COMPARATIVE ANALYSIS OF EATING PATTERNS OF INDIVIDUALS WITH OBESE VS. NORMAL BMI AND WITH AND WITHOUT TYPE 2 DIABETES

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Abstract

This study explored eating patterns of obese-weight (OB) and normal-weight (NW) individuals with and without Type 2 diabetes (T2D). The dietary intakes of OB-T2D individuals were significantly higher than those of NW individuals. Health care professionals can use this knowledge to provide direction for treatment modalities (e.g., different dietary strategies, more intensive dietary therapy, lifestyle counseling).

Problem

Although obesity has become a global problem, little is known about the food intakes of NW compared to OB individuals, or of food intakes of those with and without T2D. Existing studies tend to focus on specific cultural groups only. The current caloric intake of the average Canadian is well above the recommended dietary intake (RDI) for most age and gender groups, and approximately ¼ of the adult population consume more fat and less carbohydrates than recommended (Health Canada, 2012). Recommended energy intakes for males/females (31-50 years old) are 2,600/2,000 kcal respectively (Health Canada, 2014), but obese males/females consume on average 2,820/2,160 kcal respectively (Langlois, Garriguet, & Findlay, 2009).

Purpose

The purpose of this study was to explore the eating patterns of OB and NW individuals with and without T2D to provide direction for treatment modalities.

Relevant Literature

Obesity has become a global problem that has been attributed to many factors including caloric intake (Caballero, 2007). It can be difficult to obtain accurate energy intake data from participants. Garriguet (2008) found participants underreported energy intake on nutrition surveys by about 10%. However, food records are known to be more accurate than retrospective dietary recall methods for assessing actual food and nutrient intake (Crawford, Obarzanek, Morrison, & Sabry, 1994).

Relevant Literature (cont'd)

It has been reported that individuals with T2D have difficulty in applying nutrition recommendations (Savoca & Miller, 2001), and they exceed the RDI for fat, saturated fat, and sodium (Vitolins et al., 2009). No studies were found that compared the nutrition patterns of OB versus NW individuals or of those with and without T2D.

Research Questions

Are there differences in energy intake or micro- and macronutrient consumption among individuals who are NW, NW-T2D, OB, and OB-T2D?

Procedures

A comparative focus group study of the eating patterns of adults with a relatively stable BMI (minimum 5 years) was undertaken. Participants for this study were recruited through media and community health centers/events. The presence or absence of T2D was established through self-report during a phone interview. Participants were placed into the OB or NW groups on the basis of their self-reported BMI, which was later verified through actual measurement of weight and height and recalculation of BMI. Participants completed 3-day food records.

Procedures (cont'd)

The four groups of participants were: OB with mean BMI = 37.1, n = 10; OB-T2D with mean BMI = 37.1, n = 10; NW with mean BMI = 21.5, n = 11; and NW-T2D with mean BMI = 23.8, n = 6. BMI range for NW individuals is 18.5 - 24.9, and for OB individuals, it is ≥30.0.

Data Analysis

The 3-day food records were analyzed for energy intake (kcal), macronutrients (protein, fat, and bread/starch) and micronutrients (cholesterol and sodium) using Nutritionist ProTM software. Comparisons were made through one-way ANOVA with a Bonferroni post hoc test.

Findings

A summary of the results of the one-way ANOVAs for energy intake (kcal), macronutrient (protein, fat, and carbohydrate), select micronutrient (cholesterol and sodium), and bread/starch servings for the data are presented in **Table 1.**

Caloric, macronutrient (fat and protein), and micronutrient (cholesterol and sodium) intake of the OB-T2D group was found to be well above the National Academy of Science Institute of Medicine' s

Findings (cont'd)

RDI. Individuals in the OB-T2D group had signific higher intakes of kilocalories, protein, fat, and soc than in either the NW or NW-T2D groups (p < .05 Although significant between-group differences in cholesterol intakes were detected in the F test, po hoc analysis detected that a difference in choleste intakes between the OB-T2D and NW groups was approaching significance (p = .052). In addition, t number of bread/starch servings was significantly greater in the OB-T2D group than all of the other groups (p < .05). Overall, however, there were no significant differences between any of the groups carbohydrate intake (p = .149).

Limitations

The sample size was small, and all the participant were middle-aged adults. Therefore, obtaining a la more diverse sample is warranted to ensure that t findings are applicable to younger and older adult to children.

Conclusions

The energy, micro-, and macronutrient intakes of t 10 OB-T2D were well above RDI levels and significantly different from normal weight individua (with or without T2D). Therefore, new treatment modalities are needed, including different dietary strategies, more intensive dietary therapy, and po different lifestyle counseling.

Social Change Implications

Using the study results to develop effective treatm modalities for achieving and maintaining normal w may improve an individual's health, quality of life, longevity. Moreover, decreasing the incidence of obesity in the population will reduce the strain on the health service system (Haslam & James, 2005).

Table 1. Means, Standard Deviations, and One-Way Analysis of Variance for the Effects of OB, OB-T2D, NW, and NW-T2D on Energy Intake and Six Macro-/Micronutrients

	Obese (OB)		Obese, with Type 2 diabetes (OB-T2D)		Normal weight (NW)		Normal weight, with Type 2 diabetes (NW-T2D)		One-way ANOVA result & effect size			Bonferroni post hoc test	
Macro-/micronutrient	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	$F(3, 33)$	p	ω^2	Groups Compared	p
Energy intake (kcal)	1,925.08	695.03	2,428.87	480.19	1,750.79	297.33	1,618.33	468.88	4.44	.010	.22	OB-T2D x NW OB-T2D x NW-T2D	.025 .023
Protein (g)	78.80	16.96	98.58	15.25	69.51	15.18	71.44	20.97	6.13	.002	.29	OB-T2D x NW OB-T2D x NW-T2D	.002 .021
Fat (g)	77.72	30.35	104.15	31.71	66.24	14.37	64.12	18.05	4.95	.006	.24	OB-T2D x NW OB-T2D x NW-T2D	.010 .026
Carbohydrate (g)	232.01	103.53	281.39	73.12	215.29	57.53	196.90	67.63	1.90	.149	.07		
Cholesterol (mg)	314.29	123.72	391.33	134.77	243.65	98.19	231.16	131.85	3.38	.030	.16	OB-T2D x NW	.052
Sodium (mg)	2,903.44	1,090.65	3,878.56	727.88	2,386.03	456.32	2,468.01	1,272.20	5.81	.003	.28	OB-T2D x NW OB-T2D x NW-T2D	.003 .024
Bread/starch servings	7.15	2.70	11.45	3.90	6.14	2.10	6.33	3.31	6.60	.001	.31	OB-T2D x OB OB-T2D x NW OB-T2D x NW-T2D	.019 .002 .015

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