lips-Wiersma, Wright, & Dik, 2016). Blue collar is defined as a person who performs skilled or unskilled physical labor in a manufactural or factory setting (Lips-Wiersma et al., 2016). The two white collar operations made up a combined total of 4,600 employees at their operations. The two blue collar operations had 4,298 employees total at their locations. Therefore, there was a total of 8,898 employees that had a possibility of purchasing in the corporate cafes. After data was collected from all locations, a total of 2,398 purchases of the chosen snacks were recorded.

Sample Procedure

In order to assess the effects that nutrition claims had on consumer snack purchases in a working environment, corporate white collar and blue collar locations had to agree to participate

in the study and implement the nutrient claims in their corporate foodservice operations. The foodservice operations were cafés within each of the corporate operations. By agreeing to partake in this study, corporate locations granted access to their point of sales 30 days prior and 30 days after the implementation of the nutrition claims on snacks sold at their operation. This time frame allowed thorough evaluation of snacks purchased with nutrition claims compared to snacks without nutrition claims throughout the duration of the 60 days of the study. Additionally, the managers of the corporate operations agreed to be trained on how to implement the nutrition claims efficiently for the duration of time the study would be observing purchasing data.

Nutrient Claim Application

In order to assess the impact nutrition claims have on snack purchases in a working environment, the criteria for each nutrition claim had to be determined. A group of five corporate registered dietitians assembled six different nutrient claims. Next, the registered dietitians handpicked snacks that fit the criteria of these claims from the list of food items that the corporate foodservice operations offer to their employees. The registered dietitians determined whether or not a snack fits into a nutrition claim's criteria by examining the nutrition labels of the snacks.

The corporate registered dietitians and marketing professionals collaborated to create a retail snack mobile cart that was implemented at each corporate location. The mobile cart consisted of 6 total shelves; three shelves on the front of the cart and three shelves on the back of the cart. A magnetic strip that labels a nutrient claim was placed on each shelf to highlight the category of snacks on that shelf. The mobile carts were placed in the same area of other snacks that did not fit the nutrient claim criteria. The snacks with and without claims were available to customers at the same time.

Nutrition Claim Categorization

The first nutrition claim that was used for this study was labeled as "replenish." The criterion for this nutrition claim specified that food items must have a minimum of 8 grams of protein per serving. The next nutrition claim implemented in this study is labeled as "energy." This nutrition claim's criteria stated that the food item must have had at least 5 grams of protein and 3 grams of fiber per serving. The third nutrition claim was labeled as "mindful." The criteria for this nutrition claim specified that food items must have had no more than 250 calories per serving and the company that manufactured this snack has contributed to sustainability of the environment and to society. This was determined by conducting research of each company included in the snack list to determine if they have participated in any programs or work that promotes sustainability. The fourth nutrition claim was labeled as "fit." The criteria for this nutrition claim included food items that had no more than 250 calories, no more than 10 grams of fat, no more than 3 grams of saturated fat, has 0 grams of trans fat, and had no more than 230 milligrams of sodium per serving. The fifth nutrition claim was "avoiding gluten." In order to fit in this criterion, food items must have been labeled as gluten free by manufactures. The last nutrition claim was labeled as "superfood." In order to fit in the criterion of this nutrition claim, food items must have had a fruit, vegetable, whole grain, nut or a legume listed as the first or second ingredient under the ingredient list.

Retail Snack Intervention

The types of snacks offered at each corporate location were varied. This includes chips, granola bars, crackers, cookies and candy. Corporate locations participating in the study did not sell all the same snacks in their cafes. Three snacks for each nutrition claim that were sold in all corporate locations prior to the nutrition claim implementation were chosen to be evaluated.

Therefore, a total of 18 snacks were evaluated in the study. The snack items chosen for this study were evaluated 30 days before and 30 days after implementation of the nutrition claims at the four corporate operations. The snacks chosen for each claim fit that claim's criteria. The snacks with the nutrition claims were placed on a separate display in corporate foodservice operations. However, snacks with and without the nutrient claims were placed near the cash registers. Snacks were available for purchase during all hours that each individual foodservice operation was in service. Once the list of snacks for each nutrition claim criteria was finalized to be evaluated in the study, the foodservice managers participating in the study were notified about the list of snacks that they must have in stock in their foodservice operation throughout the duration of the study as well as placed under the proper nutrition claim.

Measures

In order to evaluate the independent variable (nutrition claims) and the dependent variable (sales of snacks), a point-of-sales system was used at each corporate location to record the purchases of snacks in the foodservice operations before and after implementation of the nutrition claims. Once the data was collected at each location, the purchases of the chosen snacks was evaluated. This data allowed the study to compare purchases of the chosen snacks before and after the implementation of the nutrition claims. The data also allowed the study to determine if nutrition claims have more of an impact in one working environment over another (white collar versus blue collar). In the end, the data provided the study an opportunity to determine which claim, if any, had the biggest impact on snack sales.

Statistical Analysis

All data were analyzed in Microsoft Excel 2016 Software. Descriptive statistics were computed to characterize the sample. The percentage change formula was utilized to evaluate

changes in values of the variables over a period of time. The variables of this study were the sales of the snacks before and after the implementation of nutrition claims. The percentage change equals the change in the value divided by the absolute value of the original value, and then this was multiplied by 100 [(new value - original value) / original value] x 100.

Results

Total Recorded Purchases

A total of 8,898 people had the opportunity to purchase the chosen snacks during the 60-day period of the study. Out of the total population, 4,600 (51%) of the people were in the white collar operations and 4,298 (48%) people were in the blue collar operations. A total of 2,398 purchases were recorded at all operations during the 60-day period. Out of the 2,398 purchases, 1,385 (57%) were from the two white collar operations and 1,013 (42%) were from the two blue collar operations.

The data suggest that sales increased during the time the nutrition claims were in place. Within the first 30 days of evaluation without the nutrition claims, the white collar operations had 594 purchases of the 18 chosen snacks utilized for this study. The white collar sales of the same snacks increased to 791 purchases after 30 days with the intervention of the nutrition claims. The blue collar operations recorded 362 purchases of the chosen snacks before the nutrition claim intervention and the sales increased to 651 purchased after the claims were implemented. The further breakdown of purchases are listed in Table 1.

The analysis revealed that the nutrition claims may have had a greater impact in the blue collar operations. This was evaluated by comparing the total percent change of the white collar and blue collar data. The percentage change of the total white collar purchases before and after the intervention was a 33.2%increase. The percentage change of the total blue collar purchases

before and after the nutrition claims were implemented was an increase of 79.8%. The data suggest that after the implementation of the nutrition claims, there were 46.6% more sales of the specific snack items in the blue collar operations compared to the white collar. The percentage change of the white collar sales can be reviewed in Figure 1. The percentage change of the blue collar sales are further shown in Figure 2.

Overall, the total purchases grew after the nutrition claims were implemented. Before the intervention, the point of sales system recorded a total of 956 purchases of the 18 snacks being evaluated for this study. After the intervention, the point of sales system recorded a total of 1,442 purchases of the same snacks. The percentage increase of the total purchases of these snacks was 50.8%. The percentage change in the combined sales of the white collar and blue collar can be found in Figure 3.

Nutrition Claim Purchases

"Mindful" Nutrition Claim

In the white collar operations, the data suggested that the "mindful" nutrition claim may have had a greater impact on purchasing than the other five claims. Before the intervention, the "mindful" snacks were recorded as having 30 purchases during the 30-day evaluating period. After the intervention took place, the "mindful" snacks were recorded as having 95 purchases (Table 1.). The percentage change of purchases for the "mindful" nutrition claim for the white collar operations was a 216.7% increase (Figure 1). The blue collar operations were not as influenced as the white collar operations with the "mindful" claim. The blue collar operations had 55 purchases before the intervention and 76 purchases after (Table 1.). Therefore, the percent increase for this nutrition claim in the blue collar working environment was 38.2% (Figure 2). The "mindful" nutrition claim had the least potential impact on purchasing and the

lowest percent change when compared to the five other nutrition claims implemented in the blue collar working environments.

