Title

The Asking People with Psoriasis about Lifestyle and Eating (APPLE) study.

Investigators and Affiliations

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Current dietary advice for people living with psoriasis

- A low-calorie diet is beneficial to people living with overweight or obesity and psoriasis for weight-loss.
- Weight-loss is recommended for people living with overweight or obesity and taking Methotrexate for psoriasis.

Background and purpose

People living with psoriasis often wish to know whether changing what they eat could be helpful for their skin. At present, there isn't enough high-quality research for specific recommendations, which is why understanding the role of diet and lifestyle in treating psoriasis is the top research priority of the Psoriasis Association's Priority Setting Partnership (1).

Aims of research

We aimed to explore whether certain diets, foods or food groups are more linked to more severe psoriasis compared with milder psoriasis, and whether diet is related to psoriasis severity.

Key findings

- Following a healthy dietary pattern is linked to less severe psoriasis. This includes diets where more plant-based foods are eaten.
- Participants with higher intakes of red meat and processed meat tended to also have more severe psoriasis.

- Higher intakes of fruits, nuts, and pulses were associated with less severe psoriasis.

Approvals

The study was approved by the King's College London Research Ethics Committee (LRS/DP-21/22-29257) and by the NHS London - Westminster National Health Service Research Ethics Committee (23/LO/0536).

Methods

We asked volunteers to answer questions about diet, physical activity, sleep, alcohol, and psoriasis severity in an online multiple-choice survey between June 2022-January 2024.

Study population

A total of 353 volunteers participated in the APPLE study, of which 269 completed the online survey in full.

The characteristics of the people taking part in the APPLE study were as follows:

- Most respondents were female (82% female).
- Ages were evenly distributed across younger and midlife, with fewer older respondents: 18-29 years (22.1%), 30-39 years (28.0%), 40-49 years (22.4%), 50-59 years (16.8%), 60-69 years (8.1%), 70-79 years (2.2%), and 90-99 years (0.3%).
- Ethnicity was predominantly White (91.6%), the rest of the respondents were Asian (5.0%), mixed (3.1%) and Black-Caribbean (0.3%).
- Most of the respondents were non-smokers (83.5%), whilst 16.2% were active smokers, and 0.3% preferred not to disclose.
- A significant proportion of respondents reported a diagnosis of anxiety (37.1%), depression (21.0%), psoriatic arthritis (21.8%), and digestive conditions (21.2%).
- Self-assessed psoriasis severity was mainly moderate (42.9%), whilst mild and severe psoriasis was reported in 25.5% and 31.7% of respondents respectively.

