

Full title:

Identifying preferred features of weight loss programmes for adults with, or at risk of, type 2 diabetes: a discrete choice experiment with 3,960 adults in the UK

Running title:

Preferred features of weight loss programmes

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Twitter summary:

Tailoring programmes to individual preferences could increase participation by around 17 percentage points from (25% to 42%).

Key words:

Weight loss programmes; overweight and obesity; type 2 diabetes; discrete choice experiment; overweight and obesity co-creation

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Tables: 1

Figures: 2

Abstract

Objective: To understand preferences for features of weight loss programmes among adults with, or at risk of, type 2 diabetes in the UK.

Research Design and Methods: A discrete choice experiment with 3,960 UK adults living with overweight, (675 with type 2 diabetes). Preferences for seven characteristics of weight loss programmes were analysed. Simulations from choice models using the experimental data predicted uptake of available weight loss programmes. Patient groups comprising those who have experience with weight loss programmes, including from minority communities, informed the experimental design.

Results: Preferences did not differ between people with or without type 2 diabetes. Preferences were strongest for the type of diet. Healthy eating was most preferred relative to total diet replacement (TDR) (OR=2.24, 95%CI: 2.04-2.44). Individual interventions were more popular than groups (OR=1.40, 95%CI: 1.34-1.47). People preferred programmes offering weight loss of 10-15 kg (OR=1.37, 95%CI: 1.28-1.47) compared with 2-5kg. Online content was preferred over in-person contacts (OR=1.24, 95%CI: 1.18-1.30). There were few differences in preferences by gender and ethnicity though weight loss was more important for women than for men, and individuals from ethnic minority populations identified more with programmes where others shared their characteristics. Modelling suggested that tailoring programmes to individual preferences could increase participation by around 17 percentage points (68% in relative terms).

Conclusions: Offering a range of weight loss programmes targeting the preferred attributes of different patient groups could potentially encourage more people to participate in weight loss programmes and support people living with overweight to reduce their weight.

Highlights:

- Why did we undertake this study?
- Weight loss programmes are recommended to improve outcomes in type 2 diabetes but require patient commitment
- What is the specific question(s) we wanted to answer?
- Preferences for weight loss programmes are key for guiding patients to weight loss programmes that are most likely work for them, so what are they?
- What did we find?
- Important features of weight loss programmes were the style of diet, individual (versus group), amount of weight loss, and online delivery (versus in-person).
- Weight loss was more important for women than for men
- Individuals from ethnic minority populations identified more with programmes where others shared their characteristics
- What are the implications of our findings?
- Tailoring programmes to individual preferences could increase participation by 17 percentage points (from 25% to 42%).

Weight loss improves multiple cardiometabolic risks. Evidence demonstrates that the likelihood of remission from type 2 diabetes is linearly related to weight loss. One effective intervention, being implemented by NHS England, is a total diet replacement (TDR) programme with specially prepared, nutritionally complete products replacing all meals (1). Although TDR programmes are known to be effective, about 75% of people decline an invitation to participate in these programmes (1). Thus, there is a need to identify alternative weight loss programmes for people with type 2 diabetes and living with overweight or obesity, yet are unwilling to try a TDR programme. Understanding which features of weight loss programmes appeal and how preferences vary across individuals' characteristics could help healthcare systems to provide more suitable and effective weight loss programmes for diverse patient groups.

There are no systematic reviews of quantitative preference studies for weight loss programmes. In three small studies, adults living with overweight and obesity variously expressed a preference for weight loss programmes that had: diets and exercise rather than diets only; less exercise; maximal weight loss; more clinician involvement; personal rather than group-based interaction; tailored versus generic support; lower travel times; and were cheaper (2-4,21,25). A study of 55 people with metabolic syndrome found that participants initially preferred flexible diets over restricted meal programs and group-based exercise programs over individual ones. However, over the course of 16 weeks, the cost of the program dominated their preferences (5). Crane et al. (6) enrolled 221 men (77% non-Hispanic) of low socioeconomic status. Participants preferred online over in-person weight loss interventions, small rather than large dietary changes, and weight loss interventions without competition over those with. However, none of these studies included more than 4 options for weight loss programme characteristics, which does not represent the wide variety of weight loss programmes available.

