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Defining a Plant-Based Diet - What are New Zealanders Being Exposed to?

An Executive Summary

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Background

Over the past several years, there has been growing interest and attention on following a plant-based diet. The definition of a plant-based diet is often misunderstood, and as a result, varies widely⁽¹⁾. The New Zealand Heart Foundation defines a plant-based diet as one which is rich in minimally processed foods such as fruit, vegetables, legumes, wholegrains, nuts and seeds and comprises smaller amounts of meat, poultry, fish, seafood and dairy⁽²⁾. This description is the most appropriate definition of a plant-based diet and will hereafter be used as the basis of this study. The 'plant-based' dietary pattern defined by the Heart Foundation is often confused with being vegetarian or vegan⁽³⁾. Vegetarian diets cut out all forms of meat and fish but include animal products such as milk and eggs ⁽⁴⁾. Vegan diets do not contain any form of meat, fish or animal product and are restricted to only consuming plants and non-animal products ⁽⁴⁾. While these diets have similar definitions to that of 'plant-based', what they consist of day-to-day varies. The only diet label that may be closely comparable to 'plant-based' is a flexitarian diet, both allowing for more versatility and less restriction. Flexitarian diets are generally vegetarian, with occasional consumption of meat and fish⁽⁵⁾. Fundamentally, a plant-based diet is plant-rich and low in animal products, which, with a lack of clear definition, allows the term to be used as an overarching expression to include many plant-focused diets, such as a vegan rather than an independent diet.

A proposed advantage and common influence of following a plant-based diet is the amelioration of environmental impacts through reductions in greenhouse gas emissions, environmental pollution and global warming^(6,7). Similarly, safeguarding animal welfare tends to be an influencing factor in adopting a plant-based diet⁽⁸⁾. Individuals may be reluctant to consume animal products from factory farms which provide an unethical and immoral environment for the animals within ⁽⁹⁾. However, the strength in evidence of adhering to a plant-based dietary pattern is the most significant factor influencing individuals to follow such a dietary lifestyle⁽⁸⁾. It has been avidly reported that a plant-based diet can reduce obesity, non-communicable diseases and ultimately, mortality^(8–10). It must be noted that many of these claimed health benefits differ depending on the plant-based diet definition used within the study design.

The current food landscape of New Zealand provides large availability of animal-based and highly refined products - both of which have extensive research highlighting their impact on the development of non-communicable disease and subsequent mortality risk⁽¹¹⁾. A shift in dietary pattern leads many members of the general public to turn to easily accessible internet platforms to inform the basis of their dietary choices⁽¹²⁾. New Zealand is no exception to this shift, despite our country's predominant agricultural-based economy. Currently, the New Zealand Ministry of Health encourages a diet which is "largely plant-based, and allows for moderate amounts of animal-based foods (eggs, dairy, poultry, seafood) and small amounts of red meat⁽¹³⁾, which endorses some aspects of a plant-based diet. A recommendation as described, is largely up to interpretation by the reader, which for a population that eats meat in excess⁽¹⁴⁾, may not closely align with a plant-based diet.

Information available across multiple platforms on plant-based diets is often misaligned and incorporates arms of alternative diets. **Therefore, the purpose of this investigation is to examine the body of information available to the New Zealand public population on plant-based diets and what this information consists of.** The aim is to discover what a plant-based diet involves, as according to the information available on these platforms, and how this aligns to the definition provided by the Heart Foundation.

Methods of analysis

Two independent researchers investigated what current information is available to the New Zealand public on plant-based diet definitions. Searches were conducted across web-based search engines, including Google and Internet Explorer, throughout the months of May to June 2021. Each of the researchers' independent findings were documented and recorded on an individual document. New Zealand-based websites and platforms were prioritised to maintain relevance to the target population group. The two investigators' findings were summated and grouped into relevant categories for analysis. Findings were categorised into one of either visual media, podcasts, web page, blogs/articles, social media and literature. Any duplicate findings were excluded to ensure accurate data.

