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Research Article

How Expensive is it to lose weight? – The financial cost of one such weight loss program

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Abstract

Background: Obesity is the result of excess caloric consumption compared with caloric expenditure. Multiple approaches exist including pre-packaged meals. This study looked at just one proposed product and the cost of its use.

Methods: Sixty premenopausal women were selected to participate in a weight reduction product composed of prepackaged soy protein. The soy protein product was designed as a meal replacement program. Changes in weight were measured and reported for one month.

Results: The use of this soy product meal replacement program resulted in 7-pounds weight loss over four-weeks. Participants consumed an average of 3.75 servings of this soy chip product each day for an average of 105 packages of the soy chip product over the 4-week period of time. At an average price of $2.99 per package (plus tax and fees), this would cost each individual $313.95 to obtain an average weight loss of 7.3 pounds or $43.01 per pound. The calories consumed by the women in soy product ranged from 385 to 402.5 kCal per day.

Conclusion: To lose 1-pound per week requires an energy deficit of 350 kCal per day or 3500 kCal per week. To lose 1.75 pounds per week – as seen in this study – would require a deficit of 612.5 kCal per day at a cost of $43.01 per pound of weight loss. This deficit is required on top of the caloric intake resulting from the soy product itself.

Key points:

Questions: What is the financial cost for patients following prepackaged food replacement meals?

Findings: The overall cost associated with food replacement meals is not negligible. In this instance, a heavily marketed meal replacement program cost $43.01 per pound of weight loss.

Meaning: Given the significant numbers of weight loss programs currently marketed and the tendency for individuals to regain weight after cessation of such weight loss programs, this study raises concerns over the cost associated with such weight loss in the absence of more long term benefit including demonstration of improvement in cardiac health and reductions in cancer risk.

Introduction

Given the obsession with weight loss modern society, several companies have risen to the challenge of providing pre-packaged products for consumption. Rather than employing a reduction in caloric intake, the approach has been one of replacing one set of calories with another – the later providing a promise of weight loss and profits for the corporation producing the product. To the best of our knowledge, little attention has been placed on looking at the costs associated with the consumption of these products.

Methods

Following IRB approval and informed consent, 60-premenopausal women were enrolled in a weight loss study using a pre-packaged soy replacement product designed to be used by women in place of one of their daily meals. They were encouraged to replace the mid-day meal. The participants received free soy product for the purpose of this study at the time they were examined – initially (baseline) and at two-week intervals. Participants were provided product based upon their reported consumption of the product.

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Statistical analysis

Physicians Pharmaceuticals and their third-party academic researcher at the University of Georgia did the statistical analysis and power analysis independently.

Results

The reported weights for each participant and the subsequent change in weight during each successive interval are shown in Table 1.

The average weight for the participants was 193.71 +/- 37.54 pounds at the beginning of their participation. Weight loss for the participants are shown in Figure 1, with the mean +/- standard deviation for all subjects combined are shown in Table 2. The mean weight loss was 7.3 pounds and the median weight loss was 7.0 pounds with a range of 6 pounds gained to 19 pounds lost. The results of statistical analysis were obtained using two-tailed student t-testing. The reported statistical significance of weight change was $p<0.01$.

The specific weights of each individual have been reported previously and statistically analyzed for data validity by statisticians from Iowa State University [1]. As detailed at that time, all but one of the women lost weight, while one woman actually gained 6-pounds. The resulting changes in weight minimally satisfied the necessary weight loss to demonstrate a statistically significant benefit as shown in Table 3.

Table 1: Serial weights in pounds at baseline, 2- and 4-weeks for 60-participants [1].

