



A weight loss program in a chiropractic practice: A retrospective analysis



Anthony DeMaria^{a,1}, Casen DeMaria^{a,1}, Robert DeMaria^{a,1}, Joel Alcantara^{b,c,*}

^a 362 E Bridge St., Elyria, OH 44035, USA

^b International Chiropractic Pediatric Association, 327 N Middletown Rd, Media, PA 19063, USA

^c Life Chiropractic College West, 25001 Industrial Blvd Hayward, CA 94545, USA

A B S T R A C T

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Context: Obesity is a global problem and places individuals at risk for developing chronic metabolic disorders. The need for investigating simple, effective and sustaining approaches to weight loss cannot be overstated.

Methods: We performed a retrospective file analysis of patient files attending a 13-week weight loss program. Inclusion for analysis were files of adults (i.e., >18 years) completing the program consisting of chiropractic adjustments/spinal manipulative therapy augmented with diet/nutritional intervention, exercise and one-on-one counseling.

Results: Sixteen of 30 people (i.e., 53.33%) completed the program. Statistically and clinically significant changes were noted in weight and BMI measures based on pre-treatment (average weight = 190.46 lbs. and BMI = 30.94 kg/m²) and comparative measurements (average weight = 174.94 lbs. and BMI = 28.50 kg/m²).

Conclusion: A cohort of patients under enrolled in a weight loss program was described. This provides supporting evidence on the effectiveness of a multi-modal approach to weight loss implemented in a chiropractic clinic.

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1. Introduction

A significant proportion of the population in Canada and the United States are overweight (i.e., defined as body mass index (BMI) of ≥ 25 kg/m²) or obese (i.e., defined as BMI of ≥ 30 kg/m²) [1] and represents a significant public health problem since both conditions are strongly correlated with an increase risk for diabetes, hypertension, dyslipidemia, metabolic syndrome and other obesity-related illnesses and death [2]. In Canada; based on the 2007–2009 Canadian Health Measures survey, approximately 62% of the adult population is overweight and 24.3% are obese [3]. In the United States, the latest National Health and Nutrition Examination Surveys (NHANES) (2007–2008) revealed that approximately 68% of the population was overweight or obese, and approximately 34% were obese [4]. According to a 2013 statistical fact sheet from the American Heart Association [5], 23.9 million children between the

age of 2–19 years are overweight or obese. Among Americans age 20 and older, 154.7 million are overweight or obese (BMI of 25.0 kg/m² and higher).

The World Health Organization, through their Global Database on BMI estimates in 2005, found that approximately 1.6 billion people were overweight with 400 million of them as obese. The prevalence of obesity is wide with 1% or less of the Indian population to over 80% of the Pacific Islands [1,6]. Projections are that by 2015, approximately 2.3 billion adults will be overweight and that at least 700 million will be obese [1].

A recent evaluation on the clinical effectiveness and cost-effectiveness of three pharmacological interventions in obese patients found measures of clinical effectiveness and cost-effectiveness but highlighted safety concerns since some of these pharmacological agent/medications have been withdrawn from the market due to potential treatment-induced fatal adverse events [7]. Given the threat of obesity and overweight to public health on a global basis, there is an urgent need to find simple, effective and safe weight loss strategies and programs.

Chiropractic, with a holistic and patient-centered paradigm of care that incorporates the principles of vitalism, holism, humanism, conservatism, naturalism, and rationalism [8] may provide a unique

* Corresponding author. International Chiropractic Pediatric Association, 327 N Middletown Rd, Media, PA 19063, USA. Tel.: +1 408 759 0141; fax: +1 610 565 2310.

E-mail addresses: ademaria3@gmail.com (A. DeMaria), jalcantara@lifewest.edu, dr_jalcantara@yahoo.com (J. Alcantara).

¹ Tel.: +1 440 323 3840.

opportunity in the primary care setting to implement successful weight loss program.

In the interest of evidence-informed practice, we performed a retrospective file review in a multi-chiropractor practice implementing a weight loss program to determine some measure of effectiveness.

2. Methods

A retrospective file review was performed by chiropractors in a multi-practitioner clinic implementing a 13-week weight loss program. The 13-week program consisted of a combination of diet, exercise, and chiropractic spinal manipulation within a multi-practitioner chiropractic clinic. Prior to beginning the 13-week program, each patient/subject underwent a history and physical examination to rule out contraindications to chiropractic SMT and components of the weight loss program undertaken. Each individual's baseline (pre-treatment) weight and body fat was determined and individually, the subjects were instructed on what foods to eat and avoid, provided nutritional supplement recommendations and instructed on a specific exercise program tailored for each individual. An instructional packet on diet, diet restrictions and specific exercises was also provided to each individual to augment the instructions they received along with a daily log book. The weight loss program was individualized according to each individual's needs based on their dietary requirements and physical activity capabilities. The log book was provided to document/monitor each patient's dietary intake and exercise performed. Each week the attending chiropractor, in consultation with each subject, examined the food and exercise log and made recommendations as necessary. Also, each week, the individuals were weighed with the weight recorded. For the retrospective file review, inclusion criteria for this study included: (a) the patient underwent a diagnostic work-up including a history and physical examination to screen for co-morbidities and signs and symptoms indicative of a contraindication to chiropractic SMT and the weight loss program undertaken; (b) the subject was compliant with the 13-week program and (c) pre-treatment and comparative variables (i.e., weight, body mass index) were available.

