![CSIRO logo]

Personalisation of meal planning within the CSIRO Total Wellbeing Diet

January 2026

Citation

Hendrie GA and Baird DL (2026) Personalisation of meal planning within the CSIRO Total Wellbeing Diet. CSIRO, Australia.

Copyright

Important disclaimer

CSIRO is committed to providing web accessible content wherever possible. If you are having difficulties with accessing this document please contact csiro.au/contact.

Acknowledgement of Country

CSIRO acknowledges the Traditional Owners of the lands, seas and waters, of the area that we live and work on across Australia and pays its respects to Elders past and present. CSIRO recognises that Aboriginal and Torres Strait Islander peoples have made, and will continue to make, extraordinary contributions to Australian life including in cultural, economic, and scientific domains.

Contents

1   Introduction

AI is expanding opportunities to personalise the provision of nutrition advice and improve health outcomes

Artificial Intelligence (AI) and other precision medicine technologies are providing new ways to personalise treatment of chronic disease and manage risk factors like obesity. These technologies are powered by the growing amounts of data in healthcare, giving rise to platforms that can provide more individualised approaches to preventive care[1].

Given the persistent high rates of obesity and the complexity of factors associated with weight gain and related behaviours, it is increasingly acknowledged that a comprehensive, scientific, and more personalised approach is needed. Technology-supported programs can facilitate an enhanced level of personalisation, with individualised planning, feedback, and monitoring all commonly provided within digital platforms.

Personalisation in nutrition has emerged as an approach to optimise individual health outcomes through more targeted and tailored dietary recommendations[2]. Personalised approaches can be more engaging. Personalisation can also help individuals to choose foods and diets that meet their aspirations[3], for example consider their health goals, food preferences, likes and dislikes.

A large randomised controlled trial across seven European countries found that personalising dietary advice resulted in greater improvements in diet in the medium term (6 months), but the degree of personalisation doesn't need to be too sophisticated. Personalisation based on individual preferences for foods and meals, and support features, resulted in similar improvements in diet as more complex personalisation based on phenotype and genotype information[4]. Delivering this kind of personalisation using a digital approach also makes it more feasible to deliver tailored advice at scale, which in turn has potential to improve public health[3].

There is a need for more research to understand the effectiveness of personalised nutrition advice on longer term health outcomes. However, we know consumers now expect a level of personalised advice. Personalisation helps to keep people more engaged in a program, and greater engagement and adherence is associated with improved outcomes.

Using AI to provide CSIRO Total Wellbeing Diet members with a more personalised experience presents an opportunity to enhance their weight loss journey and improve outcomes, at a scale that has population impact. The aim of this research was to examine the use of meal plans within the CSIRO Total Wellbeing Diet platform and the association between meal plan usage and weight loss; and through a survey understand members' perceptions about the current meal planning tool. The findings of this research were used to inform a new product feature using AI to provide more personalised meal plans within the CSIRO Total Wellbeing Diet.

2   Meal plans and weight loss

An analysis of almost 78,000 members (n=77,691) of the CSIRO Total Wellbeing Diet (TWD) was conducted to examine the relationship between usage of the meal plan feature of the TWD platform and weight loss success.

- Meal plan usage within the first 12 weeks of the program was examined in three categories: Those who used the meals plans but viewed them less than once per day (Lowest usage); those who viewed the meal plans once per day through to less than 3 times per day; and those who viewed the meals plans 3 times per day or more (Highest usage).

- Weight loss increased incrementally with meal plan usage. Those with the lowest meal plan usage lost 5.2kg after 12 weeks compared to 6.4kg for those who viewed the meal plans most. This equated to 24% greater weight loss for those who viewed the meal plans at least 3 times per day compared to those who viewed the meal plans less than once per day.

- Using meal plans more frequently early on in membership, was also important for longer term weight loss. For the group of members who viewed the meal plans at least 3 times per day, the average weight loss was 6.4kg after 12 weeks, 7.4kg at 6 months and 6.9kg at 1 year. Weight loss at 1 year was 48% greater for members who viewed the meal plans at least 3 times per day compared to those who viewed the meal plans less than once per day (6.9kg vs 4.7kg).

