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Evaluation of a tool for rating popular diet books

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Abstract
Objective The aim of this study was to develop a questionnaire for use by nutrition professionals to enable evaluation of popular diet books.

Design A questionnaire was developed incorporating quantified criteria based on current authoritative nutrition guidelines. Twenty two questions were included, relating to nutritional adequacy, daily energy allowance, recommended rate of weight loss, flexibility and sustainability, physical activity advice, use of supplements, claims, author's credentials, and scientific evidence. The questionnaire was used to rate 35 diets in 20 popular diet books sold in Australia in 2001, in order to test its practicality, validity and sensitivity. A computerised dietary analysis of three days of menus from each book was used to assess the validity of the questions assessing nutritional adequacy.

Main outcome measures Assessment scores of each book and correlation with dietary analyses.

Statistical analysis Spearman rank correlation was used to compare the nutritional adequacy of the diets assessed by the dietary assessment scores from the questionnaire and the numbers of nutrients likely to be provided at <70% RDI or <100% RDI. One way ANOVA was used to compare the mean scores of books written by those with nutrition qualifications, medical qualifications, and others.

Results The scoring of the questionnaire was found to correlate well with the computerised analysis of the diets. Overall scores for the 20 books tested ranged from 32 to 97 out of a possible 100. Only five of the books were found by the assessment criteria to have diets compatible with current dietary and public health guidelines, with scores of over 80. Three diets provided less than 4200 kJ per day, whilst five books advertised weight loss results of greater than 1kg per week and promoted or used ‘fast’ weight loss as a selling point. The majority of books relied on testimonials rather than supporting their results with data published in peer reviewed journals. Books authored by people with nutrition qualifications rated highest.

Conclusion The questionnaire provides a useful standardised method of ranking the nutritional adequacy of popular diets books and evaluating their approach to weight loss, suitable for use by nutrition professionals.

Keywords
weight loss, fad diets, obesity

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Introduction

The incidence of obesity is increasing worldwide (1). In 1999-2000 the AusDiab study estimated that 60% of Australians aged 25 years or more were overweight or obese, with significant increases over the past 20 years (2). Population surveys in Australia suggest that 55-68% of adults have tried to lose weight at some time, 37-47% attempt weight loss annually, and that at any particular time 20-24% will be making an effort to lose weight (3). There is also evidence that many adolescents attempt to lose weight by dieting. One study of Australian adolescents found that 22% reported they were trying to lose weight (4). Dieting is particularly common amongst females and books are one of the most popular sources of weight loss advice (5). The popularity of self-prescribed dieting means that it is important for weight loss diet books to be nutritionally adequate and to provide scientifically accurate information.

A large number of diet books are published each year and books are identified by Australians as one of the most useful sources of nutrition information (6). Some of the diet books are nutritionally sound, and offer advice on safe and effective weight loss, based on scientific evidence of efficacy and safety. Others, however, are questionable and may even be harmful to health. Some books contain a mixture of fact and fiction, whilst others rely on a ‘special’ combination of pills or powders, or have complicated lists of rules and regulations that must be followed. Food faddism refers to any dietary practice based on an exaggerated belief in the effects of nutrition on health and disease (7). There are a number of features often found in popular weight loss books that have been ascribed to fad diets in general (8). They may:

- promote or ban a certain food or food group
- imply that food can change body chemistry
- blame certain hormones for weight control
- recommend supplements or health foods for everyone, or
- promise quick, dramatic or miraculous results.

The best way to lose weight and maintain weight loss is simply to decrease energy intake and increase physical activity (9). Analysis of data from the US National Weight Control Registry, which keeps a record of people who have been successful at maintaining weight loss, shows that the people most likely to diet successfully are those that followed a diet that restricted energy intake, contained less than 30% energy from fat, and included regular physical activity (10). Fad diets that promise
novel dietary approaches for rapid weight loss rarely have any scientific evidence to support long
term use (11).

However, the popularity of fad diets suggests that many people appear to be more concerned with
achieving rapid weight loss than with the nutritional adequacy of the diet or the likely maintenance
of long-term weight control (12). Rapid weight loss followed by rapid weight gain can have adverse
effects on the metabolic rate, making it easier to gain weight in the future (13). At least one study has
suggested that such variations in weight may constitute a health risk (14). In order to be able to
respond appropriately to enquiries from the public, it is important for dietitians and other health
professionals to be able to assess the reliability of popular diets and comment on them
knowledgeably.

A number of reviews of popular diet books have been carried out (15-23). The general consensus has
been that, whilst many can enable people to lose weight initially, some diets are nutritionally
inadequate or recommend strategies which are not supported by current public health guidelines (24, 25).
While several authors have attempted to rate diets and give them a numerical score, they have
not been explicit in the methods used, and there is no comprehensive quantitative system that can be
used to evaluate new popular diet books. Such a tool would assist dietitians and other health
professionals in their role of helping consumers to combat nutrition misinformation (26).

