

Educate students on the risks of eating fast food health essay

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Introduction

This Research's main purpose is to test the hypothesis " A Nutrition Education Intervention is Effective to Achieve Dietary Change in Trans Fatty Acids and Sodium Foods". The expected result is that that most of the students do change their diet after receiving education over consuming foods with high levels of saturated fat and sodium and the risks that it carries. The objective of this study is to test the hypothesis that a nutrition intervention in young adults in Manchester can help them change their dietary habits and improve it reducing the consumption of fast foods that contain high levels of saturated fat and sodium.

Aims and Objectives

Aim 1: To assess the amount saturated fat and sodium intake of a group of students in Manchester
Objective: Analyze the dietary intake of 30 to 50 students that consume fast foods frequently (3 or more times a week) by giving them a 3 day food diary that will be analyzed with Netwisp or other food data analyzer to view their nutritional intake focusing on saturated fat and sodium. Aim 2: Educate Students on the risks of eating fast food frequently. Objective 2: These students that eat fast food frequently will be given an intense presentation or will be provided with study material/information on consuming fast foods and the health risks it involves and how it could affect their lives negatively
Aim 3: To observe the behavioral change and diet change these students have after being educated on the dangers of consuming fast foods frequently. Objective 3: These students will

be given 5-day food diaries again and these will be analyzed with Netwisp or other food data analyzer.

Literature Review

2. 1 Introduction

This chapter is an understanding of why the research has taken place providing background information on the nutritional content of fast foods, the possible complications consuming these foods have and the need of nutritional interventions. The literature review will cover three main points: Sodium, Saturated Fat and Nutrition Interventions. Manchester is Europe's largest student populated city with over 100. 000 students between Universities and other institutions, being the main institutions " The University of Manchester", " Manchester Metropolitan University" and " Salford University". The campuses of the Universities are surrounded by hundreds of fast food restaurants, putting at the reach of students a big variety of unhealthy, low-cost fast food. Fast foods mainly offer foods that are high in saturated fat and sodium, these two elements are harmful to our health as they can produce various cardiovascular diseases. In the United Kingdom and the United States of America, processed foods and fast, takeaway foods are the main dietary sources of excess salt, saturated fats, trans fats and excess calories (Martin O'Flaherty et al, 2012). Reducing the consumption of saturated fat is a pillar of international dietary recommendations to reduce the risk of cardiovascular disease. The World Health Organization (WHO) recommends consuming less than 10% of saturated fat in account of our total energy intake (WHO, 2003).

2. 2 Sodium

High levels of sodium in a diet can cause hypertension (high blood pressure); people suffering from high blood pressure have higher risk of developing cardiovascular diseases. The recommended amount of sodium intake a day is 100mmol per day, but the majority of people exceed that recommendation (Mattes, R. D et al 1991). Cardiovascular diseases are the second major cause of death among people aged 15-59. According to the World Health Organization, 62% of all strokes and 49% of coronary heart disease events are attributable to high blood pressure (WHO, 2002). The results previous studies provide evidence of a direct association between high dietary salt intake and risk of stroke. High salt intake is associated with significantly increased risk of stroke and total cardiovascular disease. These results support the role of a substantial population reduction in salt intake for the prevention of cardiovascular disease. The relative risk indicates a 23% greater risk of stroke for an average difference in sodium intake of 86 mmol (equivalent to about 5 g of salt a day). The Dietary Guidelines recommends that individuals with hypertension, blacks, and middle-aged and older adults consume no more than 1, 500 mg of sodium per day. For the rest of population, daily sodium intake should be less than 2, 300 milligrams (mg) and further reduce intake to 1, 500 mg among persons who are 51 and older and those of any age who are African American or have hypertension, diabetes, or chronic kidney disease. The 1, 500 mg recommendation applies to about half of the U. S. population, including children, and the majority of adults (USHHS, 2010). About 77% of dietary sodium is derived from salt added by food manufacturers (Mattes et al. 1991). Thus, identification of the

sodium content of processed foods should be a critical part of nutrition education about sodium.