After combing the sales of the white collar and blue collar operations and evaluating the total percent change of each nutrition claim category, it was found that the "mindful" nutrition claim had the largest percentage increase than the other five claims. The initial sales for this nutrition claim category was recorded as 85 purchases (Table 1.). After the intervention, the sales for this nutrition claim was recorded as 171 purchases (Table 1.). The percentage change of the total purchases of the snacks in this nutrition claim category was calculated to be a 101.2% increase (Figure 3). Therefore, the "mindful" nutrition claim had the most potential influence on both the white collar and blue collar purchases.

"Fit" Nutrition Claim

In the white collar operations, the "fit" snacks did not have much of an increase in purchasing. Before implementation, the "fit" snacks had 93 purchases and increased to 123 purchases after the implementation of the claims (Table 1.). This resulted in a 32.3% percent increase and the third lowest percent change for the white collar operations (figure 1). In the blue collar operations, the data revealed that the "fit" nutrition claim had a greater impact on purchasing than the other five nutrition claims. Before the intervention, the "fit" snacks were recorded as having 14 purchases during the 30-day evaluating period (Table1.). After the intervention took place, the "fit" snacks were recorded as having 54 purchases (Table 1.). The percentage increase of purchases for the "fit" nutrition claim for the blue collar operations was 285.7% (Figure 2.).

"Replenish" Nutrition Claim

The "replenish" nutrition claim had the lowest increase of purchases in the white collar operations. The first recorded sales showed 172 purchases (Table 1.). After the implementation of the nutrition claim, the second recorded sales showed 184 purchases (Table 1.). The percentage change for this value was only a 7% increase, the lowest percent change for the white collar operations (Figure 1.). In the blue collar operations, the "replenish" nutrition claim has the capacity to being more influential. Sales increased from 39 to 90 over the evaluation period with the nutrition claims present (Table 1.). This resulted in a 130.8% percent increase, the second highest percent change for the blue collar operations (Figure 2.).

"Superfood" Nutrition Claim

The "superfood" nutrition claim did not have the most or least percent change when evaluating the blue and white collar purchases separately. However, the "superfood" nutrition claim had the second greatest impact on total purchases when the sales of both working environments were combined. Before the intervention of the "superfood" claim, the purchases of the snacks in this category were recorded as 119 sales (Table 1.). After the intervention, the purchases of the "superfood" snacks were recorded as 227 sales (Table 1.). The percentage increase for this claim was 90.8% (Figure 3).

"Energy" Nutrition Claim

When evaluating the data of the total purchases of each claim, it was found that the "energy" nutrition claim had the least percent change of purchases than any other claim in the combined sales of the blue and white collar. The sales went from 374 to 485 purchases (Table 1.) and the percent change was 29.7% (Figure 3.). However, every nutrition claim had a positive percent change, therefore, likely influenced purchasing to some extent.

"Avoiding Gluten" Nutrition Claim

The "avoiding gluten" nutrition claim did not have any standout results. The percent change for the sales of the "avoiding gluten" snacks were not the highest or lowest in either working environments. However, this nutrition claim was more influential in the white collar environment when compared to blue collar. The percent increase of the "avoiding gluten" snacks in the white collar operations was recorded as 100% (Figure 1.). The percent change of this claim in the blue collar operations was recorded as 58.6% increase (Figure 2.). Therefore, the "avoiding gluten" nutrition claim may have reached more interest in the white collar population.

White Collar versus Blue Collar

The results revealed that the blue collar's lowest percent change was higher than the white collar's lowest percent change. This data suggest that the nutrition claims had more of an impact on purchasing in the blue collar operations. The white collar's least influential claim was "replenish" and the percent change was 7% (Figure 1.). The blue collar's lowest percent change was 38.2% for the "mindful" nutrition claim (Figure 2.). Additionally, the greatest percent change for blue collar was 285.7% for the "fit" nutrition claim (Figure 2.) and the greatest percent change for the white collar was 216.7% for the "mindful" nutrition claim (Figure 1.). This reiterates the statement that the blue collar was potentially more influenced by the nutrition claims than the white collar.

Retail Snacks and Purchasing

White Collar: "Mindful" Snacks

As mentioned earlier in the results, the products with the "mindful" nutrition claim increased the most sales in the white collar working environment. The snacks that were included in this nutrition claim category were the Clif Oatmeal Raisin, Clif Builders Chocolate, and the

Planters Salted Nuts. When comparing the percentage change of these three products, it was found that the Clif Builders Chocolate had the greatest percent change than the other two snacks in this category. The percent change for this snack was calculated to be an 850% increase. Whereas the Clif Oatmeal Raisin, had the least influence when compared to the other "mindful" snacks and had a percent increase of 150%. The percent change of the white collar purchases of "mindful" snacks are shown in Figure 4.

Blue Collar: "Fit" Snacks

The "fit" nutrition claim products had the most increase in sales in the blue collar working environment. The snacks that were included in this nutrition claim category were the Nature Valley, Belvita Blueberry, and Special K Strawberry. When comparing the percent change of these variables, it was found that the Nature Valley snack had the greatest percent change than the other two snacks labeled with the "fit" claim. The percent increase for Nature Valley was computed to be 1050%. The total percent change of 285.7% for the "fit" category, or the nutrition claim with the highest percent in sales in blue collar, had a larger percent change than the most influential claim in the white collar setting. The percent change of the blue collar purchases of "fit" snacks can be reviewed in Figure 5.

Discussion

The objective of this study was to determine if nutrition claims have the potential to influence the purchases of retail snacks in a work environment. Based on the current literature, it was hypothesized that there would be an increase in sales of snacks with nutrition claims compared to the same snacks prior to the implementation of the claims. It was also hypothesized that there would be a larger increase in sales of snacks with nutrition claims in a white collar

setting compared to a blue collar setting. Based on the results, the second hypothesis had to be rejected.

Nutrition Claims Impact on Snack Sales

Overall, the data suggest that the sales did increase after the implementation of the nutrition claims in both work settings when compared to the sales of the same snacks prior to implementation of the claims. The total sales increased by 50.8% after the nutrition claims were implemented. These results were supported by current literature that stated marketing is a powerful educational and selling tool. Nutrition marketing has been found to be correlated with greater snack consumption and possibly aid in reducing obesity (Loureiro et al., 2011). When it comes to nutrition claims, findings from other studies revealed that products with a nutrition claim are 75% more likely to be chosen than an identical product without a nutrition claim (Kaur et al., 2017). Therefore, the findings from other studies' support this study regarding nutrition claims impact on sales.

Purchases of Nutrient-Dense Snacks

Past literature stated that snacks are generally encouraged to promote the feeling of satiety and aid in portion control, however, individuals tend to consume snacks that are high calorically and have low nutrient-density (Barnes et al., 2015). In this current study, the nutrition claims were utilized to highlight snack items that contained some nutrition benefits. This includes a good dietary source for protein, fiber, and relatively low in calories. The results of this experimental study indicated that nutrition claims can increase purchases of nutrient-dense foods. As previously mentioned, total sales of snacks increased by 50.8% when the nutrition claims were present. The findings of this study suggest that nutritional marketing has a strong influence

on snack purchases in a work setting. Therefore, how the nutrient-dense snacks were presented to consumers contributed to the extent of purchases.

Purchasing Trends and Inferences

Interestingly, the blue collar population was more influenced by the nutrition claims than the white collar population. The total sales for blue collar increased by 79.8% after the nutrition claims were implemented. The total sales for white collar only increased by 33.2%, demonstrating that the marketing was more persuasive in the blue collar working environment. This finding does not support the hypothesis that the marketing would be more impactful in a white collar work setting. This hypothesis was made after reviewing literature that stated that education level and socioeconomic status played a role in an individual's risk of becoming obese. The findings of the previous study revealed that higher income and education was associated with lower risks of obesity and obesity-related diseases (Zhang, et al., 2017). The results from this previous study can be used to infer that adults working in white collar occupations are more likely to participate in healthy eating behaviors, and therefore, be more appreciative of the marketing that highlights more nutrient-dense foods. However, this current experimental study did not have similar findings.