The aim of the present study was to develop a rating system that could be used by health
professionals to evaluate popular diet books. A questionnaire was developed, incorporating
quantified criteria, which was then tested for practicality, validity and sensitivity by evaluating
twenty popular diet books available in Australia in 2001. Although some of the books promoted a
variety of health benefits in addition to weight management, for the purposes of this study only the
weight loss aspects of the diets were considered in the evaluations.
Methods

Part 1: Developing a method to assess the diets

A review of the literature was undertaken to identify methods that have been used by authors who have attempted to evaluate popular diet books in the past (15-24, 27). In addition, statements from the Dietitians Association of Australia (DAA) (28-30), the American Dietetic Association (ADA) (31, 32) and the National Health and Medical Research Council (33, 34) were consulted. From these sources, the following common criteria were identified to consider when assessing fad diets:

- Nutritional adequacy
- Promised rate of weight loss
- Energy content of the diet
- Macronutrient composition of the diet
- Use of special supplements
- Whether the diet can be followed comfortably on a long-term basis
- Physical activity recommendations
- Author’s educational qualifications
- Scientific evidence.

Quantitative targets were then established for each of these factors, incorporating national nutrition guidelines where available, and these were used to develop a set of 22 questions to assess the content of popular diet books.

The questionnaire is set out in full in the Appendix. It was designed to give each book a rating out of 100, divided into various sections as described below.

1. Nutritional Adequacy

This section is allotted 40 out of the total 100 marks. The first five questions, about the number of serves recommended per day from five food groups, are derived from recommendations in the Australian Guide to Healthy Eating (AGHE) for men and women aged 19 to 60 years (35). The next four questions on desirable macronutrient balance are based on authoritative recommendations about
fat (36), carbohydrate (37) protein (25) and alcohol (38). They also reflect recommendations from DAA in relation to macronutrient balance in weight reduction diets (28).

The recommendation on protein (12-25%E) is somewhat tentative. The mean protein intake of Australian adults reported in the 1995 National Nutrition Survey was 17.1%E (39). There is mounting evidence that protein intakes in excess of two to three times the RDI - which equates to around 17-25%E - may be harmful (40). While there is one study that reported significantly greater weight loss from a diet providing 24%E in protein (41), there is no evidence of the long-term effectiveness of high protein diets and the target chosen is consistent with the current advice for weight management from the NH&MRC (34). The final question in this section relates to the Better Health Commission’s target to increase the dietary fibre content of the Australian diet to 30g per day (42).

2. Energy allowance and recommended rate of weight loss

This section is given a total of 10 marks, with two questions, each worth five marks. The first question relates to the minimum daily energy prescription, whilst the second question concerns the promised rate of weight loss. A minimum daily energy intake of 1000-1200Cal is recommended for weight loss diets by the National Health and Medical Research Council’s policy statement on slimming diets (33). This statement and others also recommend no more than half to one kilogram of weight loss per week (43). Books that prescribed energy intakes below 1000 Cal (4200kJ) per day, or weight loss of greater than one kilogram per week lose marks in this section.

3. Flexibility and Sustainability

This section is allocated a total of 15 marks. Three questions are asked, each related to an area that has been found to be important for long-term, successful weight control (15, 16, 23, 44):

- inclusion of a wide variety of foods and allowance for individual preference and taste
- making permanent, realistic lifestyle changes
- making appropriate behavioural changes.

Those diets, which allow only a limited range of foods, are still given five marks for the first question in this section if they provide useful advice on aspects such as recipe modification. Diet books that include advice on supportive behavioural changes, such as ways to deal with stress and depression, or ways to break unwanted habits such as eating whilst watching television, are given a score of five for the third question.
4. Physical Activity

This section contains two questions worth a total of 10 marks. The questions are based on the National Physical Activity Guidelines for Australians, which recommend a minimum of 30 minutes of moderate intensity physical activity on most, preferably all, days (45).

5. Supplement Recommendations

This section contains one question and five marks are given if no supplements are recommended. The Dietary Guidelines for Australians indicate that supplements should not be needed if a diet is nutritionally well balanced (46) and ideally even a weight loss diet should be able to provide a nutritionally adequate diet without the need for vitamin or mineral supplements. The ADA has stressed that supplements should not be used as replacements for nutrient-rich foods (32). A recent study that reviewed the evidence for the effectiveness of popular, non-prescription weight loss supplements in Australia concluded that there was no good evidence of any weight loss benefits from most of the 15 substances in the review (47).

6. Claims

Books are given five points if all claims made are supported clearly by scientific evidence or public health policy. Books making claims that are misleading, unsubstantiated by research, or purely anecdotal are given no points. This is in line with the position of DAA, warning the public to be wary if the author of a diet book made outlandish claims (29). The ADA has also warned consumers about claims that sound too good to be true (32). Examples of unacceptable claims for diets include using special combination of foods or supplements that would enable effortless weight loss.