Saturated Fat

Cardiovascular Disease is consistently associated with the so-called "Western" diet, consisting mainly of dairy products, meat and processed foods. Cardiovascular Disease mortality rates are twice as high among segments of society that follow such a diet than among people who eat sensibly, Salt, sugar, saturated fat and trans fats are harmful when consumed in excess (Martin O'Flaherty et al, 2012)The Food Standards Agency made an estimation that approximately 7000 CVD deaths would be prevented annually if people in the UK reached the current dietary targets for saturated fat and trans fatty acids. There is a lot of research conducted on the relation of saturated fat and cardiovascular disease, the previously mentioned study of the World Health Organization (Mattes, R. D et al, 2012) stresses the need to reduce saturated fatsThe majority of student population is not aware of the risks it involves consuming fast foods so frequently, it is fair to state that they are not nutritionally educated. This big problem because the rates of cardiovascular diseases are increasing because of two main factors: Poor nutritional knowledge: The population is not educated about the benefits and dangers of consuming certain foods and continue consuming the foods that increase cardiovascular diseases and. Physical Inactivity: Being physically inactive is an important factor that influences the index of cardiovascular diseases. Practicing 30 minutes of exercise a day, 5 days a week can drastically decrease the risk of cardiovascular diseases (DH, 2011)

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Nutrition education (Nutrition Intervention)

Nutrition education interventions have been shown to decrease the intakes of fat and sodium and increase the intakes of calcium, fruits, and vegetables (Sahyoun et al. 2004). It's proven that these nutrients and foods play a role in the risk of suffering from cardiovascular disease (USDHHS and USDA 2005a), it is fair to expect that these dietary changes would improve quality of life. Young adulthood is a unique period whereby youth obtain independence from their parents. People in this age group are vulnerable to develop unhealthy behaviors (Eun-Jeong Ha et al 2009)The benefits of nutrition education interventions for older adults have been summarized in the study of " Sahyoun et al, 2004". It is up to educators and the Government's guidelines how this message is addressed to the public. Thus, there is a need to incorporate the updated guidelines and recommendations for nutrition education to be essential. Sahyoun et al (2004) base their work on the review of 128 references related to nutrition interventions (nutrition education) and the results shown are positive, proving that nutrition interventions in older adults can have an effect on behavioral change and dietary habits on this group of people. Sahyoun et al conducted a systematic review of 128 other studies concentrating on the effect of nutritional interventions on elder adults out of which 25 fit into their criteria. The criteria they had in selecting which papers would be included in their review apart from published education programs that have targeted older adults between January 1990 and April 2003. The general criteria was to identify successful intervention programs that could provide salient points for designing appropriate, effective, and measurable nutrition education programs to

select groups of older adults, and, based on some of these criteria, suggest a framework as a guideline in designing effective programs. The selected timeline of publications was chosen because it provided a follow up to another review of the literature on older adults conducted in the early 1990s. All papers had measurable outcomes or evaluations, therefore the methods of selection were appropriate and the study covered some papers that focused on adults from different racial backgrounds, ethnicities, education levels and socioeconomic status. This gives results that can be used to generalize population because the larger and more complete the sample is, the more relevant the results will be for general population. The review's results showed that positive outcomes were more probable when the nutrition messages were limited to one or two, simple, practical and targeted to specific needs. Study participants with a specific health condition were generally more successful in making the dietary change. Increased interactions between participants and health professionals showed increase success rate, also age was not a limitation factor in increasing one's knowledge. A framework was designed by Sahyoun et al that explains that intervention at an individual level is not enough to obtain sustainable behavioral change, the next studies should be a combination of individual level and environmental level approach. The process should stay very interactive to optimize positive results. Other research done in the United States of America, (Eun-Jeong Ha et al 2009) conducted a study on 80 college (university) students at the Midwest University in which they led a nutrition intervention educational course over the course of 15 weeks with the objective to reduce the intake of carbonated drinks and increase the

intake of low fat milk in students aged 18 to 24. The researches was focused more on changing one specific aspect of the diet rather than lifestyle and was conducted on a fair amount of students. They discovered that there were marginal changes in the intake of soft drinks from the baseline results, and there was a significant increase in fat free milk in the group of participants. The difference between Eun-Jeong's study and this project is that this one intends to modify student's behavioral change in food consumption rather than drinks consumption. The similarities are that the selected population is the same as both studies use university students for the research.