Table 1. Weight loss of CSIRO Total Wellbeing Diet members by meal plan usage

	Meal plan usage*		
	< 1per day	1/day to <3/day	3/day+
Number of people	31665	21152	24874
% of sample	37.7%	25.2%	29.6%
Mean meal plan usage:			
Total usage in the first 12 weeks	34.7	169.4	714.3
Weekly average	2.7	13.0	54.9
Daily average	0.4	1.9	7.8
Weight lost at week 12/13 (n=68,606)	5.2	5.7	6.4
Weight lost at week 26 (n=47,359)	5.4	6.2	7.4
Weight lost at week 39 (n=24,148)	5.4	6.2	7.5
Weight lost at week 52 (n=17,207)	4.7	5.6	6.9

*Average usage for the first 13 weeks on program

3 Meal plans in the CSIRO Total Wellbeing Diet

An online survey of 1,303 current or past CSIRO Total Wellbeing Diet members asked a range of questions about the meal plans within the program. Among the survey respondents, 85% reported to use the meal plans.

- Usage of meal plans was higher in those who reported to have lost more weight and achieved their weight loss goal; and conversely lower in those who lost less weight and did not achieve their goal. 90% of those who achieved their weight loss goal used the meal plan compared to 76% of those who did not achieve their goal.

- Of those members using the meal plans, 84% felt confident swapping recipes to customise their meal plans, 83% agreed the meal plans taught them how to construct a healthy diet, 81% agreed the meal plans were easy to follow and 70% liked the recipes in the meals plans.

- Members who lost more weight and achieved their weight loss goal, were more likely to agree that the meal plans helped with planning ahead and being organised, and that the meal plans were important to their success. Nine out of ten members (89%) who lost more than 10kg felt being provided with meal plan was important in their weight loss success.

- While most members appeared to use and like the current meal plans, the survey results also indicated there was a need for increased personalisation in the current meal plans functionality. For example, only 57% of members using the meal plans felt that they were tailored to their likes/dislikes, 59% thought they were tailored to their eating style, and only 47% felt they were tailored to their health condition.

- However, the potential value in greater personalisation was not clear for members. About half the members (46%) agreed they would have followed the meal plan for longer if it were more personalised to them, and about one-third (36%) felt they would have been more successful if the meal plans were more personalised. Interestingly though, members who lost less weight felt greater personalisation in the meal plans would have been helpful. For example, 72% of those who had not lost weight felt they would have been more successful if the meal plans were more personalised (compared to 19% of those who lost 15kg or more). 60% of members who did not achieve their weight loss goal felt they would have been more successful if the meal plans were more personalised (compared to 21% of those who did achieve their goal or got close to it).

The survey also asked members what would make the meal plans feel more personalised or tailored. The most common responses were categorised into themes, and the following were most common:

- Desire for vegetarian or plant-forward options in the meal plans,
- Ability to remove foods they don't like or cannot eat due to allergies,
- Increased variety of meals and having more seasonal influences,
- Interest in simple, budget-friendly meals,
- More options when cooking for the whole family to accommodate fussy eaters or partners,
- Enhanced customisation tools to make swapping, filtering and planning meals easier.

Table 2. Survey responses about meal plans from CSIRO Total Wellbeing Diet members