Results

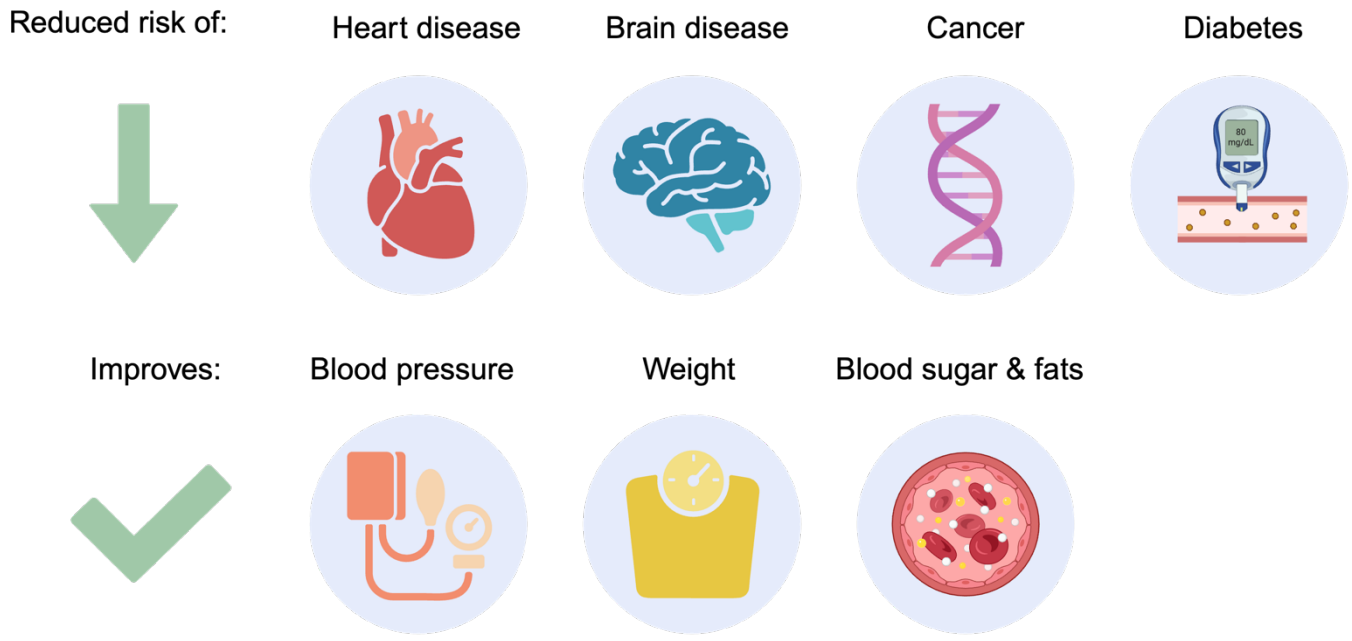
Diets

Compared with those with severe psoriasis symptoms, individuals with less severe psoriasis were more likely to follow a diet resembling:

- a diet designed to reduce blood pressure (a diet that is high in fruits, vegetables, whole grains, low fat dairy, and low in red meats and meat products, and low in salt).
- a healthy plant-based diet (a diet that prioritises fruits, vegetables, wholegrains such as cereals, breads, and pasta, nuts, and beans and limits the intake of dairy foods and meat).
- a moderate Mediterranean-style diet (a diet that is high in fruits, vegetables, wholegrains, nuts, fish and olive oil).

These diets have several food groups in common namely fruits, vegetables, pulses, whole grains, and nuts and contain limited amounts of meat and meat products such as meat pies.

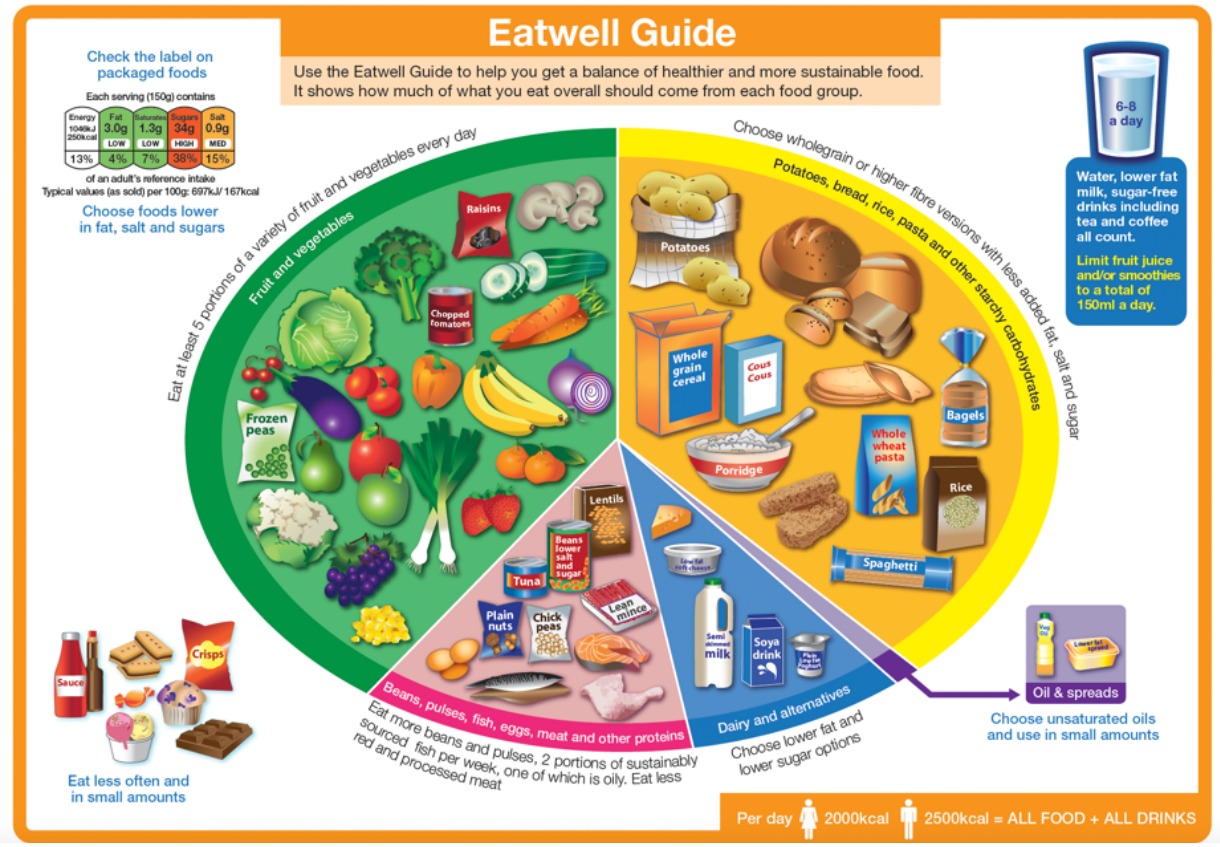
Studies have shown the beneficial effects of the dietary approaches to stop hypertension (DASH) diet, plant-based diets, and the Mediterranean diet in relation to disease risks and improvements in body function (2–7).