Conclusion

With the study examples given previously, it is evident that nutrition education improves diet and therefore quality of life. The reason of this study is to prove that the studies of Sahyoun et al (2004) and Eun-Jeong Ha et al (2009) can be also done in University level students in Manchester and investigate whether having nutrition interventions will have the same results with food consumption reducing the intake of sodium and saturated fat in adults between the ages of 18 and 30. This research is necessary to observe the effect of a nutritional intervention about the risks frequent consumption of fast food has over general health and wellbeing on students of Manchester Metropolitan University. Other reasons that increase interest in this research are to observe the interest University students have in learning about health and nutrition and the effects it has on their lives.

Methodology

Introduction

The study took a group of random group of volunteers that met certain criteria, and then these participants were asked to fill in a 3-day food diary that is widely used in other studies. The levels of salt and fatty acids were analysed with food data analysis software. After the first tier of food diaries the study participants were issued with a package of information about the dangers that consuming these foods can incur in their life. After this, the participants are requested to do one 3-day food diary that will also be analysed with food data analysis software.

Pilot

Before conducting the study, a pilot was conducted to ensure that the information given in the information sheet, the consent form, the study material and the food diaries was understood with ease by the participants and that there were no mayor complications for the participants. This pilot was conducted on 10% of the total sample (30 total participants). 3 Participants were in the Pilot and the feedback received was extremely positive. The Participants reported that it was very easy to understand and there were no problems completing the food diary. Once the pilot was approved, the main part of the study took part. The participants filled in the 3-day food questionnaire using one weekend and two mid-week days as instructed in the information sheet. [http://www. sciencedirect. com/science/article/pii/S0002822311015562](http://www.sciencedirect.com/science/article/pii/S0002822311015562)[http://www. nature. com/ejcn/journal/v56/n2/full/1601292a. html](http://www.nature.com/ejcn/journal/v56/n2/full/1601292a.html)[http://www. ncbi..nlm. nih. gov/pubmed/11857043](http://www.ncbi.nlm.nih.gov/pubmed/11857043)[http://www. ncbi..nlm. nih. gov/pubmed/11305625](http://www.ncbi.nlm.nih.gov/pubmed/11305625) <https://assignbuster.com/educate-students-on-the-risks-of-eating-fast-food-health-essay/>

Food Diary

The data collection method to know what is the saturated fat intake of students and sodium intake was a 3 day food diary. Food diaries are a very effective way to collect the totality of a person's diet and it is used in a vast amount of studies that have a nutrition educational intervention, for example studies like Eun-Jeong Ha et al (2009) have conducted a very similar study and have used 3 day food diaries to find out the amount of carbonated drinks and milk consumed by university students. Other studies that have used food diaries are those such as Høidrup S et al (2002) that used a 7-day food diary to assess the habitual energy and macronutrient intake in adults and compares it to a diet history interview in which participants are asked questions on what they have eaten recently and that information is analysed. The results obtained showed that the energy and macronutrient intake was reported slightly higher with the 7-day food diary than with the interviews. Another study that also used a 3-day food diary is Crispim et al (2011) in their study of the Relationship between Food Intake and Sleep Pattern in Healthy Individual. This study examined the correlation between dietary and sleep variables, therefore they needed an accurate method to analyse the food intake of participants. The food diary used in this study was obtained from the nutrition documents section of the website of the Student Health Services of the University of Connecticut. The diary consisted of 4 pages: one page with information on how to complete each section of the diary and an example of completion and three pages with spaces to fill in with every single food consumption over the three days. The diary was either emailed to the participants of this study or it was given in hand personally.