The aim of this study was to measure preferences for different features of weight loss programmes, representative of the wide variety of weight loss currently available, using a large, representative sample of UK adults living with overweight or obesity, including a specific subgroup with type 2 diabetes. We used a discrete choice experiment (DCE) to identify preferences; a method shown to have good predictive ability for corresponding real world behaviours (7).

Research Design and Methods

Sampling

Participants were recruited by Qualtrics using email lists that individuals signed up to, and were paid for participating. We included UK adults (18 years or older) with a reported body mass index (BMI) of 25 kg/m² or more. Quotas (age, gender, and region) based on the UK census, were used to increase the representativeness. We also collected participants with type 2 diabetes, but without quotas because these participants are harder to find.

Discrete choice experiment (DCE)

A DCE is a technique used widely in health to understand people's preferences by asking them to make specific choices. Here, participants were presented with a choice of two weight loss programmes. Each programme was defined by a set of attributes, such as the type of diet and the amount of weight lost, and the variation in each attributes is referred to as a level. By making a series of choices between a weight loss programme with one set of attributes and levels and the other with alternative attributes and levels, participants implicitly reveal the degree to which each attribute is important to them and the value they place on each level of the attribute.

This DCE was designed according to health-based principles, ranging from technicalities such as design efficiency to participant-centred considerations such as checking experimental tasks were as clear as possible to participants (8-10). Individuals made 10 choices between two alternative weight loss programmes and an opt-out, “neither of these”. The alternatives were described by attributes and levels (below) representing different characteristics of weight loss programmes. A questionnaire collected sociodemographic information.

Attributes and levels

Seven attributes, described the characteristics of weight management programmes in the choice tasks, summarised in Table 1. The full descriptions, as presented to respondents, are shown in supplement 1.

Attributes and levels were based on several sources of evidence: a rapid review of current weight loss programmes available in the UK; one-to-one interviews with eight people with experience of weight loss programmes (hereafter referred to as our public advisory group, PAG); collaborative working with a general public member of the research team to represent their views; and consulting subject matter experts: researchers, clinicians, commissioners, and providers of weight loss programmes to the NHS. Our public advisory group members were recruited from the general public, including individuals from traditionally underserved populations including ethnic minority populations and people of low socioeconomic status (11). A focus group with 10 members of the public with relevant experience helped to maximise understanding of the experiment by discussing drafts and refining the descriptions of the attributes. For example, the TDR type of diet was expressed as “all meal replacement products” as this was clearer to focus group participants.

A Bayesian D-efficient design generated the set of choice tasks (10). Priors were obtained from a pilot study of 51 individuals. Individuals were randomized to four blocks of 10 choice tasks. Each individual answered 10 choice tasks, balancing concerns of learning and respondent fatigue (12). Our sample size was sufficient to ensure statistical power based on the pilot parameter estimates (13). An example of a choice task is presented in Supplement 2. To make the choice tasks more realistic, restrictions were imposed on the design to prevent the appearance of implausible combinations of attributes. For example, the “printed information only” level of the attribute “way of taking part” was not allowed to be in the choice if the “size of support session” attribute was “group-based”. This is because it is not possible to deliver only printed information in a group support setting and so having this combination appear in the choice tasks would have been implausible. The full set is listed in Supplement 3.

Randomisation to weight loss information

During our formative public engagement few people knew that diabetes could be put into remission nor the magnitude of weight loss required to achieve this. In response, we randomised respondents to one of two arms prior to the DCE, using the experiment-within-experiment approach (29). In one arm, the respondents were exposed to a prime explaining that in people with type 2 diabetes, a weight loss of 10kg or more (on average), improves chances of achieving normal glucose control without medications. In the other arm, no information was given. This allowed testing of whether preferences for weight loss programmes are affected by knowing the importance of marked weight loss for diabetes remission.

Data quality

Respondents were given narrative and visual information describing the alternatives, attributes, and levels. A practice choice scenario prior to the experiment helped respondents understand the experiment. All information was framed to increase understanding, drawing on qualitative work and public input. We used a pilot study and asked respondents to report misunderstandings and/or difficulties and adjusted questions if needed. None of the respondents reported difficulties in

understanding and none reported any discomfort in taking the survey. “Forced responses” prevented respondents from skipping past questions in the survey; an attention check was embedded part way through the survey; and a minimum time threshold of 2 minutes, based on pilot data, removed respondents who rushed through. Questions on relative attribute importance assessed the consistency with the model estimates. Duplicate survey responses were rejected. Supplement 4 summarises.