Findings

Visual media

Documentaries have always been a large source of information on current popular issues. Sometimes they are reliable sources of information, and other times they are not. There have been several documentaries on plant-based diets released over the past several years that gained a lot of interest and viewership. Some of the most popular documentaries include: *The Game Changers*, *What the Health?*, *Forks Over Knives*, and *Cowspiracy*. *The Game Changers* was the highest viewed documentary in the first week of its release in 2019(15). All of these documentaries are available to view by New Zealanders via Netflix, TVNZ on Demand and various other streaming platforms.

Documentaries discussing the positive effects of a plant-based diet comprise similar trends. Not only do they promote plant-based diets as being beneficial to health, the environment and animal welfare, they also tend to use the terms 'plant-based' and 'vegan' alike. Many of these films invite people with different areas of expertise to voice their opinion on healthy and sustainable dietary choices; plant-based often being a point of discussion. Commonly, conversations are opened by using the term 'plant-based' and within the same discussion, reference is made to a vegetarian or vegan diet as a means of solution. Each aforementioned film interchangeably uses plant-based and vegan insinuations within their discussion, for example, "the only way to sustainably and ethically live on this planet...is to live an entirely plant-based, vegan diet" (16), or "I was eating a plant-based diet up until that marathon...I doubted myself thinking 'maybe I should've eaten meat'" (17). It is clear that each term is used in conjunction with each other as a means to indirectly promote a vegan diet through using the term 'plant-based'.

Podcasts

Podcasts are growing in popularity, resulting in an increase in conversations surrounding a plant-based diet(18). Podcasts, alongside most other internet platforms, are open to any person with any background to post their thoughts and opinions on a topic (19). Across RNZ, NewsHub, and Newstalk ZB - three of New Zealand's most popular podcast platforms - the term 'plant-based' continues to be used to represent a diet rich in plant products and low in animal products, or, to reflect a vegan diet. A popular discussion topic was based around people who were following a vegan diet, which they interchangeably referred to as plant-based. A student flat spoke on their group influence mentality which helped their flatmates to "turn vegan...in a plant-based context" (20). Similarly, an internationally recognised celebrity chef from New Zealand advertised their new plant-based cookbook and noted that through creating a variety of plant-based recipes, they had "converted a few die-hard carnivores" (21), sending mixed messages on what a plant-based diet is understood to be.

However, the term 'plant-based' has equally been referred to as a diet which emphasises plant products and reducing animal products. Some conversations honed in on the importance of increasing the amount of- and shifting focus to- plant products in meals. Instead of cutting meat out of the diet completely, it was encouraged to "eat more plant foods" (22), and consume "more whole foods, as opposed to a vegan diet" (23). Lastly, one podcast with an internationally recognised guest was titled "Shifting to Plant-based - Can New Zealand go Flexi?" (24), which without listening further, can influence the New Zealand public's understanding of a plant-based diet as being flexitarian which is closely aligned with a plant-based diet. Clearly, podcasts are a platform which provide mixed understanding and use of the term 'plant-based'. Depending on which podcast is listened to; podcasts can either contribute to an environment where 'plant-based' is confused with a vegan diet, or as one which is plant-rich.

Web Pages

The internet has become a frequently used resource as a means of quickly answering a wide range of questions. It is commonplace for the general public to refer to web-based information to aid in their understanding of what a specific diet may present as(25). Many New Zealand and international web pages have definitions or descriptions of a plant-based diet which are presented on their websites for viewers to access. The best matched websites appear in order of suitability in relation to the words or phrases entered into the search bar(26). Recent research has shown that search engine users are 94% more likely to choose a website which appears on the first page of the search results rather than scrolling to other sources(27). It is therefore important to consider websites that may appear through a convenient google search.