It is essential to question the reason for the blue collar being more influenced by the intervention in this study. Perhaps, these chosen snacks were already commonly being purchased by the white collar population which led to a lower percent change when the nutrition claims were implemented. If this was the case, one can conclude that there was a greater percentage change in the blue collar population because they were not regularly participating in healthy eating behaviors and routinely eating these snacks. Therefore, the claims increased sales when they were placed in the cafes because they were not commonly purchased before. When looking

at the data, the white collar did purchase more of the chosen snacks compared to the blue collar before the nutrition claims were utilized.

Specific Nutrition Claims and Purchases

"Fit" Nutrition Claim. In addition to the nutrition claims having more potential influences in the blue collar work environment, the "fit" nutrition claim, specifically, was the most effective in this setting. As mentioned in the literature review, blue collar occupations tend to be more labor intensive compared to white collar (Chau et al., 2012). The higher level of physical activity in this environment could play a role in the popular purchase of the snacks labeled as "fit." Perhaps, this category of snacks was chosen to aid in maintaining their fitness levels in order to fulfill the daily demands of the labor intensive jobs. However, one can argue that the "replenish" and "energy" nutrition claims could have also been of interest to this demographic due to their increased physical activity. The reason these claims were not as popular as "fit" nutrition claim is worth looking into. It could be possible that the reason "fit" was most successful in this setting is due to the type of snacks offered under this claim.

The "fit" nutrition claim consisted of three snacks. Nature Valley Bar, Belvita Blueberry Crackers, and Special K Strawberry. Interestingly, the Nature Valley Bar had the greatest percentage change compared to the other two snacks in the "fit" criteria. It increased by 1050%. This percentage change is substantially different than the percentage changes of the other snacks labeled as "fit." There are potential explanations as to why Nature Valley had more sales than Belvita and Special K. The nutritional content of each food item was reviewed in hopes to provide a reasoning as to why Nature Valley had such a large percentage change compared to the other snacks labeled with the same claim. It turns out that Nature Valley did not have less calories, fat, or carbohydrates than the other two snacks. It also did not have more fiber, and

protein when compared to the others. However, the only nutrient that could have been a factor as to why it sold more is the fact that it has less sugar per serving when compared the other snacks in the "fit" criteria. It is possible that this population is worried that sugary foods would not be effective in fueling the body in order to fulfill the daily tasks required for these types of jobs. Perhaps, sugar is a concern in this demographic and worth researching further for a more effective marketing approach.

"Mindful" Nutrition Claim. Although blue collar had the most potential impact by the intervention, white collar still experienced some impact by the nutrition claims as well. Overall, the white collar's sales increased by 33.2%. Out of the six nutrition claims, the snacks under the "mindful" criteria had the most influence on sales during the time purchases were observed. The "mindful" criteria increased by 216.7% in the white collar setting. As mentioned earlier in the discussion, a possible reason as to why the "mindful" nutrition claim increased the most compared to the other nutritional claims was due to the assumption that the white collar population already possessed healthy eating behaviors. The "mindful" nutrition claim is the only claim that was not nutrient focused and highlights companies that support sustainability of the environment and to society. The "mindful" sales experienced a greater percentage change when compared to the claims that were more nutrient focused.

The "mindful" category consisted of three snacks, including Clif Oatmeal Raisin, Clif Builders Chocolate, and Planters Salted Nuts. When comparing the percentage change of these snacks for the white collar sales, it was found that the Clif Builders Chocolate increased the most when compared to the others. A lot of factors could have influenced this percentage change. This includes preference on bars versus bag of nuts, likeness of chocolate over oatmeal, or the fact that the Clif Builders Chocolate contained the most protein in its product. Perhaps, the customers

were drawn to this snack because by purchasing it, they supported a good cause and gained a good source of protein.

When the sales of both the blue and white collar were combined for the percentage change analysis, it was found that the "mindful" claim overall had the greatest change compared to the other nutrition claims. This data suggest that the "mindful" nutrition claim was more of an interest in both populations. It is possible that more people are searching for more outlets to support the community and the environment. This finding revealed that the environment may be more of a priority compared to "nutrient" enhancement. This potential interest area could be utilized for education and marketing tools in the future.

Limitations

A limitation acknowledged in this experimental study was the differential sample size for the four corporate locations. The two white collar locations had a greater opportunity for purchases of the chosen snack items compared to the two blue collar operations. This could have influenced the number of purchases recorded at each location. Another limitation could be due to the seasonality in which the snack interventions were implemented at each site. The interventions were implemented at different times of the year for each location. Seasonality could affect purchasing due to the weather. Colder days could lead to people being less likely to leave the site to obtain food. Whereas, warmer days could lead to people being more likely to leave the site to retrieve food.

The reliability on the managers was another limitation that was put into consideration when interpreting the data. The managers were trained on how to properly implement and sustain the nutrition claim platform throughout the study. However, the managers were not supervised the entire duration of the study and were expected to utilize the training at their foodservice

operations. Therefore, there is no certainty the wellness platform was implemented correctly at each corporate location.

The researchers were unable to guarantee that the nutrition claims alone influenced consumers purchasing of retail snacks. The placement of the snacks in the snack mobile cart could have been the catalyst for greater sales. Although there is a lack of certainty at the cause and effect relationship, there was an increase in sales of the snacks evaluated in this study after the nutrition claims were implemented. Additionally, the mobile cart itself could have had an impact on overall sales and future research is needed to address this.

Another limitation was that the snacks chosen for this study did fit more than one criteria. One snack might have increased in sales after the intervention, however, it might not be due to that specific nutrition claim. For example, the Clif Builders Chocolate was labeled as "mindful" but it could also fit the "replenish" criteria. It is possible that the snack was still chosen due to its protein quality. Therefore, the marketing would be irrelevant in this scenario.

A limitation that was considered was the varying hours that each café was open for service. Each of the four locations had different hours of service and availability for purchase. For example, the blue collar locations had 1st and 2nd shift employees which lead to workers arriving and leaving work at different times in the day. In order to reach both shifts of employees, the blue collar locations offered longer purchasing times for retail snacks through the use of kiosks so customers could self-checkout after hours of service. Since the white collar location do not have 2nd shift employees, the longer window for the opportunity to purchase snacks in the blue collar locations could have influenced the total purchases recorded during the study.

Conclusion

This experimental study aimed to provide information on how nutrition claims can assist in snack choices. Overall, the results suggest that nutrition claims do meet employees' wellness interests and have the potential to increase sales of snacks in white collar and blue collar populations. This study indicated that the marketing and presentation of snacks influence sales in a positive manner. Therefore, nutrition claims could be used in the future as a marketing tool to highlight more nutrient-dense snack options in a working environment. These findings could be an incentive for employers to highlight healthier snack items in their operations to not only help employees reach their nutrition goals but to also assist in lowering healthcare costs. Additionally, the structure of this study and its data could be utilized to further research on this topic. More experimental studies are needed to certify that the nutrition claims do significantly increase sales.

Table 1. Snack Purchases in White Collar and Blue Collar Operations

White Collar Nutrition Claims	**Total Purchases Without Claims**	**Total Purchases With Claims**
Replenish	172	184
Energy	221	239
Mindful	30	95
FIT	93	123
Avoiding Gluten	31	62
Superfood	47	88
Total	**594**	**791**
Blue Collar Nutrition Claims	**Total Purchases Without Claims**	**Total Purchases With Claims**
Replenish	39	90
Energy	153	246
Mindful	55	76
FIT	14	54
Avoiding Gluten	29	46
Superfood	72	139
Total	**362**	**651**
Combined Nutrition Claims	**Total Purchases Without Claims**	**Total Purchases With Claims**
Replenish	211	274
Energy	374	485
Mindful	85	171
FIT	107	177
Avoiding Gluten	60	108
Superfood	119	227
Total	**956**	**1442**