7. Author’s Credentials

This section is worth a total of five marks. The ADA has stressed the importance of checking the author’s qualifications and advises that a reputable author is usually one whose educational background and/or current affiliation is with an accredited university or medical centre with programs in nutrition, medicine, or a closely related discipline (48). The DAA has also recommended that consumers look for authors who have recognised nutrition qualifications (29), as have other experts (24). Authors with university qualifications in nutrition are given the maximum score of five. Any author with university qualifications in medicine or physiology is given a slightly lower score of three. Authors with qualifications in alternative medicine are not given any marks for this question.
8. Scientific Evidence

This last section is allocated a total of 10 marks. It includes a question on whether the recommendations in the book are based on published scientific evidence, rather than testimonials. A second question asks whether the author refers the reader to further credible sources of nutrition information. The ADA has warned that case histories, testimonials, and subjective evidence should be viewed with skepticism, and that evaluation of nutrition information can only be done through proper interpretation of scientific studies (48).

Part 2: Applying the assessment questionnaire to review popular diet books

Twenty diet books were chosen for review, based on the advice of staff at local bookstores about the most popular titles (49-68). They are listed in Table 1. In order to test the performance of the questionnaire, a number of aspects were evaluated.

Practicality

The energy content and macronutrient composition of each diet was calculated by computerised dietary analysis of three days of each menu plan, using the Foodworks Nutrient Calculation Software (69) with the AusNut food composition databases (70). If analytical data on foods were not available in AusNut, values were taken from the Nuttab95 database (71). Books that provided multiple sample menus had the first three days menus analysed to calculate the macronutrient and energy content of the diets. Some books supplied menus but did not specify serving sizes. In this situation, the average serving sizes in the Foodworks program were used as the estimated amounts, although this may have underestimated the requirements for a more active person or for some males. Not all books contained sample menus; some merely provided a list of suggestions for each meal and for snacks. In this case, the first three items on each of the breakfast, lunch and dinner lists were included in the analysis. The first six items on the snack list were also included (one for mid morning and the other for mid afternoon each day, if permitted). When recipes from the books were analysed, salt was not included unless specifically stated in a recipe.

Validity

The calculated mean daily nutrient intakes based on the three day menus were compared to the recommended dietary intakes (RDI) for a male (assumed to have a height of 175.8 cm and a weight of 81.2 kg) and a female 163.1 cm tall and weighing 64.3 kg) (72). These were the average heights and weights for males and females aged 25-44 years, reported in the 1995 National Nutrition Survey
Values for dietary fibre intake were compared with the recommended intake of 30g per day (42).

The validity of the nutritional adequacy section of the questionnaire (questions 1-10) was tested by comparing the nutrition sub-score (out of 40) with the maximum number of nutrients found to be provided at less than 100% or 70% of the RDI, for either the reference man or woman.

**Sensitivity**

Ideally an assessment method should be able to discriminate between the quality of different diets across a wide numerical range, so that diets can be categorised easily into broad bands that relate to their acceptability. The final overall scores were examined to measure the range of the scores and whether they could categorised into bands for summary descriptions of the diets as recommended, adequate, or not recommended.

**Statistical analysis**

Statistical analyses were undertaken using SPSS for Windows 11.0 (SPSS Inc., Chicago, SPSS for Windows, version 11.0, 2002). The relationships between the overall score (out of 100) or the nutrition sub-score (out of 40) and the numbers of nutrients likely to be provided at <70% RDI or <100% RDI were assessed by calculation of the Spearman’s rank correlation coefficient. One way analysis of variance with Bonferroni post-hoc comparison was used compare the mean scores of books written by those with nutrition qualifications, those with medical qualifications, and others. For this comparison, the total scores were adjusted to exclude the maximum score of 5 related to author’s qualifications. A significance level of <0.05 was applied to all statistical test.
Results

Description of the diets and nutrient adequacy
Table 1 lists the books that were reviewed, author details and a summary of the approaches taken to weight loss management. The scores in each category of assessment and the total score of each book out of 100 are shown in Table 2. Table 3 sets out the nutrients potentially at risk in each diet, expressed as the percentage of adult daily recommended intake provided by each diet, based on the nutrient analysis of three days of menus.

A total of 35 diets from the 20 books were analysed. Only two (Licence to Eat and The Volumetrics Weight Control Plan) supplied at least 100% of the RDI for all nutrients. The nutrients that were provided below 100% of the RDI for women included zinc (low in 59% of the diets), iron (low in 41% of the diets), calcium (low in 38% of the diets) and magnesium (low in 29% of the diets). For men, the following nutrients were often below the RDI: zinc (low in 53% of the diets), magnesium (low in 44% of the diets), calcium (low in 38% of the diets), riboflavin (low in 35% of the diets) and thiamin (low in 26% of the diets).