The file review was performed by one of the attending clinicians involved in executing the 13-week weight loss program. The data was compiled into an Excel spreadsheet (Excel, Microsoft Corp). In addition to patient demographics (i.e., age, gender), we examined for weight loss body mass index based on pre-13-week program and comparative variables. Categorical data were analyzed using

Table 1
Pre-treatment (W_{PreTx}) and comparative ($W_{Compare}$) weight measures.

Subject	Gender	Age (years)	W_{PreTx} (lbs)	$W_{Compare}$ (lbs)	$\Delta W_{PreTx} - W_{Compare}$ (lbs)
1	F	62	150.2	137.1	13.1
2	F	67	166	157.1	8.9
3	F	66	202	189.5	12.5
4	F	54	120	113.8	6.2
5	F	59	178.6	162.5	16.1
6	F	53	207	181	26
7	F	69	164	160.4	3.6
8	F	47	178	172	6
9	F	62	164	144.8	19.2
10	M	50	198	180.7	17.3
11	F	56	194.3	183.2	11.1
12	M	66	200	181	19
13	F	67	192	186.1	5.9
14	F	77	290	259	31
15	M	59	332	286.3	45.7
16	F	57	111.4	104.5	6.9

Table 2
Pre-treatment (BMI_{Pre-Tx}) and comparative BMI ($BMI_{Compare}$) measures.

Subject	Gender	Age (years)	BMI_{Pre-Tx} (kg/m^2)	$BMI_{Compare}$ (kg/m^2)
1	F	62	28	24
2	F	67	29	27
3	F	66	32	29
4	F	54	21	20
5	F	59	32	30
6	F	53	35	32
7	F	69	30	30
8	F	47	30	30
9	F	62	25	22
10	M	50	29	28
11	F	56	30	29
12	M	66	28	26
13	F	67	36	34
14	F	77	47	40
15	M	59	42	36
16	F	57	21	19

descriptive statistics (i.e., frequency distributions and percentages) while pre-treatment and comparative variables were analyzed using the Wilcoxon Signed Rank Test [9].

3. Results

Our review found a completion rate of 53% with 30 individuals initiating the 13-week program and 16 individuals met our inclusion criteria. Of the 16 subjects, 3 were males and 13 were females. Their average age was 60.69 years (median = 60.5 years; mode = 62,67,66 and 59 years; range of 47–77 years). The pre-treatment and comparative individual weight and BMI values are provided in Tables 1 and 2, respectively. The cohort's mean weight and mean BMI prior to initiating the 13-week program was 190.46 lbs. and 30.94 kg/m^2 , respectively. The majority of the cohort ($N = 9$) was obese while 5 individuals were overweight, based on the pre-defined BMI values. Following the 13-week program, the cohort mean comparative weight was 174.94 lbs. resulting in an average loss of 15.531 lbs. This decrease in mean weight was statistically significant based on the Wilcoxon Signed Rank Test analysis with the following values: $W = 136$; $Ns/r = 16$; $z = 3.5$. From a table of critical values of z , the observed value of $z = +3.5$ was significant beyond the .0005 level for a two-tailed non-directional test. The comparative cohort mean BMI was 28.50 kg/m^2 , indicating a mean loss of 2.44 kg/m^2 . This decrease in mean BMI was statistically significant based on the Wilcoxon Signed Rank Test with the following values: $W = 105$; $Ns/r = 14$; $z = 3.28$. From a table of critical values of z , the observed value of $z = +3.28$ is significant beyond the .001 level for a two-tailed non-directional test.

Of the 16 individuals completing the program, we found 5 individuals with pre-treatment and comparative HA1C blood test results. This is provided in Table 3. The mean HbA1C pre-treatment and comparative measures were 5.56 mmol/mol and 5.40 mmol/

Table 3
Pre-treatment ($HbA1C_{Pre-Tx}$) and comparative ($HbA1C_{Compare}$) glycosylated hemoglobin measures.

Subject#	Genders	Age	$HbA1C_{Pre-Tx}$	$HbA1C_{Compare}$	%
2	F	67	5.9	5.4	8.5%
4	F	54	5.5	5.3	3.6%
7	F	69	5.8	5.9	-1.7%
9	F	62	5.7	5.6	1.8%
10	M	50	4.9	4.8	2.0%

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