Figure 1. Percent Change of White Collar Snack Purchases

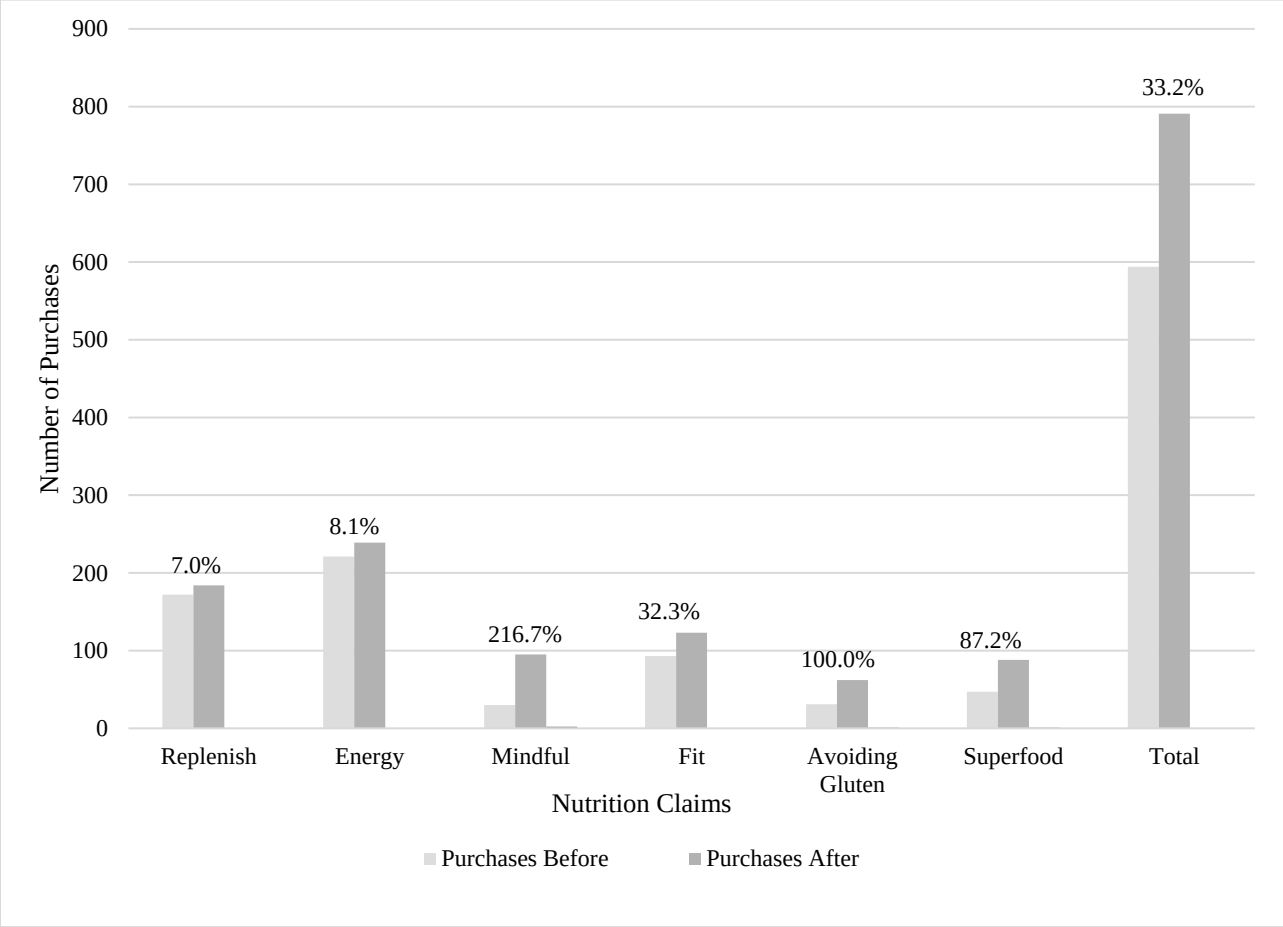


Figure 2. Percent Change of Blue Collar Snack Purchases

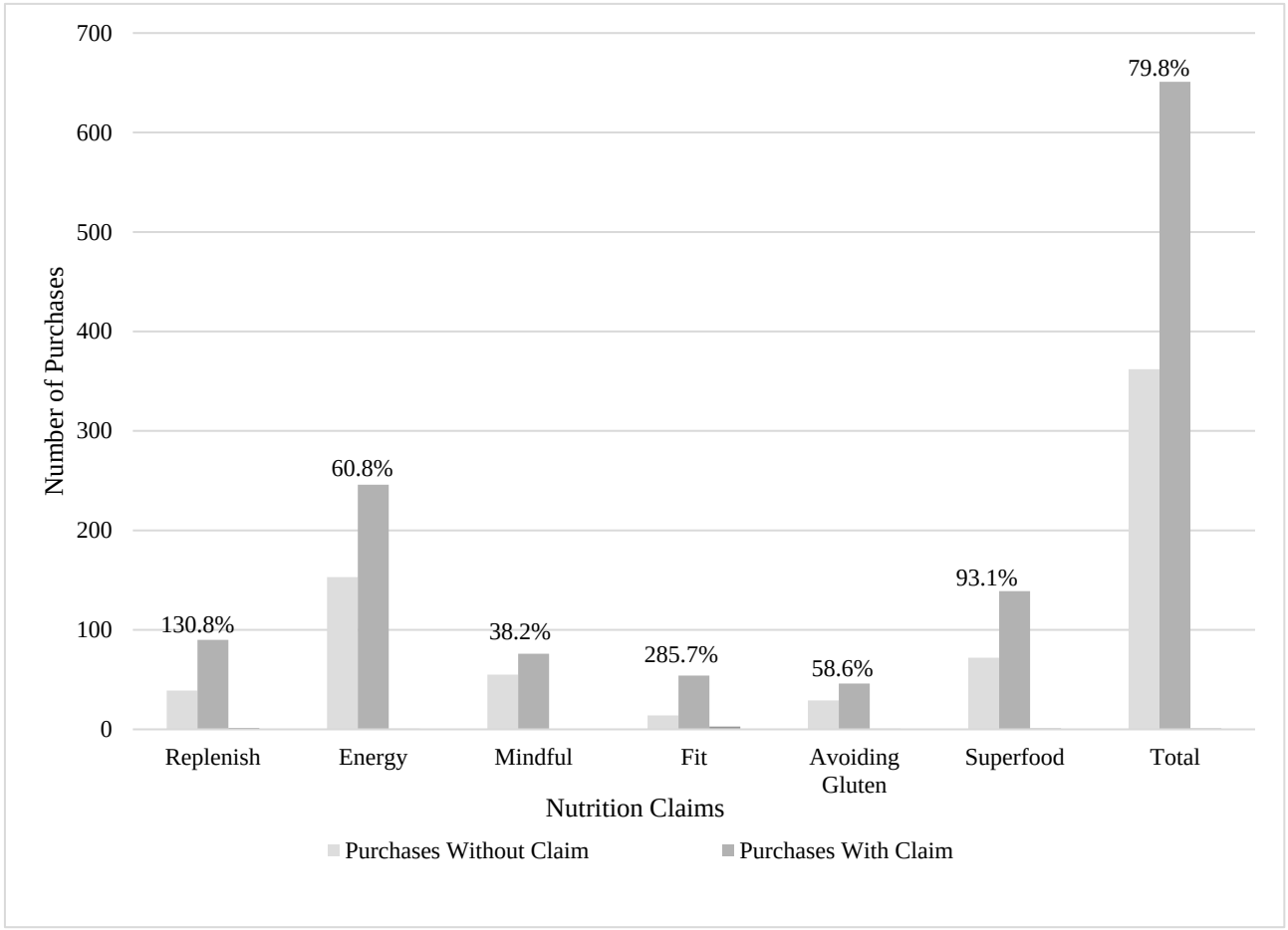