As demonstrated with the studies mentioned previously, the food diary is a widely used method to collect food intake of people rather than using other methods like the Food Frequency Questionnaire and the food diary has been successful reporting the food intake of participants in other nutrition interventions. The food diary is handed in at the start of the study, when the participants read the information sheet and sign the consent form. After the completion of the first 3 day food diary the participants are provided with information about the dangers of diets that include fast foods on a regular bases with high saturated fats and sodium intakes and the complications and difficulties that they can implicate in one's quality of life. In continuation to the intervention, approximately a week after, the participants receive once more the 3 day food diary that has the same instructions and has to be completed in the same manner as the previous one. These two sets of data were analysed further with Netwisp 3. 0 - Tinuviel Software, UK (tinuvielsoftware. com)

The intervention

According to Deanna. M et al (2002), Nutrition interventions, especially those that are behaviour based, have been effective in producing dietary behaviour change among adolescents and these changes can be maintained over time. In Deanna's et al's study there is proof of nutrition interventions being useful to achieve dietary change in adolescents and it's cost effective because in this manner it can influence the development of chronic disease in the future. Also, as previously mentioned in the literature review chapter of this project, the study of Sahyoun et al (2004) was a systematic review of nutrition intervention studies in older adults and this study also confirms the

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effectiveness of nutrition interventions, but it also gives some guideline frameworks for further studies. If these interventions can be done in adolescents and older adults, there could be a similar method of intervention that would be effective in young adults. This method was proven by Eun-Jeong Ha et al (2009) where an intervention was executed successfully on achieving a change in carbonated beverage consumption and milk on young adults aged 18-25. There is enough research to support the effectiveness of nutrition interventions, therefore this project is carried out to support the previous research and find out if it is possible to achieve dietary behavioural change. The intervention consisted on a piece of information focusing on few main points in simple layman language stressing the role that nutrition plays in lifestyle, the dangers that high intake of saturated fat and sodium and mainly the negative effect and life deterioration that is caused by diseases developed from consuming those nutrients in high amounts that are present in fast foods. The information provided was mainly obtained from the National Health Service (NHS) and the World Health Organization (WHO). Links for further research were also attached.

Sample Selection

The study participants were volunteers recruited by word of mouth and advertisements. The participants had to meet an easy criteria to be part of the study. All participants had to be healthy males or females aged between 18 and 30 years old that consumed fast food frequently (three or more times a week). The number of participants in this study were a total of 30 successful ones. This number was chosen after discussion with this project's supervisor and by presenting other interventions that had a number of

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participants of 60 people (Reida. M, Hammersleyb. R & Duffyc. M) in their nutrition intervention on the effect of sucrose drinks on macronutrient intake. A group of 80 participated in the intervention of Eun-Jeong Ha et al (2009)Initially a group of 34 participants were recruited, but 4 were unsuccessful and dropped out the study, no questions were asked about it. These participants were recruited through word or mouth, and an advert posted in the College of Law (Manchester). Volunteers got in touch via email and in return they were getting a copy of their data analysis and free nutrition advice if requested. The group sample size is an achievable number of individuals to study in the given time. The targeted individuals are Students from the Manchester Metropolitan University, University of Manchester and College of Law (Manchester) because there will not be complications to find volunteers.

Food Intake Evaluation

The data collected from the food diary of 3 consecutive days (1 weekend and 2 weekdays). This was chosen by guidance from the supervisor and previous literature review in which if the food diaries are 3, 5 or 7 days there is always a combination of weekdays and weekends, being the number of weekdays higher in order to get a more global overview of the participants' dietary behaviour. Volunteers were instructed to report the highest number of detail possible about the intake, always trying to include where the product was consumed, how it was cooked and the brand name if remembered. All of the amounts were not recorded accurately; therefore the average portion was taken as measurement. The software used to analyse the food data was Netwisp Version 3.0 Anglesey, UK: Tinuviel Software. For each participant

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the 3 day food diary was analysed and the mean was taken. The information extracted was Saturated Fat Intake Pre-Intervention, Saturated Fat Intake Post-Intervention, Sodium Intake Pre-Intervention and Sodium Intake Post-Intervention. Netwisp was used as a food data analyser because it contains a large amount of UK food products with average sizes and it's also used in other UK/Ireland studies for example the Evaluation of current food-based dietary guidelines for healthy eating in Ireland by McFeely et al (2010).

Statistical Analysis

All analyses were performed using SPSS (Statistical Package for Social Sciences) for Windows (version 19, 2010, SPSS, Chicago, Ill). The statistical tests performed on SPSS were the one sample T-Test, the Paired Samples T-Test, Paired Sample Correlations, Frequencies and Main Statistics.

Ethical Issues

All the data gathered in this research is considered as personal information, people's diets, names, signatures, email addresses. Everything is under a confidentiality form signed by the author and the participant. The participants are aware why this data is being collected and know how to access it if needed.

