Self-monitoring behaviours for greater weight loss

A secondary analysis of data from the CSIRO Total Wellbeing Diet online program

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Introduction

In September 2020, enhancements were introduced to the CSIRO Total Wellbeing Diet online program based on the findings of secondary analysis exploring the characteristics associated with greater weight loss success in a large cohort of members. The platform usage characteristics that were associated with greater weight loss in members according to that analysis included:

- Recording their weight at least once per week every week in their first 12 weeks;
- Using the menu plans and diary features around 1-2 times per day;
- Using the food search once per week and doing this regularly throughout the program.

These findings informed the development of a feature within the Total Wellbeing Diet known as the Start Strong Guide – a task-oriented manual to support members to focus on these key behaviours.

The following report is a secondary analysis of members' compliance with the Start Strong Guide and evaluates the associations between compliance and weight loss.

Sample and Methods

Since the introduction of the Start Strong Guide in September 2020, almost 24,000 people have been exposed to the Guide within the CSIRO Total Wellbeing Diet website (Table 1). These findings are from an analysis of 10,725 members who joined since the introduction of the Start Strong Guide and who have completed the 12-week weight loss program (referred to as "Stayers").

Table 1. Demographic characteristics of members of the CSIRO Total Wellbeing Diet who have had access to the Start Strong Guide since September 2020.

		Stayer (n=10725)		Starter (n=13267)		Total (n=23992)	
Gender	Female	8743	81.5%	10901	82.2%	19644	81.9%
	Male	1982	18.5%	2366	17.8%	4348	18.1%
Age group	18-30 years	684	6.4%	1117	8.4%	1801	7.5%
	31-50 years	4563	42.5%	6447	48.6%	11010	45.9%
	51-70 years	5067	47.2%	5326	40.1%	10393	43.3%
	71 years+	409	3.8%	369	2.8%	778	3.2%
	invalid or missing	2	0.0%	8	0.1%	10	0.0%
SEIFA	First quintile	964	9.0%	1253	9.4%	2217	9.2%
	second quintile	1469	13.7%	1919	14.5%	3388	14.1%
	middle quintile	1945	18.1%	2483	18.7%	4428	18.5%
	Forth quintile	2420	22.6%	2853	21.5%	5273	22.0%
	Fifth quintile	3841	35.8%	4648	35.0%	8489	35.4%
	missing/unknown	86	0.8%	111	0.8%	197	0.8%
Weight status	Underweight	0	0.0%	0	0.0%	0	0.0%
	Normal weight	469	4.4%	691	5.2%	1160	4.8%
	Overweight	3656	34.1%	4235	31.9%	7891	32.9%
	Obese	6600	61.5%	8341	62.9%	14941	62.3%
	missing or invalid	0	0.0%	0	0.0%	0	0.0%

This analysis focused on members' compliance with tasks outlined in the Start Strong Guide. The Guide recommends members complete tasks with varying frequency each week of the program. Examples of these tasks include weighing in, viewing the menu plans, and tracking food intake in the tracker. The Guide may recommend, for example, that members weigh themselves once and track their food intake on 3 days during week 2 of the program.

Compliance with the tasks outlined in the Guide were divided into three levels of compliance. Low compliance was defined as compliance with less than half (50%) of the tasks assigned for the week. A medium level of compliance was defined as a compliance with 50% to less than 75% of tasks assigned for the week, and a high level of compliance was defined as compliance with 75% or more of the tasks assigned for the week.

From here, an overall compliance score was also calculated across the three main tasks of weighing in, viewing the menu plans, and using the food tracker. Using this overall compliance score, three groups of overall compliance were created from the lowest level of compliance through to the highest level of compliance. Weight loss in groups of members with different levels of compliance with the Start Strong Guide was analysed.

Results

What pattern of compliance in the Start Strong Guide was associated with greater weight loss?

Regular weighing appeared to be important for weight loss with an overall medium to high level of compliance with the weigh in recommendations of the Guide associated with greater weight loss than a low level of compliance (6.4-6.9% vs 4.4% of body weight lost).