Practicality
In general the questionnaire was able be implemented easily. However, the calculation of energy and macronutrient content was not always straightforward and required some decisions to standardise the procedures, as described in the Methods section. A few specific procedures were adopted for individual diets:

The Carbohydrate Addict’s Diet:
The daily menu plans only specified the foods to be included at breakfast and lunch. The other daily ‘Reward Meal’ may include anything, however the authors recommend the use of low-fat dairy, lean meat/fish/poultry, vegetables/salad, whole grains, and fruits at the Reward Meal. Reward Meals for analysis were chosen with these recommendations in mind, but obviously may not be typical of the foods chosen by other people.

The Liver Cleansing Diet and Eat Right 4 Your Type:
The fat and calcium content of soy milk was not specified in either book. Calcium-fortified, full-cream soy milk was used in the analyses.
Stop the Insanity:
No sample meal plan was included in the book. The author provides a few meal suggestions and examples of foods that she sometimes eats. The analysis was based on these foods. The author recommends approximately 1750 calories for a 64.3kg female and 1930 calories for an 81.2kg male, so each of the three day’s diets were constructed to be as close as possible in energy content to these recommendations.

Fat Free Forever:
The author recommends one “junk food” meal per week to “speed up the metabolism”. The reader is encouraged to eat “anything from pizza to pasta with cream, or fried chicken and a chocolate sundae”. The analysis included two days of the Fat Free Forever diet, plus one with a “junk food” meal (3 slices of pizza & a milkshake), but this may not be typical of the choices made by other readers.

Licence to Eat:
The book did not contain a specific menu plan. Foods were chosen from the author’s lists of ideas for each meal. Adjustments were made to ensure that 10 fibre serves, 3-4 calcium serves, and 3 iron serves were chosen each day, in accordance with the author’s recommendations.

The section of the questionnaire relating to evaluation of the claims made about the diet required the exercise of professional judgement. This introduces some lack of precision into the tool and makes it unsuitable in the current form to be used by the general public. However, this question accounts for only five percent of the final total score. Examples of claims in the books that were classified as unacceptable were:

- “a carbohydrate-restricted diet is so effective at dissolving adipose tissue that it can create fat loss greater than occurs in fasting”
- “when eaten on an empty stomach, fresh fruit can have only a positive effect; it accelerates weight loss”
- “the key to successful weight loss and maintenance is to restore efficient liver function”
- “it is not only what you eat that makes the difference, but also of extreme importance is when you eat and in what combinations”.
Validity

Table 4 compares the nutrition scores from questions 1-10 (max score 40) and the nutritional adequacy of the diets, as assessed by the number of nutrients that were provided in quantities less than 70% or less than 100% RDI. There was a strong correlation with both measures (Spearman’s rho = -0.671 and -0.731 respectively; p<0.01), indicating that the ten questions provide a good indication of the nutritional adequacy of the diets. There was also a strong correlation between the number of nutrients that were provided in quantities less than 70% or less than 100% RDI and the overall rating score out of 100 (Spearman’s rho = -0.618 and -0.653; p<0.01). Such a correlation is to be expected given the fact that the nutrition sub-score makes up 40% of the overall rating score.

Sensitivity

Among the 20 books evaluated there was a wide range of scores, from 32 to 97. This indicates that the evaluation tool is capable of discriminating between the books in a useful way. Using the detailed nutritional assessments as a guide to the overall adequacy, the following bands of ranking the total scores can be suggested:

- 81-100: Recommended
- 61-80: Adequate (but some areas need improvement)
- 1-60: Not Recommended

This division is somewhat arbitrary, but the five diets which achieved an overall rating of greater than 80 had a mean nutrition score of 34 out of 40 and provided 100% of all nutrients - or at most two between 70 and 90% RDI (either zinc or calcium). The sole exception was The Diet That Works! which provided just 69% of the riboflavin RDI for males. Those books with a total score of 60 or less had a mean nutrition score of only 15 out of 40 and an average of three nutrients provided at less than 70% RDI.

There was a significant difference in the scores of books according to the author qualifications. Considering the total score without the five points related to author qualifications (ie, out of a maximum of 95 only), books by those with recognized tertiary nutrition qualifications (n=5) had a mean score of 83, those by medical practitioners (n=6) had a mean score of 52, and those by other authors (n=9) scored 48. The differences between the scores of the books by nutrition authors and both other groups were significant (p<0.02), but the difference between medical and other authors was not.
Discussion

Given that there is no gold standard by which to assess popular diet books, the scoring system used in this tool is somewhat arbitrary. The weighting of values given to the different sections of the rating score was based on the judgement of the authors. In particular it was decided that the nutritional scores and scientific evidence (which together make up half of the overall rating) should predominate, in order that those using recommended diets can be confident that they are safe and nutritionally adequate.