Strengths and Limitations

The strengths of this methodology are that all the methods used have been previously tested and approved for this type of research. All methods are realistic to perform in the timescale given leaving enough time for analysis. Some limitations are that the study uses only a 3 day food diary instead of a 5 day or 7 day food diary due to time restrictions, a 5 or 7 day food diary

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would provide more precise information about the participants diet. An important difficulty of this study is that the intervention can only be demonstrated effective for a short term results and not long term due to time restrictions. Further follow-ups should be maintained once every 1-3 months during a period of 9-12 months to strengthen the hypothesis.

Results

In this chapter the results from data analysis will be displayed.

T-TEST

Table i. Notes

Output Created 20-Feb-2013 14: 53: 45 Comments Input Active

Dataset DataSet0 Filter Weight Split File N of Rows in Working Data

File 30 Missing Value Handling Definition of Missing User defined missing values

are treated as missing. Cases Used Statistics for each analysis are based on

the cases with no missing or out-of-range data for any variable in the

analysis. Syntax T-TEST PAIRS= Saturated Fat Preintervention Na

Preintervention WITH Saturated Fat Postintervention Na Postintervention

(PAIRED)/CRITERIA= CI(. 9500)/MISSING= ANALYSIS. Resources Processor

Time 00 00: 00: 00. 015 Elapsed Time 00 00: 00: 00. 065

Table 1. Paired Samples Statistics

Mean N Std. Deviation Std. Error Mean Pair 1 Saturated Fat Pre Intervention 32.

97003014. 858792. 71283 Saturated Fat Post Intervention 27. 28333012.

905412. 35620 Pair 2 Na Pre Intervention 3443. 2333301028. 03363187.

69240 Na Post Intervention 2995. 5333301311. 54052239. 45344 In this table

a Paired T-Test Saturated Fat Pre Intervention (satfatpre) Na Pre Intervention

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with Saturated Fat Post Intervention (satfatpost) Na Post Intervention was performed. This T-Test was practiced with a criteria of confidence interval of 95%

Table 2. Paired Samples Correlations

NCorrelationSig. Pair 1Saturated Fat Pre Intervention & Saturated Fat Post Intervention30. 963. 000Pair 2Na Pre Intervention & Na Post Intervention30. 811. 000In table 2 we can observe the correlation between Saturated Fat and Sodium Pre and Post intervention we can also observe that their significance is 0. 000

Table 3. Paired Samples Test

Paired DifferencesMeanStd. DeviationStd. Error MeanPair 1Saturated Fat Pre Intervention - Saturated Fat Post Intervention5. 686674. 25114. 77615Pair 2Na Pre Intervention - Na -Post Intervention447. 70000767. 89029140. 19694

Table 4. Paired Samples Test

Paired Differences95% Confidence Interval of the DifferenceLowerUpperPair 1Saturated Fat Pre Intervention - Saturated Fat Post Intervention4. 099267. 274077. 327Pair 2Na Pre Intervention - Na Post Intervention160. 96505734. 434953. 193

Table 5. Paired Samples Test (P-Value)

dfSig. (2-tailed)Pair 1Saturated Fat Pre Intervention - Saturated Fat Post Intervention29. 000Pair 2Na Pre Intervention - Na Post Intervention29. 003

Frequencies

Table ii. Notes

Output Created 20-Feb-2013 15: 00: 48 Comments Input Active

Dataset DataSet0 Filter Weight Split File N of Rows in Working Data

File 30 Missing Value Handling Definition of Missing User-defined missing values

are treated as missing. Cases Used Statistics are based on all cases with valid

data. Syntax FREQUENCIES VARIABLES= Saturated Fat Preintervention

Saturated Fat Postintervention Na Preintervention Na

Postintervention/NTILES= 4/STATISTICS= STDDEV VARIANCE MINIMUM

MAXIMUM SEMEAN MEAN MEDIAN MODE SKEWNESS SESKEW KURTOSIS

SEKURT/BARCHART FREQ/ORDER= ANALYSIS. Resources Processor Time 00

00: 00: 03. 448 Elapsed Time 00 00: 00: 03. 066

Table 6. Main Statistics

Saturated Fat Pre Intervention Saturated Fat Post Intervention Na Pre

Intervention Na Post Intervention N Valid 303030 Missing 0000 Mean 32.