Figure 3. Percent Change of White Collar and Blue Collar Snack Purchases

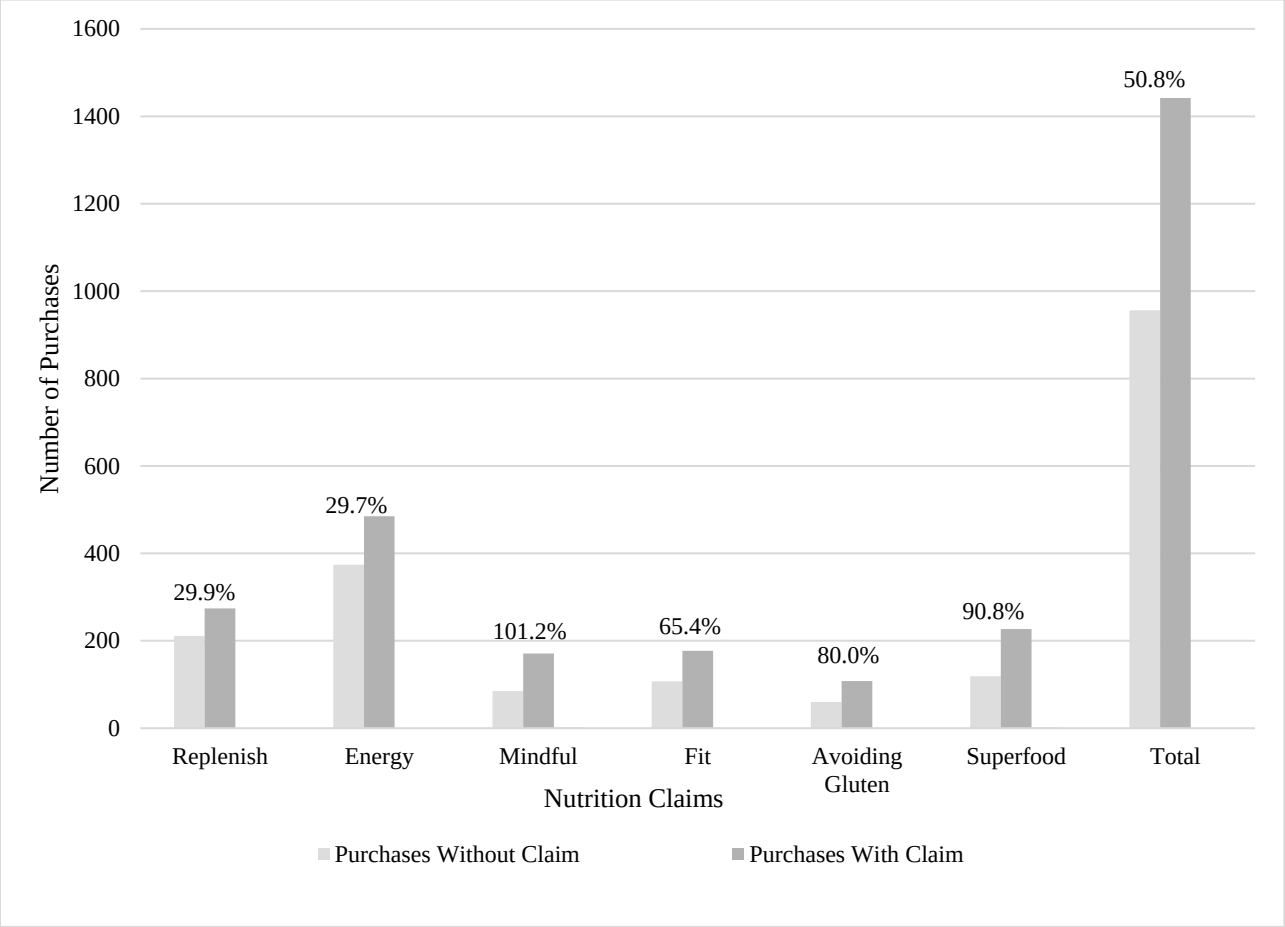


Figure 4. Percent Change of "Mindful" Snack Purchases

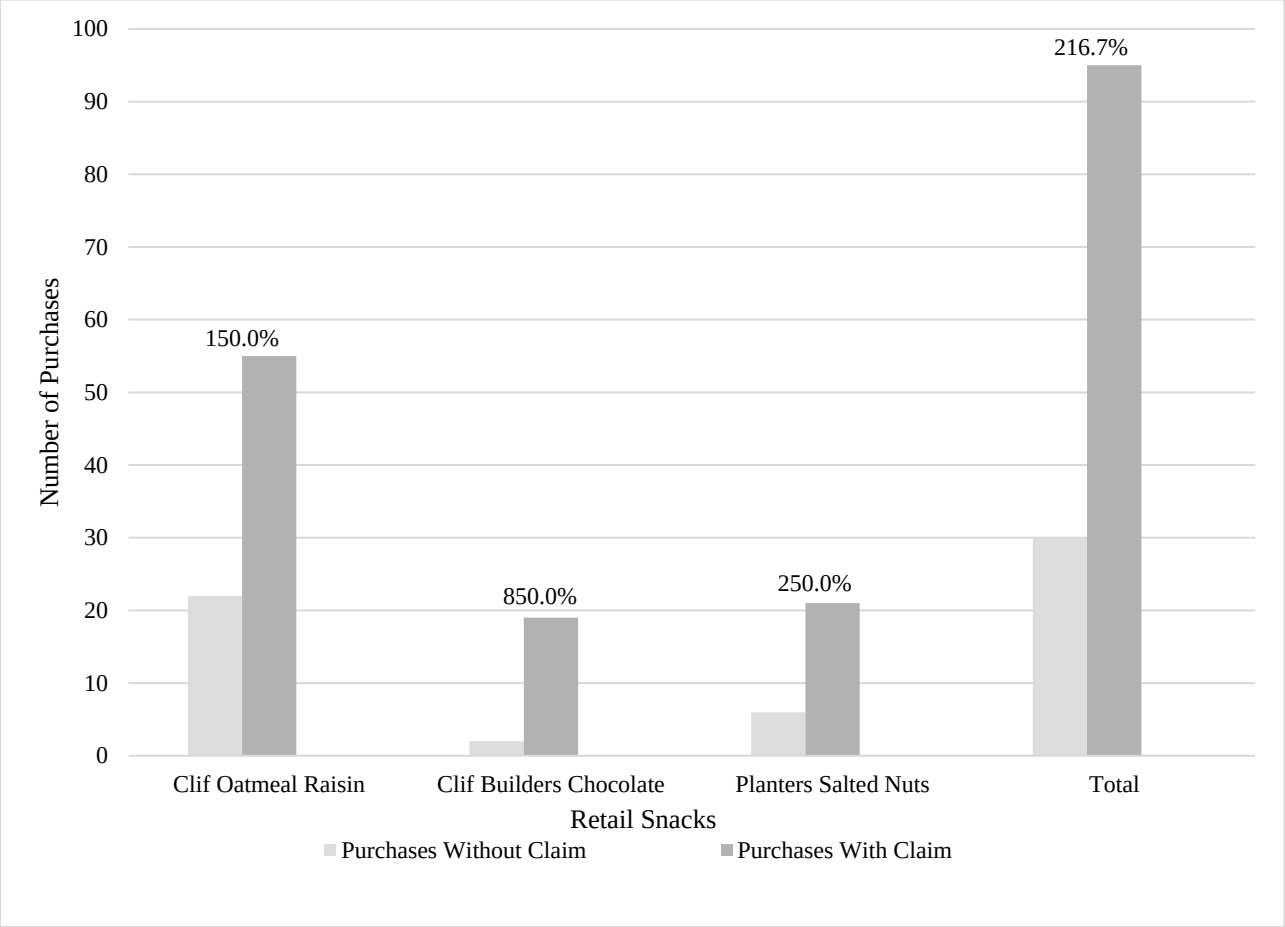
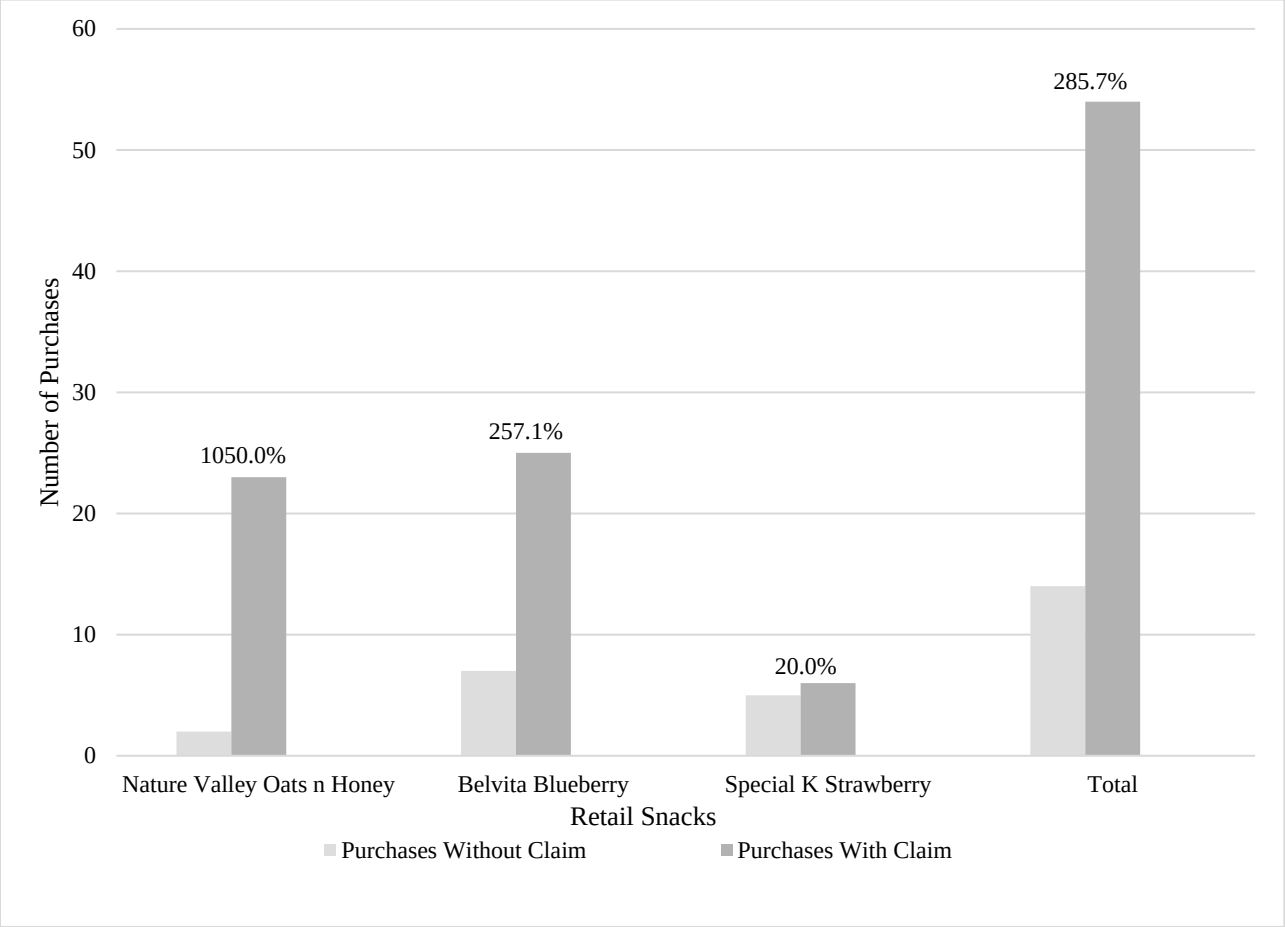