Most commonly, health-based websites definitions of a plant-based diet closely align with that of the Heart Foundation whereby a dietary pattern is encouraged which is higher in plant-based products and lower in animal products(28–32). Some websites tended to use the term 'plant-based' as a more broad and generalised label to represent vegetarian, vegan and/or flexitarian diets while still advocating the benefits of reducing animal products and increasing plant-based products (33–35). Lastly, google searches on plant-based diets presented many New Zealand news outlets such as Stuff, The New Zealand Herald or Scoop which did not give a specific definition of a plant-based diet, however, used 'plant-based' interchangeably with diets which address reducing animal-based products such as that seen in a vegan, vegetarian or flexitarian diet(36–41). Mainly, the difference seemed to be that plant-based diets could contain some animal products. The articles on all of these sites differed in who it was written by and their sources of information. Some interviewed doctors and researchers in the field, but others seemed to only get information from other internet-based sources. This has resulted in articles on the same site providing conflicting information on what a plant-based diet entails(36,37).

It is clear that results from search engines present a range of different definitions - most commonly, either in line with the Heart Foundation definition used as a basis of this research, or as a vegan or vegetarian diet.

Social Media and blogs

Some of the most popular social media platforms at the moment are Instagram, Facebook, TikTok and YouTube. These platforms are accessible by everyone with internet access (except young children), but tend to target slightly different populations. They are all, however, very rich sources of information regarding plant-based diets, though with different mechanisms of delivery(42,43).

TikTok, a recently popular app for sharing videos, has many accounts of people that follow and promote their plant-based diets, and currently plant-based diets are one of the most popular

trends(44). Some of these people are based in New Zealand, but the accounts with the most followers (upwards of 100k) are based in the UK and US(44). These accounts mostly share recipes and videos of their plant-based diets, and why they are on them. From a scan of the accounts with the largest following, almost all of them also had the word 'vegan' in the description, and exclusively shared vegan recipes.

Instagram has been around for a few years now, and is based on sharing pictures and videos. Similar to TikTok, there are many accounts of people sharing their plant-based diets. There are many of these accounts held by people based in New Zealand, but the accounts with the largest number of followers tend to be from the UK, US and Australia(45). Many of these accounts also used the word 'vegan' interchangeably with 'plant-based', but there was more variability in the recipes, some including small amounts of animal products.

Facebook has a slightly different method for sharing information regarding plant-based diets. There are many different groups, consisting of members of the public sharing their own ideas, recommendations and opinions on this dietary pattern with each other. This results in a large variability in what people perceive the plant-based diet to be. Many recipes shared in these groups, that have upwards of 50k members, are vegan, and many are vegetarian.

YouTube is a platform for posting videos. When searching for plant-based diets in this media, the most popular videos have upwards of 200k views, from people all over the world. The people that post these videos are not New Zealand based, though the majority of these are sourced from TedTalks, a platform where well-educated and researched people share their knowledge(46). Some of these people discussed plant-based diets as vegan diets, but many shared the view that a plant-based diet consisted mostly of plants, but also occasionally included animal products.

Blogs are used as a large source of information, recommendations and recipes for plant-based diets. There are several well-known plant-based blogs written by people based in New Zealand, but those blogs with the largest following are usually created by people based in the US, Australia or UK, similar to social media. There is no data available on how many people subscribe to these popular blogs or how many of the viewers/followers are from New Zealand, so it is only possible to make assumptions about the content New Zealanders are accessing from these. A google search of "plant-based diet blog" provides many results, all aimed at different groups of the population; young people, families, middle aged people. A search result showed that many of the top results for this had blogs with the word 'vegan' in the name (47–50). When searching through the blogs that were the top results almost all of these blogs had exclusively vegan recipes. The articles posted in these varied in their content, but many were focused on other aspects of a 'vegan' lifestyle. Some blog articles looked at the different variations of a plant-based diet and lifestyle, but often the focus was on veganism.

Literature

In 2020, approximately 5% of the New Zealand population (>253,000) were employed in the healthcare industry, and employment rates in this area continue to increase(51). It is important to consider where healthcare professionals may gain their understanding of a plant-based diet as the general public often turn to healthcare professionals for guidance on such matters(52). Many health professionals may refer to research-based studies and literature when understanding or recommending certain diets for their patients(53). A scan of the scientific literature pertaining to plant-based diets demonstrates a mixed understanding and use of the term 'plant-based diet'. However, across an array of literature, a plant-based diet has been acknowledged as having various

definitions as it is often used synonymously with other dietary patterns such as vegetarian or vegan(54–56).