| | Did you use the meal plan? % Yes | Percent (%) responding as Agree (4 out of 5) or Strongly agree (5 out of 5) for… | | | | | | | | | | |
| | | Current meal plans … | | | | | | Tailoring of meal plans … | | | | |
		… was important in my weight loss success	… helped me plan ahead and get organised	… I felt confident swapping recipes to customise my meal plan	… taught me how to construct a healthy diet	… I liked the recipes in the meal plan	… was easy to follow	… was tailored to my likes/ dislikes	… was tailored to my preferred eating style	… was tailored to my health condition	… I would have followed the meal plan for longer if it was more personalised	…I would have been more successful if the meal plan was more personalised
Total	**85**	**85**	**85**	**84**	**83**	**71**	**81**	**57**	**59**	**47**	**46**	**36**
Gender												
Female	86	86	85	84	83	70	81	57	59	46	47	37
Male	83	83	88	83	85	77	83	59	62	49	41	35
Age group												
18–30 years	100	100	67	67	67	100	100	33	67	33	33	33
31–50 years	86	86	87	84	78	68	80	50	48	35	55	49
51–70 years	86	86	85	85	84	73	82	59	61	47	47	36
71 years and over	82	82	83	79	84	66	79	58	59	52	40	31
Weight status												
Normal weight	92	92	92	91	91	78	90	67	69	49	41	27
Overweight	86	86	85	85	86	73	85	60	61	46	44	35

Pre-clinically obese	85	85	84	80	81	67	80	53	52	43	49	49
Clinically obese	83	83	82	80	78	65	74	52	56	48	50	40
Weight loss												
I haven't lost weight	79	79	63	65	61	48	50	33	39	22	65	72
Less than 5 kg	83	83	80	77	76	62	76	47	50	40	50	46
5–10 kg	88	88	87	89	87	75	84	62	63	50	44	33
11–15 kg	84	84	92	85	89	80	85	64	66	49	42	27
More than 15kg	89	89	93	91	94	76	90	71	73	60	40	19
Weight loss goal achievement												
Yes, I achieved my goal or got close to it	90	90	92	91	93	82	90	74	76	57	33	21
No, but I got part of the way to achieving my goal	86	86	88	85	86	73	84	56	59	49	48	37
No, I didn't achieve my goal	76	76	65	66	59	45	55	33	34	22	63	60

4   Summary of findings

- Personalisation in meal planning, supported by AI and digital platforms, is increasingly recognised as essential for supporting weight loss and improving health outcomes.

- Higher engagement with meal plans was associated with greater weight loss success for CSIRO Total Wellbeing Diet members. Members who viewed meal plans more frequently (3 times per day or more) lost 24% more weight over 12 weeks, and 48% more weight over 12 months.

- Most members valued and used the current meal plans, but the survey results suggested a need for increased personalisation. Many members felt that the meal plans could be better tailored to their preferences, eating styles, and health conditions.

- Greater personalisation may help improve adherence and outcomes, especially for those who have struggled to lose weight previously. Member suggestions from this survey included more vegetarian options within the meal plans, the ability to exclude disliked or allergenic foods, increased variety, budget-friendly meals, and enhanced customisation tools.

- Taken together, there is evidence to support further development of personalised meal planning features within the CSIRO Tota Wellbeing Diet to maximise user engagement and weight loss for members.

References

[1] Naughtin C, Evans D, Packer K, Schleiger E, Burns S, Niven P and Hansen D (2024) Beyond tomorrow: Health megatrends anticipated to impact NSW and the healthcare workforce to 2040. CSIRO, Australia. Beyond tomorrow: Health megatrends anticipated to impact NSW and the healthcare workforce to 2040

[2] Brankovic A and Hendrie GA (2025). Perspectives, challenges and future of artificial intelligence in personalised nutrition research. Proceedings of the Nutrition Society. Perspectives, challenges and future of artificial intelligence in personalised nutrition research - PubMed

[3] Mathers JC (2019). Paving the way to better population health through personalised nutrition. EFSA Journal. Paving the way to better population health through personalised nutrition

[4] Celis-Morales, Livingstone, Marsaux et al (2017). Effect of personalized nutrition on health-related behaviour change: evidence from the Food4Me European randomized controlled trial. International Journal of Epidemiology. Effect of personalized nutrition on health-related behaviour change: evidence from the Food4Me European randomized controlled trial - PubMed

As Australia's national science agency, CSIRO is solving the greatest challenges through innovative science and technology.

CSIRO. Creating a better future for everyone.

Contact us

1300 363 400
+61 3 9545 2176
csiro.au/contact
csiro.au