For the sake of simplicity, most of the nutrition sub-scores were scored either as zero or full marks. For example, if the diet included at least five serves of vegetables per day it achieved a score of 4, if less than five were included the score was zero. It would be possible to construct a more refined scoring system depending on how close the diet was to the target, in the way that the US Healthy Eating Index was constructed (74), but it was decided not to adopt this approach in order to reduce the complexity of the scoring.

The validity of the nutrition component of the questionnaire was evaluated by examining how well the scores correlated with nutritional adequacy determined by analysis of three days of the diet plans, a method that has been used to validate other assessment tools (74, 75). While the two scores do not measure precisely the same aspects of the diet, they both relate to overall nutritional quality. The results in Table 4 provide reassurance that the semi-qualitative assessment of the diet, using the questions about food groups and macronutrient targets in the questionnaire, is meaningful when evaluated in terms of the quantitative assessment of provision of nutrients.

It must be acknowledged it can be difficult to ensure 100% RDI is met for all micronutrients when planning energy restricted diets. Indeed on some low energy diets it may be appropriate to recommend a general vitamin and mineral supplement to ensure all requirements are met. However it is notable that with one minor exception none of the books that scored above 80 provided less than 70% RDI for any nutrient and only a few were marginally below the RDI for nutrients like zinc and calcium. The recommendations for these nutrients are among the most difficult to meet using basic unfortified foods (76), and slight deficits are unlikely to be nutritionally significant, especially when energy reduction diets are not usually intended for lifelong use.
It is not possible to make direct comparisons of the scores using this method with other evaluations made of popular weight loss diets, however the results are generally consistent with other assessments. Berland in his 1983 review rated the Atkins Diet Revolution as Not Recommended and the Scarsdale diet was given a rating of 2 stars (out of 4), which compare with the ratings of 35 and 44 (out of 100) respectively given with our method (16). In a more recent Australian nutrition book, the following diets are criticised for incorrect or unbalanced advice, which is consistent with the fact that none scored above 60 in the assessment reported here (scores shown after each): Sugar Busters - 40, Fit for Life - 41, Eat Right 4 Your Type - 36, Dr Atkins New Diet Revolution - 35 (77).

**Nutrition and exercise advice**

In one instance, the percentage of energy from carbohydrate, protein and fat (analysed by computer) was different from the figures quoted by the author. Barry Sears, author of The Zone – A Dietary Road Map, claimed that the key to permanent weight loss and optimal health is consumption of a diet containing 40%E carbohydrate, 30%E protein, and 30%E fat. Analysis of three days of menus from the diet indicated they provided 35%E carbohydrate, 39%E protein, and 25%E fat. This discrepancy has been noted by other authors (78).

Thirteen diets in eight books contained a higher percentage of energy from protein than the target of 12-25%. Seven diets contained 30% or more energy from protein and less than 40% from carbohydrate. Low carbohydrate diets often result in initial rapid weight loss, however this is mainly due to excessive water loss rather than loss of body fat. Possible complications of low-carbohydrate, high-protein diets include ketosis, dehydration, loss of electrolytes, calcium depletion, weakness, nausea and possibly kidney problems. People following these diets are also at risk of inadequate vitamin and mineral intake (25) and a review of the outcomes of popular diets reported that lower scores on a healthy eating index were associated with low-carbohydrate diets (79). Controlled studies have not shown any significant differences in weight loss when low and high carbohydrate hypocaloric diets were compared (80) and the results of several studies have refuted the contention that low carbohydrate diets, in the absence of energy restriction, provide a metabolic advantage for weight loss (79). For all these reasons the NH&MRC has concluded that there is no long-term evidence supporting the use of ‘popular’ low carbohydrate or high protein diets (34).

It is unlikely that dramatic manipulation of the macronutrient balance of the diet will have substantial effects on weight loss. Energy restriction remains the key variable associated with weight loss in the short term (79) and those most likely to be successful at long term weight control are those following
a low-fat low energy diet (81). Researchers recently analysed the diets of more than 2600 members of the U.S. National Weight Control Registry, who had maintained a weight loss of at least 30 pounds (approximately 13.6 kg) for one year or longer. Although high protein diets have been used for more than 30 years, the researchers found that less than 1% of successful people had followed a high protein diet and concluded that such diets may not create any metabolic advantage (82).

One book (Fit for Life) promoted a diet that was found to be low in protein (<10%E). It was a food-combining diet, which involved eating mainly fruit and vegetables. Low-energy food-combining diets have not been found to provide any metabolic benefits over low-energy balanced diets in terms of weight loss, blood pressure, fasting plasma glucose, cholesterol or triglyceride levels (83). It has been argued that food-combining may create deficiencies in zinc, vitamin B12, protein and calcium due to the elimination of major food groups (84).