Statistical analyses

Main analyses were pre-registered prior to collection of the data (14); full details in Supplement 5.

Multinomial logit models were used to analyse the experimental choices. Alternative-specific constants and dummy-coded attribute levels were independent variables. A joint coefficient on both weight loss programme alternatives was specified relative to the “neither of these” option yielded a measure of “any weight loss programme” versus “no weight loss programme”. A nesting structure allowed for correlation between the weight loss programmes, the implication being that individuals first chose between “any weight loss programme” versus “no weight loss programme”, and then between weight loss programmes conditional on choosing the “any weight loss programme” option. Attribute levels were treated as normal distributions to allow for preference heterogeneity. We therefore estimated mixed nested logit models. Statistical significance was examined with t-ratios (i.e. two-tailed t-tests).

Simulating choice probabilities of weight loss programmes

The dependent variable in regression models was the selection of, “weight loss plan 1”, “weight loss plan 2”, or “neither of these”. After estimation, we used the fitted model to predict (simulate) choice probabilities for each of these outcomes. That is, for each observation in the data, the model predicted a probability for all three outcomes, the sum of which is 1 (i.e. each individual has to choose something). The probability was calculated from the specific attribute values in a given choice task and the estimated parameter for each attribute. By summing the probability for “weight loss plan 1” and “weight loss plan 2”, the probability of “any weight loss plan” was derived. Then, for each observation we recovered the probability of “any weight loss plan” and “neither of these” (or equivalently “not to have a weight loss plan”).

Based on the estimated parameters, we simulated choices for any combination of attributes by setting the attribute values in the data and applying these to the model. In this way, we predicted probabilities of choosing weight loss programmes based on people’s preferences of five different weight loss plans: four of which were commonly used in the UK; and a “most popular” weight loss programme possible with the attributes and levels used in the experiment, regardless of its availability in practice. Supplement 6 shows the attributes and levels. Simulations used sample enumeration (15) with 95% Krinsky-Robb confidence intervals (16).

A known issue with stated responses in DCEs is hypothetical bias, where individuals’ stated behaviours do not match those observed in the real world (18). In our experiment, individuals may have focussed more on choosing between weight loss programmes rather than the choice to attend a programme or not. Accordingly, the model may predict much higher engagement in a programme than would be seen in the real world. To mitigate this we used data from a clinical trial to set base predictions to a level that was observed in real world behaviour, a procedure known as model calibration (19); details are in Supplement 5.

Analyses were conducted in R. Regressions used the *Apollo* package (17). Code scripts are available on request. Ethical approval was granted from OxTREC ethics committee at Oxford, REF: R81951/RE001.

Results

Our sample comprised 3,960 individuals, including 675 (21%) with type 2 diabetes. See Supplement 7 for participant characteristics. The average age was 46 (similar for people with and without diabetes). Around 20% of participants were from ethnic minority populations (in line with the UK population). There were more men than women with type 2 diabetes, reflecting the population with type 2 diabetes. 44% had a degree, similar to the proportion in UK, 47% (20). Region of residence was balanced across respondents with and without diabetes. Participants with type 2 diabetes had a higher mean BMI than those without (mean BMI=32.1, s.d.=5.9 vs. mean BMI=30.2, s.d.=5.0). Most participants (59%) had at least one long term health condition. Around 16% smoked. Two percent reported having had bariatric surgery. Sixty-three percent were currently working.

Comparison of preferences in people with and without type 2 diabetes and bariatric surgery

None of the interactions between the attributes and diabetes status were statistically significant (Supplement 8). No interactions were significant for those that had received bariatric surgery. We therefore used the pooled sample for all analyses.

Behavioural priming

There was no evidence that randomising participants to information about the amount of weight loss necessary to achieve remission from diabetes influenced the outcome (Supplements 13 and 14). This was also the case among participants with diabetes. The pooled sample was used in all analyses.

Preferences for weight loss programmes' attributes

Figure 1 presents the odds ratios (ORs) for weight loss programme choice for each of the attributes (Supplement 9 for model estimates). These reflect the sample level preferences for the attributes. These are means of estimated normal distributions of preferences. The full distributions for each attribute level are presented in Supplement 10.