970027. 28333443. 23332995. 5333 Std. Error of Mean 2. 712832. 35620187.

69240239. 45344 Median 38. 850028. 70003302. 50002677. 3000 Mode 12.

7010. 20a2730. 001500. 00a Std. Deviation 14. 8587912. 905411028.

033631311. 54052 Variance 220. 784166. 5501056853. 1511720138.

533 Skewness -. 178. 177. 4781. 697 Std. Error of Skewness. 427. 427. 427.

427 Kurtosis -1. 418 -. 635 -. 4983. 153 Std. Error of Kurtosis. 833. 833. 833.

833 Minimum 10. 809. 401875. 001500. 00 Maximum 56. 4057. 105408.

006821. 90 Percentiles 25 16. 625013. 32502684. 00002148. 12505038.

850028. 70003302. 50002677. 30007546. 425037. 67503975. 25003198.

9500a. Multiple modes exist. The smallest value is shown

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Frequency Table

Table 7. Saturated Fat Pre Intervention Frequency

Frequency	Percent Valid	Percent Cumulative	Percent Valid
10	8013.33	33.33	
312	7026.76	710.012	9013.33
313	313.00	13.33	316.714
3013	33		
320	015.20	13.33	323.317
1013	33		326.717
2013	33		330.021
8013			
33	333.326	2013.33	336.726
3013	33		340.032
8013	33		343.333
0013	33		346.738
4013	33		350.039
3013	33		353.339
5013	33		356.739
6013	33		360.039
8013	33		363.339
9013	33		366.740
8013	33		
370	046.10	13.33	373.346
3013	33		376.746
8013	33		380.047
9013			
33	383.348	1013.33	386.748
9013	33		390.049
1013	33		393.356
2013	33		396.756
4013	33		3100.0
Total	30100.0	100.0	0

Table 8. Saturated Fat Post Intervention frequency

Frequency	Percent Valid	Percent Cumulative	Percent Valid
9	4013.33	33.39	
5013	33	36.710	2026.76
713	310.40	13.33	316.711
4013	33		320.012
2013	33		323.313
7013	33		326.717
5026	76		733.321
0013	33		
336	726.40	13.33	340.026
6013	33		343.328
4013	33		346.728
5013			
33	350.028	9013.33	353.329
3013	33		356.730
7013	33		360.031
5013	33		363.331
9013	33		366.735
0013	33		370.037
0013	33		373.337
4013	33		376.738
5013	33		380.039
1013	33		383.339
3013	33		
386	740.60	26.76	793.348
7013	33		396.757
1013	33		3100.0
Total	30100.0	100.0	0

Table 9. Na Pre Intervention Frequency

Frequency	Percent Valid	Percent Cumulative	Percent Valid
1875	0013.33	33	
31899	0013.33	36.72	250.00
310	02259	0013.33	313.32
279			

0013. 33. 316. 72288. 0013. 33. 320. 02546. 0013. 33. 323. 32730. 0026.
 76. 730. 02849. 0013. 33. 333. 33055. 0013. 33. 336. 73067. 0013. 33. 340.
 03122. 0013. 33. 343. 33276. 0013. 33. 346. 73297. 0013. 33. 350. 03308.
 0013. 33. 353. 33419. 0013. 33. 356. 73433. 0013. 33. 360. 03747. 0013.
 33. 363. 33762. 0013. 33. 366. 73956. 0013. 33. 370. 03969. 0013. 33. 373.
 33972. 0013. 33. 376. 73985. 0013. 33. 380. 04388. 0013. 33. 383. 34489.
 0013. 33. 386. 75266. 0013. 33. 390. 05287. 0013. 33. 393. 35386. 0013.
 33. 396. 75408. 0013. 33. 3100. 0Total30100. 0100. 0