Almost one third of the diets were high in fat (>30%E), whilst 11 diets (in 7 books) contained more than 300 mg of cholesterol per day. Fourteen diets (10 books) contained more than 2300 mg of sodium. Some diets took the low-fat recommendation to excess, with two of the diets (Eat More Weigh Less; Stop the Insanity) providing less than 10%E from fat. Although diets high in dietary fibre have been shown to help reduce food intake (85), the majority of these diets provided less than 30 g of dietary fibre per day, with the low carbohydrate diets supplying the least amount.

Six books relied on special supplements or products. A review of potential supplements to assist weight reduction, conducted in developing the NH&MRC draft clinical guidelines for weight control, concluded there is no convincing evidence that any popular supplements are necessary or assist weight loss (34).

All diet books mentioned the need for physical activity. Fourteen of the books contained exercise suggestions that were consistent with the recommendations from the National Physical Activity Guidelines for Australians (45). Few authors recommended a medical check up prior to commencing an exercise program.

In general the level of energy prescribed was reasonable. Three diets - The Complete Scarsdale Medical Diet, Sugar Busters and The Zone Diet - contained less than 4200 kJ per day, and five promised undesirably rapid rates of weight loss: The Complete Scarsdale Medical Diet, Dr Atkins New Diet Revolution, Fit for Life, The Liver Cleansing Diet, and Slim Forever.
Flexibility and Sustainability:

Every diet made some allowance for individual preference and taste by offering a variety of options, even though some diets contained only a limited range of foods. Ten diets achieved the maximum score of 15 for overall flexibility and sustainability (see Table 2).

Author’s Credentials and Scientific Evidence:

The two books with the highest overall scores (>95) were written by a professor of nutrition and a dietitian, but only five authors overall had university qualifications in nutrition. It might be argued that author credentials should not be included in the total assessment score since the value of nutrition expertise should be assessable by the dietary advice provided. In practice this sub-score had no effect on the final ranking of the books, but because it is a factor recommended for consideration by many experts (8, 24, 29, 48), it has been left in the final assessment tool.

Only three books received the maximum marks for the two questions relating to evidence: Licence to Eat, The Volumetrics Weight-Control Plan, and the Omega Plan. Most relied on unreferenced or unsubstantiated claims.
Conclusions

The questionnaire developed here has been found to be practical and potentially useful in providing a quantitative assessment of the adequacy and sustainability of the advice provided in popular diet books. Further research is required to assess its reproducibility when used by different assessors. Applying the questionnaire to a sample of currently popular diet books it was found that 11 out of 20 books could not be recommended (with scores of 60 or less out of 100). The findings from this study are similar to those from previous studies and reviews which have found many fad diets to be lacking in both nutritional adequacy, and without scientific evidence (15, 16, 22, 24).