Food groups

The UK's food and beverage guidelines are illustrated in the Eatwell Guide (8).

https://www.nhs.uk/live-well/eat-well/food-guidelines-and-food-labels/the-eatwell-guide/



The EatWell guide shows how much of what we eat overall should come from each food group to achieve a healthy, balanced diet. It recommends:

- 5 servings of fruits and vegetables per day.
- Breads, rice, pasta, and potatoes that are wholegrain or high in fibre with less added fat, salt and sugar.
- To eat more beans and pulses.
- 2 portions of fish per week, one of which is oily.
- Eating less red and processed meat.
- Low fat and low sugar (or alternative) cheese, yogurt and milks.
- Oils and spreads rich in unsaturated fats to use in small amounts.
- 6-8 glasses of water per day, to limit fruit juice and to include low fat milk and sugar-free drinks such as tea and coffee.

Our results showed the following:

People whose psoriasis symptoms were less severe reported a diet containing more plant-based sources of:

- protein such as pulses (beans, lentils, chickpeas etc.) and nuts (Figure 1).
- fibre from whole-grain cereals and nuts (Figure 2).

Figure 1. Sources of protein across categories of psoriasis severity.

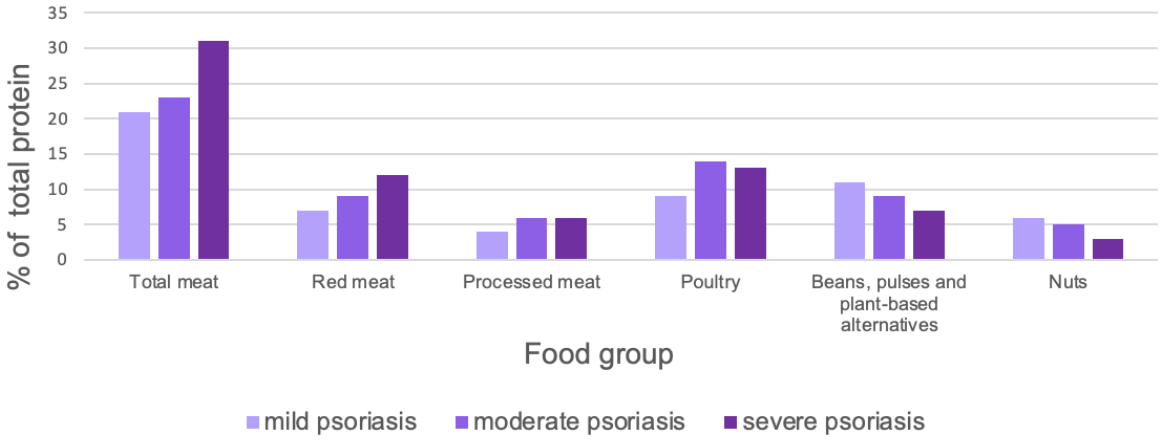
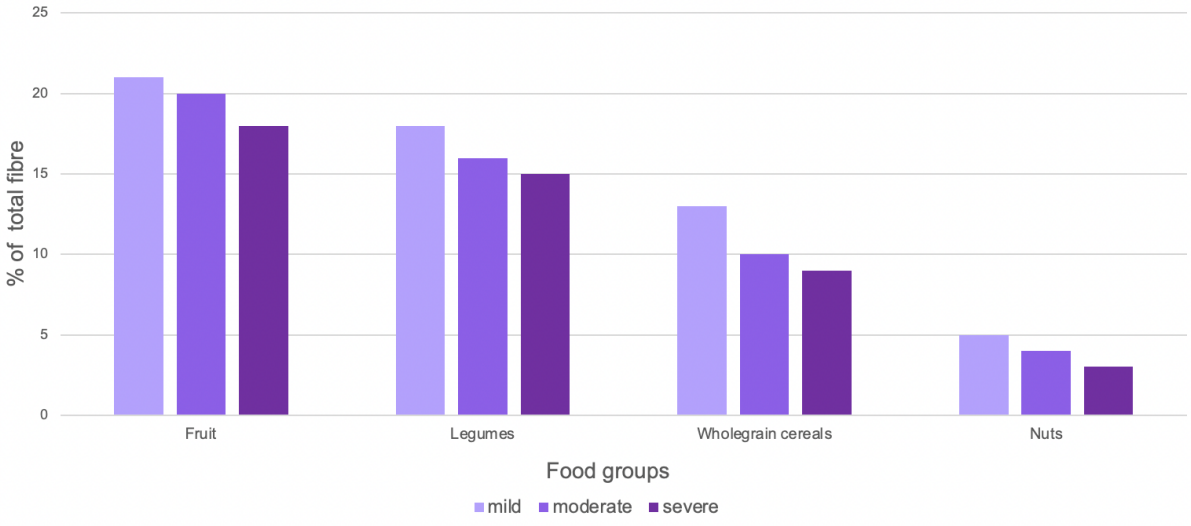