Compliance with the recommendation to view the menu plans regularly was associated with greater weight loss, with a stepwise increase in weight loss observed with increased compliance. High compliance with the food tracker recommendations in the Guide appeared to be important for greater weight loss. Members who were most complaint with the food tracker recommendations lost 7.7% of their body weight compared to 5.0% and 5.7% for those in the lowest and medium groups of compliance (Figure 1 and Table 2).
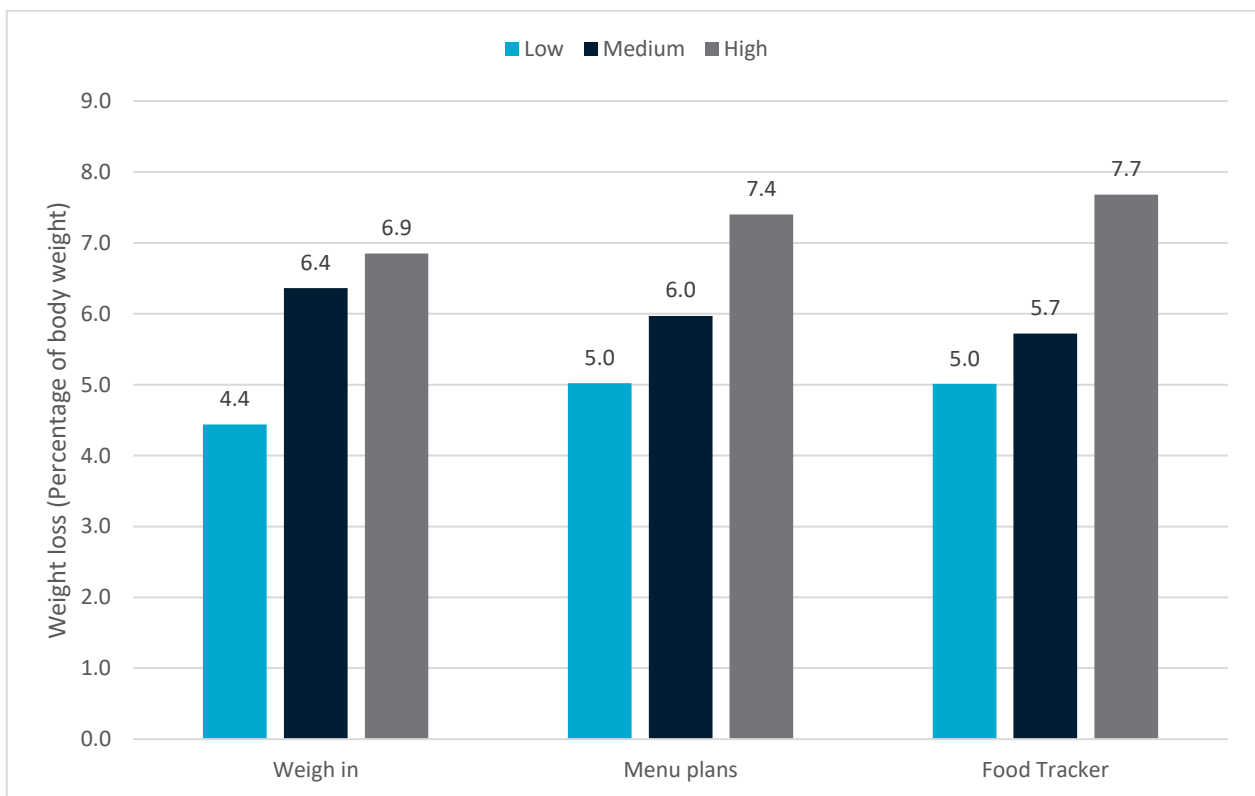

Figure 1 Percentage of body weight lost by level of compliance with the Start Strong Guide.

Table 2 Weight loss in kilograms and percentage of body weight lost by level of compliance with the Start Strong Guide.

		Weight loss (kg)	Weight loss (Pct body weight)
Weigh in	Low	4.1	4.4
	Medium	5.8	6.4
	High	6.3	6.9
Menu plans	Low	4.6	5.0
	Medium	5.5	6.0
	High	6.8	7.4
Food Tracker	Low	4.6	5.0
	Medium	5.2	5.7
	High	7.1	7.7

Was overall compliance with the Start Strong Guide associated with greater weight loss?

A combination sequence was constructed to represent the level of compliance with the menu plan, food tracker and weigh in tasks.

Position in sequence	Value
Position 1 = Menu Plan	1= Lowest compliance overall (Less than 50%)
Position 2 = Food Tracker	2= Medium compliance (50% to less than 75%)
Position 3 = Weigh in	3=Highest compliance (75% or more)

Members who were highly compliant with all three aspects of the Guide (the menu plan, food tracker and weigh in) recommendations lost most weight. On average, these members lost 8.1% of their starting body weight. This was equivalent to nearly 4.5kg more weight lost than members who had lowest compliance for all 3 aspects.

Members who were highly compliant with two out of three of these aspects of the Guide (and one being the food tracker), and had medium compliance with the third aspect, lost about 7.5% of their starting body weight.

Table 3 Weight loss by overall compliance with the menu plan, food tracker and weigh in recommendations of the Start Strong Guide.

Compliance Combination	Count	Weight loss (Pct body weight)	Weight loss (kg)
333	1791	8.11	7.52
233	676	7.53	6.93
332	232	7.53	6.76
133	361	7.26	6.72
232	141	7.26	6.56
313	242	7.25	6.69
323	629	6.87	6.21
312	75	6.87	6.36
132	107	6.80	6.39
131	65	6.74	6.33
331	127	6.60	5.95
322	154	6.46	5.67
213	527	6.20	5.71
212	192	6.19	5.70
231	83	6.17	5.60
122	160	6.01	5.41
222	225	5.93	5.31
311	120	5.83	5.13
223	766	5.80	5.44
123	459	5.72	5.22
321	243	5.58	5.08
112	301	5.29	5.01
113	823	5.23	4.84
221	438	4.67	4.25
121	368	4.41	4.10
211	456	4.38	4.02
111	964	3.34	3.09

Summary

Three key behaviours have been identified as having the biggest impact in terms of weight loss. This analysis of nearly 11,000 CSIRO Total Wellbeing Diet members revealed that members who were most compliant with recommendations to regularly weigh in, follow the menu plan and track their food intake achieved a weight loss of 8.1 per cent in 12 weeks, compared to 3.3 per cent for those who engaged in these behaviours the least over the same period. This equated to 4.5kg more than those members who were least compliant.

These findings will be used to inform a digital weight loss coach and provide greater support for members of Total Wellbeing Diet in achieving their weight loss goals.