The questionnaire described here may be useful for dietitians and other health professionals who want to evaluate diet books or make recommendations about the development of new diets. Accurate advice to the public is an essential part of any strategy to address the national obesity problem (86) and it is the responsibility of nutrition scientists to speak out about questionable nutrition advice, particularly those that have not been proven to be safe (87). Because the questionnaire requires the skills of a trained professional to carry out the nutrient analysis and make some judgements about the claims made, in its current form it is not a tool that can be used by members of the public to assess books themselves. In the future, it would be useful to refine this method to develop a simpler version that could be used by consumers directly.
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<td>Not mentioned</td>
<td>Increase incidental exercise</td>
<td>1724Cal (7217kJ)</td>
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<td>The Complete Scarsdale Medical Diet (50)</td>
<td>Cardiologist</td>
<td>Not mentioned</td>
<td>Walking, swimming, golf, tennis</td>
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<td>Diet Signs – The Health Signs Diet (51)</td>
<td>Astrologer</td>
<td>Vitamin, mineral &amp; herbal supplements recommended</td>
<td>20 mins/day, three times weekly</td>
<td>1332Cal (5577kJ) 1254Cal (5248kJ) 1432Cal (5994kJ) 1204Cal (5042kJ)</td>
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<tr>
<td>The Diet that Works! (52)</td>
<td>Medical practitioner</td>
<td>Avoids reliance on supplements</td>
<td>Increase incidental activity, &amp; add 30-60 mins/day of walking</td>
<td>1672Cal (7000kJ)</td>
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<td>Dr Atkins’ New Diet Revolution (53)</td>
<td>Medical practitioner</td>
<td>Sells &amp; recommends many vitamins, minerals, low CHO bars, shakes &amp; bread mixes</td>
<td>Minimum 30 min walk per day</td>
<td>1467Cal (6141kJ) 2511Cal (10512kJ) 3175Cal (13293kJ)</td>
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<td>Eat More Weigh Less (54)</td>
<td>Professor of medicine</td>
<td>Avoids reliance on supplements</td>
<td>Walk 20-60 mins per day. Add moderate resistance training (eg light weights)</td>
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<td>Eat Right 4 Your Type (55)</td>
<td>Naturopath</td>
<td>Variety of supplements recommended</td>
<td>Recommendations vary according to blood type. Approx 30 mins aerobic exercise recommended on most days for blood types O &amp; B</td>
<td>1074Cal (4496kJ) 1036Cal (4335kJ) 1300Cal (5441kJ) 1229Cal (5144kJ)</td>
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<td>Fitness leader Personal trainer</td>
<td>Variety of vitamin &amp; mineral supplements recommended</td>
<td>Walking &amp; resistance training recommended</td>
<td>1874Cal (8219kJ)</td>
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<td>Fat Loss For Life (57)</td>
<td>BSc Grad Dip Nutr. Dip Naturopathy &amp; Homeopathy.</td>
<td>Avoids reliance on supplements</td>
<td>30 mins aerobic exercise per day. Increase incidental activity</td>
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<td>MSc – Nutrition</td>
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<td>Certain rules must be followed to maximise fat burning (eg exercise 2-3 hrs after meals; weight training must be done after walking/low intensity exercise)</td>
<td>1362Cal (5850kJ) 1492Cal (6244kJ)</td>
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<td>Diet Plan</td>
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<td>Exercise &amp; Supplement Recommendations</td>
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<td>Fit For Life (59)</td>
<td>Nutrition qualification from non-accredited institution</td>
<td>Claim that supplements are not needed &amp; that fruits &amp; veg contain all necessary nutrients</td>
<td>20 mins aerobic exercise per day</td>
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<td>Importance of aerobic &amp; incidental exercise</td>
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<td>Medical practitioner</td>
<td>Sells &amp; recommends many supplements</td>
<td>Acknowledges the importance of exercise but does not elaborate on this</td>
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<td>The Omega Plan (62)</td>
<td>Medical practitioner Chair of Nutrition committee of the National Institute of Health</td>
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<td>Minimum 45 mins exercise per day</td>
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<td>Publisher: diet &amp; fitness magazine</td>
<td>Daily multivitamin whilst dieting</td>
<td>30 mins aerobic exercise 3-5 times per week</td>
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<td>Motivational speaker - Owns an exercise studio</td>
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<td>20 mins exercise at least 4 times per week</td>
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<td>PhD Holds the Guthrie Chair of Nutrition at Penn State Uni</td>
<td>Avoids reliance on supplements</td>
<td>Advice re stretching, warming up, inclusion of some longer exercise sessions, varying the intensity, trying weights</td>
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<td>PhD (biochemistry)</td>
<td>Recommends various vitamins. Sells &amp; recommends zone-favourable bars &amp; powders</td>
<td>Importance of aerobic exercise such as walking for 6 hrs or jogging for 3 hrs per week</td>
<td>817Cal 1226Cal</td>
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* CHO = carbohydrate
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<th>Energy allowance (max 10)</th>
<th>Flexibility &amp; sustainability (max 15)</th>
<th>Physical activity (max 10)</th>
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1) Range shown where several diet plans are given in the one book
2) Total score calculated using the mean nutritional adequacy score
Table 3. Nutrients potentially at risk in 20 popular diets: percentage of adult daily recommended intake provided by each diet calculated from analysis of 3 days of menus

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<td>Sugar Busters!</td>
<td>58</td>
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<td>The Volumetrics Weight Control Plan</td>
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<td>The Zone – A Dietary Road Map</td>
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<td>- 8 Protein Blocks (female)</td>
<td>47</td>
<td>45</td>
<td></td>
<td></td>
<td>82</td>
<td>65</td>
<td>62</td>
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<tr>
<td>- 12 Protein Blocks (male)</td>
<td>66</td>
<td>56</td>
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<td>97</td>
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</tbody>
</table>

3 Male adult Australian RDI used as reference unless specified, except for iron where female RDI used as standard (72).
4 30g per day used as reference value for dietary fibre (42). No entry in table and other nutrients not included in table indicates nutrient provided at greater than 100% RDI.
Table 4. Relationship between nutrition score and nutrients at risk in 20 popular diet books, as assessed by three day diet analysis

<table>
<thead>
<tr>
<th>Nutritional adequacy score (out of 40)</th>
<th>Mean number of nutrients less than 70% RDI</th>
<th>Mean number of nutrients less than 100% RDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-40 (n=6)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>21-30 (n=2)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>11-20 (n=11)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>1-10 (n=1)</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>
APPENDIX

Rating the Diets Questionnaire

Nutritional Adequacy (maximum score = 40)