Participant #	Baseline Weight	2 Week Weight	4 Week Weight	Heights-B
1	164	160	157	63.5
2	170	167	164	63.75
3	178	176	176	62.75
4	160	158.5	158	65
5	149.5	145	139.5	65
6	201.5	197.5	197.5	62.25
7	214.5	212	211	70
8	180	177	174	68.25
9	180	177	175	64
10	158.5	156.5	155	64.75
11	176.5	173.5	173	67.25
12	160	159	155	64
13	220	213	211	65.5
14	273	270	267	76
15	183.5	179	176	62
16	208	203.5	200	71
17	146	144	140	62.5
18	266.5	262	255	62.25
19	278.5	270.5	264	70
20	198.5	196.5	195	63.5
21	252	246	240	73.75
22	208	204.5	202	67.5
23	147.5	139	128.5	61.25
24	205	200	197	63
25	195	193	189	68
26	159	154	150	60.5
27	189	184	181	65
28	180	176	173	64.5
29	167	164	160	65
30	154	150	147	66
31	203	198.5	195	68
32	207	204	200	71
33	182	176	175	69
34	179	175	169	67.5
35	165.5	163	162	66.5
36	149	145	143	63
37	184	181	177	69
38	162	159	154	65
39	199	196	190	67
40	245	239	233	70
41	201	195	191	67
42	205	200	196	70
43	174	167	163	69
44	268	263	258	62.5
45	280	275	272	71
46	208	204	199	66
47	252	247	244	68
48	198	195	189	66
49	154	149	148	68
50	189	186	182	65
51	197	194	188	69
52	186	189	192	66
53	205	201	199	68
54	301	295	293	70
55	148	146	141	62
56	173	168	165	67
57	197	192	190	66
58	154	150	147	61
59	171	168	164	69
60	163	157	155	65

Discussion

The promotion of weight loss products and the weight loss industry is a very profitable industry currently in excess of $66 Billion annually [2]. The current study included women who did not need to pay for the product they consumed. We believe part of the reason for doing this was to determine how much of the product women would consume if they didn't need to worry about cost. This undoubtedly provided the soy manufacturer with information they desired for product development.

The actual loss of weight; however, is independent of the diet employed. The only concern being the associated

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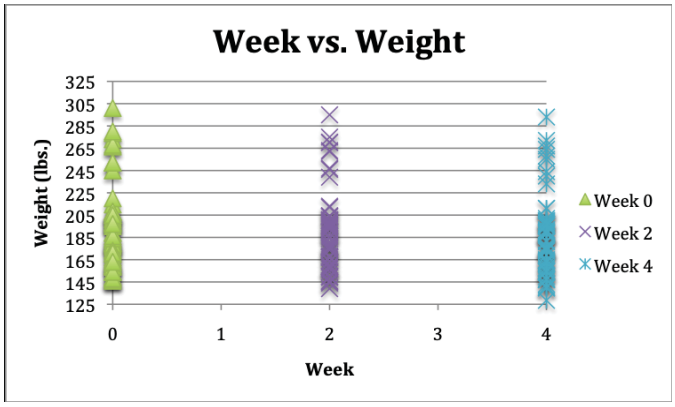

Figure 1: Study participant weight loss over the 4-week period.

Table 2: The mean +/- standard deviation of weight in pounds for participants at baseline, two- and four-weeks later.

Time	Mean +/- Standard Deviation
Baseline	193.71+/-37.54
Two weeks	189.76+/-37.02
Four Weeks	186.41+/-36.84

Table 3: Statistical comparison of weight changes throughout the study.

Comparison	t-statistic	*p*-value	95% CI for mean
Baseline to Two	0.815	0.4183	184.01 to 203.41
Two to Four	0.701	0.4861	180.20 to 199.32

consequences of following a specific dietary program [3] and the necessary reductions in caloric content required for weight loss.

Given the additional caloric intake included with the daily consumption of an additional 385 to 402.4 kCal (393.7 kCal average) of the 3.75 packages-ranging from 110 to 115 kCal per package – eaten on average, the women would need to produce an additional deficit of 612.5 kCal per day plus approximately 393.7 kCal to compensate for the caloric intake of the soy product. The cost of which is currently $2.99 per package. At the given average of 3.75 packages per day, this would cost each woman $313.95 per month or $43.01 per pound per month.

The questions isn't whether losing weight is an important strategy for reducing risks from inflammatory diseases [4] but the cost of that weight loss and whether women, and men, are being taken advantage of by corporate producers of food.

Conclusion and limitations

The determination of how many packages of the pre-packaged soy product were consumed was based upon the reporting of the participants with an average daily number of 3.75 servings per person. Rather than question the integrity of those participating, we are left with the numbers provided to us for analysis. Additionally we cannot fully question the motives of the food producer involved in this study – although we must also question the amount of altruism present. Given the massive amount of money being spent on weight loss and the continued problem associated with increasing levels of individuals both over weight and morbidly obese, one cannot help but question the association between the food industry's involvement in the obesity epidemic and the actual epidemic itself. The results obtained were the expected equivalent of anyone merely cutting back on the number of calories consumed each day by 350-500 kCal per day. Based upon this outcome, it is hard to justify spending money on any replacement product to lose weight, when the same result can be obtained by merely reducing caloric intake. The limitations of the study design were the result of the limitations placed on the study by the product manufacturer.

Acknowledgment

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Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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