Participants expressed strongest preferences for the type of the diet. Total diet replacement diets were, all else being equal, the least popular choice, with healthy eating the most preferred relative to TDR (odds ratio (OR)=2.24, 95%CI: 2.04-2.44). Other types of diet were preferred to TDR, but to a lesser extent: calorie counting (OR=1.74, 95%CI: 1.61-1.88), food group based (OR=1.64, 95%CI: 1.52-1.77), intermittent fasting (OR=1.47, 95%CI: 1.36-1.58), and some meal replacement (OR=1.42, 95%CI: 1.31-1.53). People preferred relatively shorter (1-3 months (OR=1.14, 95%CI: 1.08-1.20) or 3-6 months (OR=1.20, 95%CI: 1.11-1.28)) programmes to those lasting longer than 12 months, but these preferences were weakly held (i.e. lower odds ratios compared to other features). The only preference for frequency of contact was that weekly contact was preferred to monthly (OR=1.09, 95%CI: 1.03-1.16). Participants strongly preferred weight loss programmes that led to substantial weight losses (10-15kg) (OR for 10-15kg compared to 2-4kg=1.37, 95%CI: 1.28-1.47); programmes offering slightly greater or lesser weight losses than this were still preferred to those offering only small weight losses (5 to 9kg (OR=1.18, 95%CI: 1.12-1.24) and more than 15kg (OR=1.20, 95%CI: 1.13-1.26)). Participants preferred programmes that enrolled "people like me" to those that did not; or in the case that there was only an instructor, that the instructor was, "like me" (OR=1.07, 95%CI: 1.04-1.11). Participants preferred one-to-one support to treatment in a group setting (OR=1.40, 95%CI: 1.34-1.47). Talking in-person was less popular than talking online (OR=1.08, 95%CI: 1.03-1.13) or online content (OR=1.24, 95%CI: 1.18-1.30), which was the most popular option; participants were indifferent between talking in-person and simply receiving printed content (OR=1.02, 95%CI: 0.89-1.13).

Preferences for weight loss programmes' attributes: individual characteristics

We tested pre-specified interactions of gender, ethnicity, and BMI with the attributes, presented in full in Supplement 11. There was evidence of two interactions only. First, women preferred greater weight loss more strongly than men. Second, people in an ethnic minority preferred group formats with people of the same background more strongly than White respondents. In a post hoc analysis, we found that higher weight loss was more strongly preferred by people with BMI \geq 40.

Figure 2 presents simulated choice probabilities for five weight loss programmes (calibrated using UK-based clinical trial of TDR (1) and our clinicians' guidance; for results see supplement 5). One of these was designed to represent the theoretically most popular programme based on the attributes and levels in the experiment. This featured online content, individual support, with 'an instructor like me', 10 to 15kg weight lost, weekly sessions, over a 3 to 6 month plan, and healthy eating. The simulated likelihood of participation was 0.42; 95%CI 0.39-0.44. If offered to participants, 42% of the choices would be this programme, and 58% of choices would be not to participate. The simulated likelihood of participation in the least popular of the four currently available programmes, group-based community weight management programmes, was 0.22; 95%CI 0.21-0.24. Other currently available weight loss programmes were between these two limits; participating in a TDR (all meals replaced by formula liquid products) (0.25; 95%CI 0.23-0.27), online 1:1 support for a "real food" weight loss diet (0.31; 95%CI 0.29-0.33) and online healthy eating information with low weight loss (0.33; 95%CI 0.31-0.35).

Sensitivity analyses

Mixed nested logit models were preferred to simpler nested logit models on the basis of improvements in model fit (Vuong test for non-nested models) and allowing for heterogeneity in respondents' preferences, mitigating the risk of parameter bias.

Including over-sampled (by the survey firm on some quotas) participants did not change the results (Supplement 12). Survey questions on relative attribute importance corroborated findings from the choice models.

Discussion

This study estimated preferences for attributes of weight loss programmes to understand weight loss programme participation in a sample of individuals living with overweight and obesity. The strongest preferences related to the type of diets, with TDR the least favoured amongst a set of six, and healthy eating preferred most over TDR. The amount of weight lost and preferring weight loss programmes alone, rather than in a group, were also important. The TDR programme delivered high weight loss, but in predictions was less preferred to others which did not (e.g. online healthy eating) because the preference for style of diet had more bearing on choices than the amount of weight lost. There was no evidence that these preferences differed by whether people had type 2 diabetes. There was some evidence that women preferred programmes that resulted in greater weight loss than men. Further, individuals from ethnic minority populations were more likely to prefer attending a group programme with other people from the same background. Lastly, we found evidence that those with high BMI preferred programmes that could deliver higher weight loss. There was no evidence that providing information on the need for larger weight loss to put type 2 diabetes into remission changed preferences.