Figure 5. Percent Change of "Fit" Snack Purchases



CHAPTER II: EXTENDED LITERATURE REVIEW

The purpose of this literature review was to evaluate pre-existing literature and gain an understanding of research findings and gaps in studies that evaluated the cause and effects of obesity in working adults, eating behavior and snack consumption and the effects nutrition claims haves on consumer purchasing.

The Cause and Effect of Obesity in Working Adults

Approximately 111.5 million U.S. adults are employed full-time and more than 100 million Americans consume food or beverages at work daily (Lee-Kwan, Pan, Kimmons, Foltz, & Park, 2017). Lee-kwan et al. (2017) found that of employed adults, 3 out of 10 were obese. This presents a remarkable threat to human health due to obesity being linked to a variety of chronic diseases. This includes type 2 diabetes mellitus, cardiovascular diseases, and certain cancers (Sutliffe et al., 2019). Moreover, obesity and associated diseases can be costly. It was estimated that 2.8% of the global domestic product (GDP) was spent on obesity related diseases in 2014 (Sutliffe et al., 2019). Additionally, obesity is associated with increased use and duration of sick leave, the amount of reported work disabilities, reductions in work productivity, and increase healthcare costs (Lee-kwan et al., 2017).

The work environment has been shown to influence obesity-related behaviors because of a number of factors, including sedentary work environment, worksite cafeterias, and vending machines (Lee-Kwan et al., 2017). Since employees typically work 40 hours a week or more, decisions regarding foods to consume are made primarily at the worksite (Sutliffe et al., 2019). Based on the statistics on increasing prevalence of obesity and the increase risk of chronic disease in working adults, it can be concluded that a change in dietary behavior is an essential component required to address health and costs. Therefore, employers should want to implement

worksite dietary interventions to not only improve the health of their employees but to also increase work productivity and lower healthcare costs.

In the US, the number of working adults in sedentary jobs have doubled since the 1950s (Campbell, Brosnan, Chu, Skeaff, Rehrer, Perry, & Peddie, 2017). Sedentary behavior is defined as sitting or reclining while awake and expending very little energy and is associated with poor health outcomes (Campbell et al., 2017). Compared with being sedentary, standing or light activity requires higher energy expenditure. A study conducted by Campbell et al. (2017) aimed to determine the association between sedentary behavior, body weight, and obesity in adults. After completing a systematic review and meta-analysis of prospective cohorts and randomized controlled studies, it was reported that over a 5-year follow-up period, each one hour per day increase from baseline to follow-up in sedentary behavior was associated with a 0.02 mm increase in waist circumference (Campbell et al., 2017). Campbell et al. (2017) also reported that switching from working sitting down to working at a standing desk increases energy expenditure by 6-10%. These findings provide an opportunity to search for other factors that could be associated with weight gain in working adults.

Another study investigated if sitting time was associated with fitness level and cardiorespiratory fitness in working adults. Cardiorespiratory fitness is an emerging issue for the health and productivity among working adults (Wibowo, Wasityastuti, & Sofo, 2019). Cardiorespiratory fitness is determined by the body's cardiovascular and pulmonary systems ability to supply oxygen to its body's muscles and tissues during incremental exercise (Wibowo et al., 2019). In other words, it determines the body's capacity to perform work and tolerance to fatigue. The lower cardiorespiratory fitness an individual has, the stronger the risk factor for cardiovascular disease, diabetes, obesity, and mortality (Wibowo et al., 2019).

This cross-sectional study recruited 31 healthy working adults and utilized the International Physical Activity Questionnaire. Evidence indicated that total physical activity, total sitting time, and sitting time on a weekday were associated with cardiorespiratory fitness (Wibowo et al., 2019). Higher total sitting time and sitting time on a weekday were associated with lower cardiorespiratory fitness level (Wibowo et al., 2019). Interestingly, it was observed that sitting on a working day had greater effect on lowering fitness level when compared to sitting on a non-workday (Wibowo et al., 2019). The researchers of this study noted that workplace policy should encourage workers to reduce occupation sitting time and increase physical activity daily (Wibowo et al., 2019).

As sedentary jobs continue to rise, social interactions on a daily basis could decline and as a result, lead to weight gain. A study performed by Yun-Hsuan Wu, Spencer Moore, and Laurette Dube (2018), evaluated social capital and networks and its influence on a person's risk for obesity. They found that adults with higher network diversity and high generalized trust were at a lower risk for obesity (Wu, Moore, & Dube, 2018). Obese participants were more likely to be male, older, and socially isolated when compared to the non-obese patients. It can be concluded that sedentary jobs lead to poor social interactions and results in weight gain.

Although there is significant evidence that sedentary working jobs correlate with obesity in adults, it is essential to understand what other factors could be a contributor. A cross-sectional study was conducted to evaluate the disparities in obesity among working adults in both rural and urban environments. The study included 10,302 participants who were 20 to 64 years old with a body mass index ranging from 18.5 to 60. The study's results showed that the risk for obesity was significantly higher in rural areas compared to urban areas (Wen, Fan, Kowaleski-Jones, & Wan, 2018). The higher risk for obesity in rural areas were explained by individual

education, household income, and neighborhood environment (Wen et al., 2018). Out of the American population, 19.3% live in rural areas and it has been reported that health disparities in terms of morbidity and mortality have been routinely documented (Wen et al., 2018). This evidence can be useful when looking at data comparing blue-collar and white-collar classes when it pertains to health, wellness, and purchasing.