Figure 2. Sources of fibre across categories of psoriasis severity.



People whose psoriasis was more severe reported a diet containing higher amounts of :

- protein from red meat, processed meat, and chicken or turkey (which includes breaded and fried types) (Figure 1).

Nutrients

Adult dietary recommendations for carbohydrates, fats and fibre as illustrated by the British Nutrition Foundation (9) include:

	Population recommendations (% of daily food energy)	The APPLE study participants
Total Carbohydrate	At least 50%	45% exceed recommendation
of which free sugars (10)	No more than 5%	88% exceed recommendation
Total Fat (11)	No more than 35%	47% exceed recommendation
of which Saturated fat (12)	No more than 10%	70% exceed recommendation
	Quantity per day	
Fibre (10)	30g/day	77% do not meet recommendation

Total carbohydrates includes all sugars, starches and fibre. Free sugars are sugars that are added to foods, in the form of sugar, honey or syrups. Sugars naturally present in fruits or milk products are not considered free sugars. Free sugars can be found in soft drinks and beverages, confectionary products, puddings, and desserts.

Saturated fats are mainly consumed from meats such as beef, lamb and pork, bakery products (pastries, cakes, biscuits), butter, and full fat dairy products.

Fibre is present in food such as:

- Pulses e.g. peas, green beans, lentils, chickpeas, black beans, and kidney beans.
- Whole grain products e.g. oats, wholegrain breads, wholemeal pasta, brown rice, wholemeal breakfast cereals.
- Tree nuts e.g. almonds, pistachios, hazelnuts and pecans.
- Seeds e.g. chia seeds, flaxseeds and pumpkin seeds.
- Fruits e.g. bananas, apples, avocados, raspberries, blackberries, pears and oranges.
- Vegetables e.g. broccoli, cauliflower, artichokes, sweet potatoes and carrots.

Considerations

The APPLE study looked at the types of foods that people with psoriasis eat. The study explored specific diets, food groups, and specific nutrients are based on information collected from an online survey.

Responses were omitted from the analysis if dietary data was not provided in full.

Additional responses were omitted when the total energy intake for a respondent was significantly below or above the thresholds for daily energy intake.

The findings are limited to a UK-based population of individuals living with psoriasis, which was predominantly reflecting the diet of female participants, within the 18-50 years age categories, and are not generalisable across other population groups.

Conclusion

The results of the APPLE study help to understand the types of diet that are associated with mild or severe types of psoriasis. This is the first project of its kind in a UK population, and it provides information on aspects of the diet that may be a focus for future research in people with psoriasis. We hope these findings can help plan future studies to find out if changing diet can help psoriasis and help answer key questions for people living with psoriasis.

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