Strengths of this study include an experimental design underpinned by: a scoping review of existing weight loss programmes and the input from a diverse group of people with experience of trying to lose weight and using weight loss programmes, clinicians, and other stakeholders. This ensured that we studied the features of programmes that are representative of weight loss programmes currently available, and described in a way that was understood by members of the public. We also used a large, nationally representative sample. Oversampling people with type 2 diabetes meant we were able to assess whether preferences for weight management differed from the general population in this group

and found no evidence that they did so. We took steps to ensure the quality of the data and a series of sensitivity analyses to verify our findings. We used advanced modelling techniques to yield robust estimates. An experiment-within-experiment design allowed us to test the impact of a behavioural prime.

Limitations include that obesity-related behaviours are potentially subject to misreporting due to social stigma and/or social desirability bias (23). In this setting, it could have manifested in respondents choosing weight loss programmes more often than they otherwise might have. Indeed, discrete choice experiments are vulnerable to hypothetical bias; that is, what respondents report in surveys is not necessarily what they do in real life settings (18). This is potentially a limiting issue insofar as measured preferences may differ from those in reality. Some signals from the analysis help to mitigate these concerns. First, many individuals chose “neither of these” weight loss programmes (around 20% of all choices). Second, in the survey feedback, respondent comments such as, “...I avoided all intermittent fasting ones as I have tried it and hated it...” gave reassurance that the experiment worked as intended. Further, we took steps to mitigate this by designing the experiment based on available weight loss programmes in the real world, engaging users of weight loss programmes in our design processes, and using results from clinical trials to base our predicted choice probabilities on observed behaviours, which made a substantial difference to the predicted participation rates. Whilst using results from a clinical trial to calibrate our model improves the accuracy of our estimates, we note that trials are subject to forms of selection bias, in this case recruitment through primary care, that may mean the participation rate in trials differ systematically from routine practice. Both the estimated preferences and the predicted probabilities should be treated with some caution because they are ultimately hypothetical choices in an online experiment and not behaviour. Moreover, previous research (5) and clinical experience suggests that while many people believe they will not enjoy or have success with particular dietary programmes, notably TDR, this perception frequently changes over time based on direct experience. Therefore, it is important to acknowledge that a hypothetical choice may not necessarily reflect what people choose or have success with in practice. However, it is possible that understanding people’s preferences for weight loss programmes could help to make more programmes available with characteristics that people will identify as the “right diet for them”, and that may in turn promote uptake and adherence (24).

Previous studies, (2-4,6,21,25), found that individuals preferred interventions that: involved diets and exercise rather than diets only; required less exercise; maximised weight loss; had more clinician involvement; were personal rather than group-based; offered tailored versus generic support; were cheaper; minimised the risk of diabetes; and required lower travel times to access. Our results are not directly comparable because we focussed specifically on diet-based interventions and we found that the type of diet was the leading driver of preferences. In two studies (4,21), weight loss was more important than the type of diet (though the diet options were unspecific as “restrictive”, “flexible” and “no diet”). Other studies, e.g. (21), used cost as an attribute which will be important in settings where individuals pay for weight loss programmes, such as in the US.

There are important implications of these findings for the provision of weight loss programmes. Firstly, based on the results of recent trials (1,26) TDR is becoming the mainstay of dietary interventions for diabetes remission, yet was the least popular diet generally, despite the promise of significant weight loss. This finding may help explain the relatively low participation rate observed in the national rollout of this treatment in a pilot programme in the UK, and implies that efforts may be needed to promote this approach. Secondly, the least popular option is a group-based community weight management programme, yet this is one of the most common options offered by local areas for the treatment of obesity or adopted by individuals looking to lose weight. Uptake may be enhanced by offering one of more of the more preferred features e.g. online resources, subject to costs. Indeed, many providers are now incorporating these aspects into their programmes.