Some of the reported descriptions of a plant-based diet are in line with a vegan diet. Two publications emphasised excluding animal products as a means to reduce atherogenic biomarkers and subsequent cardiovascular disease risk(57,58). Similarly, one study addressed a plant-based diet as vegan and therefore restricted meat, fish, poultry, eggs and dairy in their trial as a method to reduce the weight of their participants(57).

All of the investigated literature acknowledged the importance of increasing consumption of plant-based food such as fruit, vegetables, grains, legumes, nuts or seeds. However, some texts are more broad with their definition descriptions. Two publications used more vague phrasing such as “discourage *most or all* animal products(59)” or “*limit or avoid* animal products(60)” which by using two adjectives, can blur the definition of a plant-based diet and introduce elements of disclarity. Similarly, one publication did not mention animal products within their description and instead, shifted their focus to a nutrient-centred approach through focusing on “macronutrients (carbohydrates, protein, and fats), micronutrients (vitamins and minerals), and bioactive components (eg, flavonoids, plant sterols, polyphenols)”(61). Clearly, this definition strays from the intent behind following a plant-based diet. However, a shift in focus from healthy and sustainable eating patterns to specific nutrients can inadvertently take place in subjects who aim to maximise optimal health status(62).

A selection of the scanned publications have defined, and continued to refer to a plant-based diet correctly. These publications have dichotomised a plant-based diet away from vegan and vegetarian diets and have instead, highlighted a plant-based diet as an eating pattern that is plant-rich and low in animal products(8,10,54,55,63). However, only a small number of publications investigated have used such definitions. Therefore, the power of this definition in line with the Heart Foundation description is weakened amongst the range of definitions used within the literature.

A scan of the literature has made it clear that the term ‘plant-based’ is often used to represent diets and dietary patterns which may differ from its true meaning, much like the information supplied to the general public. With varying definitions utilised throughout the literature, an educated interpretation may be required when offering dietary advice to patients.

Limitations

There are several limitations to this type of research that affects the totality of the conclusions able to be made relating to information accessible to New Zealanders on plant-based diets. One of these limitations is accessing the reach of the sources on most of the investigated sources. Due to the nature of the type of information we were investigating, it is very difficult to access statistics on who may be accessing and viewing this information. Further, we still cannot determine whether they choose to believe what they are accessing and reading. Particularly, data pertaining to the most popular sources of information, such as social media applications, documentaries or blogs are highly privatized by the parental site which make it extremely difficult to reveal what select sources are most relevant to New Zealanders and the demographics, location or enumeration of said populations. This makes it difficult to conclude what the most ‘popular’ sources are for the New Zealand population. Therefore, we have assumed that the sources we have explored are utilized by the general New Zealand public.

Another limitation to this research method is the bias created through personal search engine algorithms. Searches were conducted via platforms on the investigators personal computers.

Previous search input indirectly influences the output of future searches. In this instance, each device has stored information which may have changed the outcome produced(26). As both researchers are current dietetic students, historic and current searches pertaining to nutrition and dietetics may influence the results of the search. Alongside this, alike terms being entered into each search engine multiple times may have a similar impact(26). As a result, an uncontrollable algorithmic bias and non-representative outcome was formed. Thus, the generated results may be less generalizable to the general population of New Zealand, however, still provide a rich and contextualised understanding of what New Zealanders are exposed to regarding plant-based diets.

Conclusion

In conclusion, it is clear that across a multitude of sources, New Zealanders are exposed to a range of different definitions of a plant-based diet. Visual media, podcasts, organisation websites, blogs/articles, social media and literature continuously use the term 'plant-based' in an inconsistent manner. Most commonly, 'plant-based' is used as an overarching term to reflect a vegan or flexitarian diet which poses a barrier to the New Zealand public having corresponding understandings of a plant-based dietary style as the array of sources have varying descriptions.

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