Table 10. Na Post intervention Frequency

FrequencyPercentValid PercentCumulative PercentValid1500. 0013. 33. 33.
 31519. 2013. 33. 36. 71800. 0013. 33. 310. 01807. 2013. 33. 313. 31830.
 4013. 33. 316. 72036. 5013. 33. 320. 02051. 6013. 33. 323. 32180. 3013.
 33. 326. 72184. 0013. 33. 330. 02208. 2013. 33. 333. 32248. 2013. 33. 336.
 72443. 8013. 33. 340. 02461. 9013. 33. 343. 32471. 8013. 33. 346. 72646.
 0013. 33. 350. 02708. 6013. 33. 353. 32940. 4013. 33. 356. 72997. 6013.
 33. 360. 03159. 5013. 33. 363. 33164. 9013. 33. 366. 73175. 2013. 33. 370.
 03177. 6013. 33. 373. 33188. 0013. 33. 376. 73231. 8013. 33. 380. 04227.
 4013. 33. 383. 34253. 9013. 33. 386. 74309. 1013. 33. 390. 04326. 4013.
 33. 393. 36794. 6013. 33. 396. 76821. 9013. 33. 3100. 0Total30100. 0100. 0

Table iii. Notes

Output Created20-Feb-2013 15: 04: 39CommentsInputActive

DatasetDataSet0FilterWeightSplit FileN of Rows in Working Data

File30Missing Value HandlingDefinition of MissingUser-defined missing values
 are treated as missing. Cases UsedStatistics are based on all cases with valid

data. Syntax
FREQUENCIES VARIABLES= Saturated Fat Preintervention
Saturated Fat Postintervention Preintervention Postintervention/NTILES=
4/STATISTICS= STDDEV VARIANCE MINIMUM MAXIMUM SEMEAN MEAN
MEDIAN MODE SKEWNESS SESKEW KURTOSIS SEKURT/HISTOGRAM
NORMAL/ORDER= ANALYSIS. Resources
Processor Time 00 00: 00: 00.
686 Elapsed Time 00 00: 00: 00. 716

Graph 1. Saturated Fat Pre Intervention

Graph 2. Saturated Fat Post Intervention

Graph 3. Sodium Pre Intervention

Graph 4. Sodium Post Intervention

Summary of Results

In this section all the results of raw data presented. Thirty participants provided complete food diaries at pre and post intervention (n= 30). There were four (n= 4) participants that agreed to take part of this study initially but dropped out before handing in the first set of food diaries. It can be observed in Table 1 that the Saturated Fat Mean pre intervention is 32.97 grams (g), the saturated fat mean post intervention has reduced to 27.28g. It is also shown that the second pair, the sodium (Na) level before intervention is 3443.2 milligrams (mg) and after the intervention this amount reduced to 2995.5mg. In table 2, correlations between each nutrient pre intervention and post intervention can be observed, In saturated fat there is a correlation of 0.963 and in sodium before and after intervention there is a correlation of 0.811. This means that each pair correlates, in other words, there is a significant direct relationship between pre intervention and

post intervention. Table 3 shows the mean, standard deviation and standard error mean of the paired samples test. It can be observed that the mean difference (reduction) of saturated fat in the diet is 5.69g and sodium is 447.7mg. Table 5 is the most important table that defines answers the main hypothesis of this thesis because it reveals the P-value and it is under 0.05. It will be discussed in the next chapter. In table 6 all the main statistics are plotted, showing the mean, standard error of mean, median, mode, standard deviation, variance, skewness, kurtosis, both their standard errors, minimum, maximum and percentiles for each nutrient. In tables 7-10 each and every result of saturated fat and sodium that came up in the Netwisp analysis can be appreciated with its frequency. In Bar graphs 1-4 we can observe the skewness and kurtosis illustrated to have a better understanding.

Discussion

Introduction

The discussion will include explanations of the main results and it will compare its relevance with other similar studies. The results expected from this thesis are that the participants in the study reduced their saturated fat and sodium intake after receiving a nutrition intervention. The results of this study provided evidence that nutrition education intervention was a viable mechanism to use to help university students achieve behavioral changes in saturated fat and sodium intake. Other research support the results obtained, like for example the previously mentioned study in the Midwest University by Eun-Jeong Ha et al. In their T-Test the value was $P < 0.05$ proving their null hypothesis right. In the results obtained in this thesis the $P = 0.000$ (therefore $P < 0.001$) making the results extremely

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significanttotally proving that the null hypothesis presented at the introduction was right.