The promise of at least 5 kg weight loss is also important, perhaps reflecting a sense of what is worthwhile. This goal may have been reinforced by targets outlined in many clinical guidelines which recommend initial “realistic” targets of around 5% weight loss (27). Whilst evidence suggests that

greater weight loss brings greater clinical benefit and larger weight losses are certainly important, if the goal is diabetes remission, at a population level even small reductions are beneficial (1,28). Nonetheless, the unsurprising desire for substantial weight loss within relatively short periods of time should focus attention on more intensive programmes.

The notion of 'healthy eating' was very attractive to participants. However this was not precisely defined and in practice it may be harder to develop programmes universally perceived as 'healthy'. For example, there is considerable debate about the 'healthy' content of carbohydrate in the diet, especially for people with diabetes. TDR programmes are nutritionally complete, which is hard to achieve in energy-restricted diets based on 'usual' foods, yet their 'ultra-processed' nature may be perceived as unhealthy. Nonetheless, since the desire for a 'healthy diet' in association with the opportunity to lose weight is important, emphasising the nutritional value of any dietary intervention could promote uptake.

This study suggests that the theoretically most preferred weight loss programme for the average participant would be available online, delivered 1:1 to the individual, supporting 10-15kg weight loss, with weekly contact, following a "healthy eating" type of diet, for 3 to 6 months, where the instructor or health coach shares characteristics of the individual. While such a programme is not currently available, so it is at this time hypothetical, our modelling suggests that offering a programme such as this could increase participation by 17 percentage points, or 68% in relative terms, compared to TDR.

In conclusion, we have described patient preferences for attributes of weight loss programmes. It is possible that creating programmes that match these may increase uptake of weight loss programmes and these preferences can be used by commissioners to design pathways to support more people to access weight loss programmes.

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Attribute No.	Attribute	Levels
1	Way of taking part	<i>Talking in person, e.g. at a community centre</i>
		<i>Talking online, e.g. app/zoom</i>
		<i>Online content only</i>
		<i>Printed information only</i>
2	Size of support session	<i>Group-based</i>
		<i>Only me</i>
3	People (or instructor) are like me	<i>Yes</i>
		<i>No</i>
4	Amount of weight lost	<i>2kg to 4kg (4lb to 9 lb)</i>
		<i>5kg to 9kg (11 lb to 1 stone, 6 lb)</i>
		<i>10kg to 15kg (1 stone, 8 lb to 2 stone, 5 lb)</i>

		<i>more than 15kg (2 stone, 5 lb)</i>
5	Visits	<i>One-off</i>
		<i>Twice per week</i>
		<i>Once per week</i>
		<i>Twice per month</i>
		<i>Once per month</i>
6	Length of [weight loss] plan	<i>Less than 1 month</i>
		<i>1 to 3 months</i>
		<i>3 to 6 months</i>
		<i>6 to 12 months</i>
		<i>more than 12 months</i>
7	Type of diet	<i>Calorie counting</i>
		<i>All meal replacement products (TDR)</i>
		<i>Some meal replacement products</i>
		<i>Food-group-based</i>
		<i>Healthy eating</i>
		<i>Intermittent fasting</i>

Table 1: Attributes and levels used in the discrete choice experiment.

[Insert Figure 1 here]

Figure 1: Odds ratios (ORs) of choosing weight loss programmes, by attribute. Point estimates and 95% confidence intervals are shown. For each attribute, the attribute levels are compared to the reference level (i.e. the omitted attribute level), which are shown in parentheses. The reference levels, indicated with an underscore prefix in the figure, are (corresponding attribute): Talking in person (1. Way of taking part), Group-based (2. Size of support session), People are not like me (3. People are like me), Weight Loss of 2 to 4 kg (4. Amount of weight lost), Monthly (5. Frequency of visits), More Than 12 Months (Length of plan), All Meal Replacement (Type of diet).

[Insert Figure 2 here]

Figure 2: Simulated choice probabilities for 5 weight loss programmes. (See the appendix for attribute/level combinations.) Four of these (1-4 above) are currently available, and (5) is a hypothetical weight loss programme that would be the most popular with the attribute levels available. We present the probability of selecting a particular programme compared with choosing to lose weight without attending a programme. The probabilities also represent the population uptake, so that 42% would choose the most popular programme and 58% would not participate. The uptake of the

remaining programmes were 33% online-only healthy eating information resource; 31% 1:1 intensive support with real food; 25% TDR; 22% group-based community.