It is well recognized that obesity has been a rising issue. However, the effort to change the prevalence of obesity has been continuous. A study was conducted in 2018 to determine what factors contributed to viscous cycles of weight loss and weight gain in adults as well barriers to lose fat-based weight. Evidence suggest that once weight is gained in adulthood, it is often difficult to lose (Johnson & Annesi, 2018). It was found that the most commonly reported reasons for weight gain include a lack of ability to control behaviors and overcome barriers, emotional health issues, physical health, and influence of significant others (Johnson & Annesi, 2018). All of the participants indicated a desire to lose weight and attempted weight loss methods in the past (Johnson & Annesi). Half of the participants revealed that the participants had specific weight loss goals. However, only a few of them reached short-term weight loss but quickly regained the lost weight due to barriers of lacking self-regulation, skills, and lack of self-efficacy (Johnson & Annesi). Results suggest that the individual's perceived ability to control their routine behavior and overcome barriers are essential in being successful in weight loss. This significant evidence suggest that self-efficacy is one of the many factors contributing to obesity rates not improving.

Eating Behaviors among Consumers

Snacking is defined as food or drink consumed between meals (Schuster, Painter, Bernas, & Mackenzie, 2017). According to Schuster et al. (2017), individuals can consume up to 30% of

their daily calories from snacks. Snacking is often associated with foods low in nutrient density and high in fat, sugar, and salt (Schuster et al., 2017). This can potentially be a factor to increasing prevalence of obesity in working adults. Although consumers are able to identify examples of healthy snacks, there tend to be disparities between ideal healthy snacks and snacks actually consumed (Schuster et al., 2017).

Particular snacking habits have been hypothesized to be associated with both positive and negative results regarding total calorie consumption and calorie expenditure (Barnes, French, Hamack, Mitchell, & Wolfson, 2015). Snacking is often encouraged throughout the day because it promotes the feeling of satiety and aid in portion control at following meals. Snacking can be an opportunity for the inclusion of a wider variety of nutrients while including healthy, low-energy foods (Barnes et al., 2015). However, snacking frequently between meals has been reported to contribute to excess energy intake due to large portion sizes and high calorie, low nutrient-dense foods. Based on these observations, it can be hypothesized that the nutrient quality of snacks can determine how successful one will be with frequent snacking.

A study was performed to observe snacking behaviors and its association with diet quality and body mass index (BMI). Snacking behaviors, diet quality, and BMI were observed among 233 adults from 2010 through 2013 (Barnes et al., 2015). The results showed that snack food choices were significantly associated with diet quality and BMI (Barnes et al., 2015). However, total energy from snacks, frequency, or time of consumption were not significantly associated with diet quality and BMI (Barnes et al., 2015). The findings revealed that nutrient density of snack foods have the most influence on BMI and diet quality compared to the amount of food and time of the day it was consumed.

Grazing, similar to snacking, is defined as the unstructured, repetitive eating of small amounts of food (Heriseanu, Hay, Corbit, & Touyzis, 2017). This pattern of eating has been found to be associated with negative outcomes, such as eating disorders, due to people's loss of control with food consumption (Heriseanu et al., 2017). Eating disorders, such as binge eating disorder are associated with impairments in psychological, physical, and social functioning, and quality of life. Researchers recognized that obesity and eating disorders have been treated as independent health matters, however, there is physiological and psychological overlap (Heriseanu et al., 2017).

Researchers of a study aimed to examine the prevalence of grazing and its correlation with obesity in adults. A systematic electronic database was utilized to conduct a meta-analysis and yielded 32 studies that fit the study's criteria. Based on the findings, the evidence suggest that grazing is widely prevalent within obesity. However, there is mixed evidence to suggest that grazing, especially compulsive or out of control grazing, is associated with poorer weight loss treatment outcomes in obesity, lower mood, increased binge eating disorder symptomatology, and decreased mental-related quality of life (Heriseanu et al., 2017).

Binge eating is commonly reported among adults with obesity (Goldschmidt et al., 2018). A research study evaluated momentary and naturalistic indicators of binge-eating episodes in adults with obesity. The researchers describe five indicators of binge eating. These include, eating more rapidly than usual, eating until uncomfortably full, eating large amounts of food when not hungry, eating alone because of embarrassment over how much one is eating and feeling disgusted with oneself, depressed, or very guilty after overeating (Goldschmidt et al., 2018). The researchers examined preliminary associated between the five indicators and binge versus non-binge episodes among 50 adults with obesity through an ecological momentary

assessment. The results found that self-reported binge episodes were associated with lower pre-episode hunger, higher post episode fullness, and greater likelihood of reporting moderate to extreme shame prior to eating (Goldschmidt et al., 2018). In the study's discussion, it was recognized that what categorizes binge-eating is unclear. It is still uncertain whether eating rapidly should be retained as a binge-eating criterion. The duration of binge-eating can vary greatly, and that binge eating may overlap with grazing episodes (Goldschmidt et al., 2018).

Evidence from past literature suggest that snacking, grazing, and eating disorders are associated with obesity. This raises the question regarding if there are possible risk factors for these individual eating behaviors. A study examined the momentary food environment and the role of cues simultaneously in predicting everyday eating behavior in overweight and obesity adults. Cue-dependent eating has been found to be relevant among individuals who are overweight and obese, whereby these individuals experience increased cravings and physiological responses such as increased salivary in the presence of food cues reaction (Ferriday & Brunstrom, 2011). Internal cues, like stress, have been shown to trigger eating episodes among individuals with obesity (Goldschmidt et al., 2014). External cues include food availability and social cues. Social cues mold dietary behaviors through observation and interactions and eating times.

A longitudinal study used an ecological momentary assessment over 14 days in 51 adults with overweight and obesity with a total of 745 randomly timed assessments. Cues and momentary food environment were assessed during both assessment types. The results revealed that both internal (affect) and external (social situation, observing others eat, and food availability) cues were associated with increased likelihood of eating in adults that are obese and overweight (Elliston, Ferguson, Schuz, N., & Schuz, B., 2017). However, it was also found that

momentary food environment predicted snacking on top of cues, with a higher likelihood of higher-energy snacks when fast food restaurants were close by and a higher likelihood of low-energy snacks in proximity to supermarkets (Elliston et al., 2017). The study found that regardless of the nutrient content, foods that were conveniently available were more influential on eating choices over hunger cues.

Studies suggest that convenience plays a huge role in food consumerism. It can be hypothesized that the placement of foods in public places is done in a way for financial gain, not for health consideration. A study conducted by Coery Basch, Willian Kernan, and Anthony Menafro (2016), observed how the presence of snack food at checkouts in chain stores influences food purchasing. The results of the study revealed that out of the 29 stores visited, twelve had a structured line style where a customer would enter at one end and be steered through a line to the register (Basch et al., 2016). All twelve of these register lines were filled with candy, one-third had a refrigerator with soda, 17% had preserved meat, and one had an ice-cream freezer (Basch et al., 2016). Based on the evidence, it can be concluded that the access to unhealthy food can greatly enhance food choices. This is an opportunity to evaluate whether making healthier options more accessible in public options can influence food consumption for the better.

Although there is an increase in obesity and eating disorders in the United States, there seems to be an increase in health awareness and demand for healthier snack options by consumers. According to Payne, Niculescu, & Barney (2014), there has been over $200 million in annual sales of smaller snack packing of 100-calorie snacks in the United States. This movement is intended to assist overweight and obese consumers to limit calorie consumption. Consumers are not only increasing awareness of the relative health of snacks they would consume but also the exact number of calories (Payne et al., 2014). The change in snack

demands could indicate that consumers are aware of the increasing prevalence of obesity and have a desire to make a change to their lifestyle. According to a long-term study by Pearson, Tey, Gray, Chisholm, & Brown (2017), changing snack behavior can have an impact on diet quality and long-term health. Eating healthier snacks could not only assist in minimizing obesity but also have a positive effect on health in an individual.

The Effects of Marketing Interventions on Public Health

The increasing prevalence of obesity has resulted in the legislation of the Nutrition Labeling and Education Act in 1990 (Loureiro, Yen, & Nayga, 2011). The label requires nutrition facts on processed foods. This includes standard serving size, calories, and the breakdown of the macronutrient and micronutrient elements (Loureiro et al., 2011). Nutritional labels are currently only mandatory for processed food products sold in the food market, such as, supermarkets and grocery stores in the United States (Loureiro et al., 2011).