1. Does the diet include at least 4 serves of bread/cereals per day for women, or 6 serves for men? (Yes = 4) _____

1 serve =
- 2 slices (60g) bread, 1 medium bread roll
- 1 cup (180g) cooked rice, pasta, noodles
- 1 cup (230g) cooked porridge
- 1 & 1/3 cups (40g) cereal flakes or ready to eat cereal
- ½ cup (65g) untoasted muesli
- 1/3 cup (40g) flour

2. Does the diet include at least 5 serves of vegetables, legumes per day? (Yes = 4) _____

1 serve =
- ½ cup (75g) cooked vegetables, cooked dried beans, peas or lentils
- 1 cup salad vegetables
- 1 small potato

3. Does the diet include at least 2 serves per day of fruit? (Yes = 4) _____

1 serve =
- 1 medium piece (150g) of fruit (apple, banana, orange, pear)
- 2 small pieces (150g) of fruit (apricots, kiwifruit, plums)
- 1 cup (150g) diced pieces or canned fruit
- 1 ½ tablespoons sultanas, 4 dried apricot halves
- ½ cup (125ml) fruit juice

4. Does the diet include at least 2 serves per day of milk, yoghurt or cheese? (Yes = 4) _____

1 serve =
- 1 cup (250mL) fresh, longlife or reconstituted dried milk
- 1 cup (250mL) soy milk (fortified with at least 100mg calcium/100ml)
- ½ cup (125mL) evaporated milk
- 2 slices (40g) cheese
- 1 small carton (200g) yoghurt
- 1 cup (250mL) custard
5. Does the diet include at least 1 serve per day of meat, fish, poultry, eggs, nuts, legumes?  (Yes = 4)  ____

1 serve =
65-100g cooked meat, chicken (eg ½ cup lean mince, 2 small chops,
2 slices roast meat)
½ cup (80g) cooked dried beans, lentils, chickpeas, split peas, canned beans
2 small eggs
1/3 cup peanuts, almonds or ¼ cup sunflower seeds, sesame seeds

6. Does the diet provide 30% or less energy from fat (with < 10% saturated & trans fatty acids)?  (Yes = 4)  ____

7. Does the diet provide adequate carbohydrate intake?
   (a) 55-60% energy from carbohydrate  (Yes = 4)
   (b) 50-54% energy from carbohydrate  (Yes = 3)  ____

8. Does the diet provide 12-25% energy from protein?  (Yes = 4)  ____

9. Does the diet limit alcohol intake?  (Yes = 4)  ____
   (Max 2 standard drinks per day; 1-2 alcohol free days per week)

10. Does the diet provide adequate dietary fibre intake?
    (a) 30g or more dietary fibre per day  (Yes = 4)
    (b) 25-29g of dietary fibre per day  (Yes = 3)  ____

Energy allowed and recommended rate of weight loss (maximum score = 10)

11. Does the diet contain a minimum of 4200 kilojoules per day?  (Yes = 5)  ____

12. Is the promised rate of weight loss no more than 1 kilogram per week?  (Yes = 5)  ____
Flexibility and sustainability (maximum score = 15)

13. Does the diet allow for individual preference and taste? (Yes = 5) ____

14. Does the diet encourage permanent, realistic lifestyle changes, enabling it to be followed long-term? (Yes = 5) ____
   (eg does it suggest ways to incorporate exercise into a busy lifestyle,
   or provide advice on the most appropriate choices to make when dining out?)

15. Does the diet provide advice on supportive behavioural changes rather than merely advising which foods to choose or limit? (Yes = 5) ____
   (eg does it suggest alternative methods for dealing with stress or depression,
   or provide suggestions on how to break unwanted habits such as eating whilst reading or watching television?)

Physical Activity (maximum score = 10)

16. Does the author discuss the importance of physical activity for effective weight control? (Yes = 5) ____

17. Are people advised to carry out at least 30 minutes of moderate-intensity physical activity on most, preferably all, days? (Yes = 5) ____

Supplement recommendations (maximum score = 5)

18. Does the diet avoid reliance on special supplements or products? (Yes = 5) ____

Claims (maximum score = 5)

19. Does the author avoid making exaggerated claims, promoting the diet in an extravagant way? (Yes = 5) ____
   (eg, faster weight loss than any other method; no need to restrict amount of food eaten)
Author’s credentials (maximum score = 5)

20. Does the author have appropriate educational qualifications?
   (a) University qualifications in nutrition or dietetics? (Yes = 5) _____
   (b) University qualifications in medicine or physiology? (Yes = 3) _____

Scientific evidence (maximum score = 10)

21. Are the recommendations based on published scientific evidence, rather than testimonials? (Yes = 5) _____

22. Does the author refer the reader to other credible sources of nutrition information? (eg, the Dietitians Association of Australia or the National Heart Foundation) (Yes = 5) _____

TOTAL RATING FOR THE DIET (max = 100) _____
References


70. Australia New Zealand Food Authority. AUSNUT - Australian Food and Nutrient Database. Canberra: ANZFA; 1999.