A study examined the relationship between nutrition labels use and obesity. It was found that nutrition labels may help reduce obesity. However, their findings indicated that the labels were more influential for females than males. The average body mass index (BMI) for men who read nutrition labels was 0.12 points lower than men who did not read them. Women who were users of nutrition labels had a BMI 1.49 points lower than women who did not read labels (Loureiro et al., 2011). The effect of nutrition labels also varied by race. The fact that nutrition labels do not have a universal effect on all populations can be used to conclude that more interventions need to be implemented to aid in obesity reduction across gender and racial groups.

Other than nutrition labels, it is important to evaluate other interventions that can influence food choices. Mass media campaigns are a commonly used strategy in public health, however there is limited literature that evaluates its effects on overweight and obesity. A study

conducted by James Kite, Anne Grunseit, Erika Bohn-Goldbaum, Bill Bellew, and Tom Carroll (2018), evaluated 29 reports and discovered that campaigns can influence intermediate outcomes, such as knowledge and attitude. The researchers pointed out that the campaigns that were examined continued to target behavior changes. This suggest that campaigns may be able to focus less on the problem of obesity as a health risk and more on possible solutions (Kite et al., 2018). As future marketing and public health education evolves, it will be important to see how marketing strategies steer away from targeting the problems, and rather provide solutions to the public.

Motivating individuals to make healthy personal lifestyle choices is important but determining how to successfully do so remains a challenge. Marketing is a powerful educational and selling tool, especially when used to modify lifestyle choices, such as obesity. It can be used to both send a message based on scientific information and to help individuals receive the message through optimal methods of communication (Aceves-Martins et al., 2016). The use of social marketing has been reported to save time and economic resources. It also, aids in the construction of new strategies that can be shaped from existing programs, and as a result, prevent obesity (Aceves-Martins et al., 2016). Researchers believe that social marketing can be utilized to improve personal welfare. Social marketing can be defined as "a social influence technology involving the design, implementation, and control of programs aimed at increasing the acceptability of a social idea or practice in one or more groups of target adopters" (Aceves-Martins et al., 2016).

A systematic review was performed to identify the effectiveness of social marketing strategies to reduce obesity. Sources for this study included 38 publications were included and utilized elements that researchers determined should be in health interventions to prevent

obesity. This included participant orientation, participant segmentation, the use of a theoretical framework, a focus on the intervention to change a specific behavior, consideration of the costs associated with the intervention, consideration of what motivates participants to change a behavior, consideration of the possible barriers faced by participants, and the inclusion of marketing elements in the mix (Aceves-Martins et al., 2016). It was hypothesized that utilizing more elements led to more influential marketing. It was found that marketing interventions overall hade a 16% likelihood of reducing the prevalence of overweight and obesity compared with no intervention, or the control group (Aceves-Martins et al., 2016). Just as hypothesized, utilizing five or more of the elements was 28% more likely to be effective in reducing prevalence of overweight and obesity (Aceves-Martins et al., 2016). These results can be used to conclude that there is more involved when utilizing marketing tools other than targeting certain behavior changes.

The Effects of Food Advertising on Consumer Purchasing

Based on studies mentioned in the last section, it can be assumed that marketing and promotion of foods can greatly affect prevalence of overweight and obesity. However, it is important to expand research to determine what aspects of marketing encourage food choices. This is an opportunity to look deeper into food advertising and visual cues and their influence on food purchasing and consumption. Packaging plays a crucial role in purchasing decisions, with an estimated 85% of supermarket purchases made impulsively (Basch et al., 2016). Basch et al. (2016) reported that 90% of products marketing to populations were unhealthy and 63% had misleading health or nutrition claims. It was also reported that food advertising has been clearly correlated with greater snack consumption, which is greatly related to the product packaging. Evidence supports that the majority of food advertising targets unhealthy food and more than

half of nutrition claims are inaccurate. Misleading advertising could be one of the many factors contributing to consumer purchasing and consumption.

A study performed in the United Kingdom evaluated how unclear nutrition claims in food marketing could adversely affect food choice and increase the risk of obesity. This was a cross-sectional study that sampled nutritional information on food packages at point-of-sale and online from foods marketed in major food retailers. Terms suggesting a nutritious or healthy attribute on product packaging and information on sugar salt and fat content were recorded. After examining 332 products from 41 different brands, it was concluded that nutrition and health claims were a common marketing strategy as 61.2% of the products contained them (Garcia, Morillo-Santander, Parrett, & Mutoro, 2019).

This study reported that one-third of products contained concentrated fruit juice as an added ingredient, yet a quarter of these products used the "no added sugar" claim (Garcia et al., 2019). Cereals and dairy products were more likely to have micronutrient-claims and only a small portion of products used high fiber, wholegrain or unregulated claims (Garcia et al., 2019). Almost half of the products made a 5-a-day claim and were mostly reporting to have one portion of fruits and vegetables (Garcia et al., 2019). Half of the products that utilized the 5-a-day claim did not specify whether the portion size was for children or adults (Garcia et al., 2019)). To expand on that, there were no exact child portion size recommendations for fruits and vegetables when this study was conducted, however, 18.8% referred to a child-sized portion (Garcia et al., 2019). This is just a few of the statistics that were recorded for the study. Due to lack of consistency and accuracy when it came to utilizing nutrition claims on food products, the researchers concluded that it created confusion during consumer purchasing. Uniform nutrition

guidance in food advertising would avoid the confusion on nutritional quality of foods. The first step in doing so is understanding and defining what a nutrition claim is.

"A nutrition claim is defined as any claim that states, suggests or implies that a food has particular beneficial nutritional properties due to the energy, nutrients, or other substances it contains, contains in reduced or increased proportions or does not contain" (Kaur, Scarborough, & Rayner, 2017). Consumers are increasingly turning to foods and beverages that promote healthy living and are looking for claims that state "natural," "organic," "low sugar," and "low fat" (Cao & Yan, 2016). According to this article, nutrition claims were found to significantly influence consumer purchasing (Cao & Yan, 2016).

As mentioned previously, there have been multiple studies that evaluated the impact health-related claims have on consumer perception of food items and purchases (Kaur, Scarborough, & Rayner, 2017; Talati, Pettigrew, Dixon, Ball, & Hughes, 2016). Kaur et al. (2017) identified and evaluated 31 different studies that observed nutrition claims on food products and their influence on consumer purchasing and consumption. The findings indicated that claims increase purchasing and/or consumption of food products compared to foods without claims (Kaur et al., 2017). Their findings suggest that products carrying a health-related claim or nutrition claim are 75% more likely to be chosen than an identical product without a health-related claim or nutrition claim (Kaur et al., 2017). Talati et al. (2016) investigated whether a positivity bias would occur on foods that featured different healthy claims. The study concluded that health claims indicated that front of labels can potentially lead to a more positive evaluation of a food product (Talati et al., 2016).

While many studies have indicated that claims will increase purchases of food, there has been a lack of studies that identified the types of claims that were more likely to influence

purchasing. Darian, Tucci, Stanton, & Baglione (2017) evaluated general versus specific health-benefit claims in consumer purchasing by surveying 1,165 people. The results indicated that claims were more influential with well-known nutrients versus lesser-known nutrients (Darian et al., 2017).

Gap in Literature

There are numerous studies that identify that nutrition and health claims increase sales of food items. Studies also established that white collar populations are more likely to have nutritious diets than blue collar populations. However, studies that evaluate the effects of nutrition claims on snack purchases in a working environment is not established in pre-existing literature. To fill this gap in literature, this experimental study evaluated sales of snack products 30 days before and 30 days after the implementation of nutrition claims in white collar and blue collar working environments.

Conclusion

This review of pre-existing literature supports why it would be significant to perform a study that evaluates the implementation of nutrition claims on snacks in corporate white collar and blue color environments because it will address whether or not the nutrition claims made any significant impact on snack purchases in a working environment. The research data could be utilized for future research on how marketing can assist in dietary snack choices. Research has shown that snacking is a normal dietary habit and can be helpful in preventing weight gain when choosing nutrient-dense foods. Additionally, research has shown that nutrition claims are associated with greater purchases of those products.

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APPENDIX A: DISPLAY OF SNACK MOBILE CART