



FINAL REPORT

Plant-Based Dairy Alternatives: Perspectives from Nutrition Professionals in Spain



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Plant-Based Dairy Alternatives: Perspectives from Nutrition Professionals in Spain.

Final report of the research funded by Alpro and independently carried out by EUFIC in 2025.

<https://www.eufic.org/en/research/article/plant-based-dairy-alternatives-perspectives-from-nutrition-professionals-in-spain-and-portugal>

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Executive summary

Plant-based dairy alternatives (PBDAs), such as soy, oat, almond, rice, and coconut-based drinks and yogurts, are gaining traction globally. As their popularity increases, it becomes critical for nutrition professionals to possess accurate knowledge to guide consumer choices. This study aimed to assess the knowledge, perceptions, practices, and information needs of nutrition professionals in Spain regarding PBDAs. The sample consisted of 259 nutrition professionals, including dietitians-nutritionists, students in nutrition (4th year degree or masters), researchers or academics in nutrition, and other health professionals related to nutrition.

Key Findings:

- **Familiarity and Exposure:** The majority of nutrition professionals reported being very or extremely familiar with PBDAs. High exposure to PBDAs while shopping was positively linked to increased familiarity.
- **Consumption Patterns:** PBDA consumption was higher among nutrition professionals with dietary restrictions or preferences. Those without restrictions were more likely to consume PBDAs infrequently or not at all. Soy drinks were the most preferred, although many nutrition professionals indicated no specific preference between the various plant-based drink options.
- **Perceptions and Knowledge:** Most nutrition professionals believe PBDAs can be part of a healthy diet and recognize PBDAs as lactose-free, cholesterol-free, and nutritionally dependent on the plant source. However, misconceptions remain, especially concerning their environmental impact and level of processing.
- **Fortification:** While nutrition professionals generally support fortification of PBDAs with micronutrients, many overestimate the prevalence of fortification of PBDAs in the Spanish market (average estimate: 55%; actual: 17% (Agencia Catalana De Seguridad Alimentaria, 2024)). Opinions diverged on whether PBDAs could fully replace, partly replace, or simply complement dairy in the diet and what is the role of fortification in this.
- **Nutritional value:** Most nutrition professionals think PBDAs are nutritionally equivalent to dairy, particularly when fortified, but considerable proportions have different opinions (they view them as either nutritionally inferior or superior to dairy).
- **Information needs:** Nutrition professionals are most interested in information about clinical evidence of health benefits, fortification, bioavailability, nutritional composition, processing and additives, and sustainability of PBDAs.
- **Professional Practices:** Familiarity, personal consumption patterns, and perceived nutritional value compared to dairy are significant predictors of recommending PBDAs to consumers. Nutrition professionals would mainly recommend PBDAs to accommodate restricted diets (e.g., lactose intolerance, dairy allergies, plant-based diets).
- **Inclusion in Guidelines:** A strong majority supported the inclusion of PBDAs in national dietary guidelines. However, opinions varied as to whether guidelines should feature only fortified versions or any version of PBDAs. Perceptions about the level of processing, environmental friendliness, role in the diet, and nutritional value of PBDAs compared to dairy significantly predicted attitudes towards inclusion of PBDAs in dietary guidelines.

Nutrition professionals primarily see the value of PBDAs for specific segments such as those who follow restricted diets, adults, or those who already consume these products.

Nutrition professionals in Spain are generally familiar with PBDAs and support their inclusion in a healthy diet and in dietary guidelines. However, diverging opinions and knowledge gaps persist—especially regarding PBDAs’ nutritional value, role in the diet, need for fortification, environmental impact, and degree of processing—highlighting the need for targeted education and evidence-based resources. Addressing these gaps can empower nutrition professionals to make more informed recommendations and better support consumers navigating plant-based options.

The research

Plant-based dairy alternatives (PBDAs), such as drinks and yogurts made of legumes (e.g., soy), oats, nuts (e.g., almonds), rice, or coconut, have become increasingly popular in recent years (MarketsandMarkets, 2023). As interest in PBDAs continues to grow, it is essential that **nutrition professionals** are well-equipped to provide accurate advice on these products to consumers. Therefore, understanding their knowledge and perceptions about PBDAs is crucial to ensure they can effectively support **informed consumer decision-making**.

To date, **limited research** has explored the perceptions of health professionals regarding PBDAs, with most studies conducted in the United States and Canada (Goff et al., 2023; Asher et al., 2021; Clark et al., 2022a; Clark et al., 2022b). For example, it has been found that health professionals generally consider PBDAs to be compatible with a healthy diet; however, they hold diverse opinions regarding their nutritional equivalence to dairy products and believe that consumers are often confused about their nutritional value (Clark et al., 2022a). Evidence also suggests that health professionals currently have **insufficient information** on PBDAs and highlight the **need for improved, evidence-based nutrition training** in this area (Clark et al., 2022b; Goff et al., 2023).

The present study aimed to fill this gap by examining the **knowledge** and **perceptions of nutrition professionals in Spain regarding PBDAs**. These insights will support the development of communication materials to address their information needs. The research was funded by Alpro and was independently carried out by EUFIC between February and August 2025. An **online survey** was shared with national and regional **associations of dietitians-nutritionists**, including both professionals and students. It was also distributed to **academic institutions** offering dietetics and nutrition programs. In addition, the survey was promoted through EUFIC's **social media** platforms and Spanish dietitian-nutritionists **influencers** within EUFIC's network. The data collection took place between March 20 and May 11, 2025.

The survey assessed how **familiar** nutrition professionals are with PBDAs and the frequency with which they **encounter** and **consume** these products. It also examined **awareness** about fortification practices in Spain, **perceptions** around these products (e.g., environmental friendliness, need for fortification, nutritional value compared to dairy), and **information needs**. Furthermore, it investigated how nutrition professionals currently incorporate PBDAs into their **dietary recommendations** and their **attitudes** towards including PBDAs in national dietary guidelines. This study focussed only on plant-based **drinks and yogurts**, because plant-based cheese is less widespread and differs considerably to plant-based drinks and yogurts (and to animal-based cheese) in its nutritional profile and sensory attributes (Molina et al., 2023; Clegg et al., 2021). The survey questionnaire is available [here](#).

Insights from this research can help tailor educational programs and resources to address misconceptions and knowledge gaps among nutrition professionals and can inform best practices and guidelines for recommending PBDAs to consumers.



RESULTS





Sample information

Twenty-one respondents did not provide consent to the survey and 44 did not meet the study's inclusion criteria (i.e., being either a professional, researcher, 4th year student, or postgraduate in nutrition, or other health professional related to nutrition). Among those who were eligible (n = 367), 71% provided sufficient data¹ to be included in the analysis (n = 259).

The sample consisted of 67% **dietitians-nutritionists**, 21% **students in nutrition** (4th year degree or masters), 5% **researchers or academics** in nutrition, and 8% **other health professionals related to nutrition** (FIGURE 1). Respondents (excluding students) had a mean of 9 years of **professional experience** (SD = 9) and 53% were working directly with patients/clients. The respondents had a mean **age** of 34 years (SD = 12) and 76% were women. Most respondents (56%) reported having no specific **dietary restrictions or preferences**. Small proportions of the sample (10% or less) reported being flexitarian, vegetarian, vegan, or following other diets (FIGURE 2).

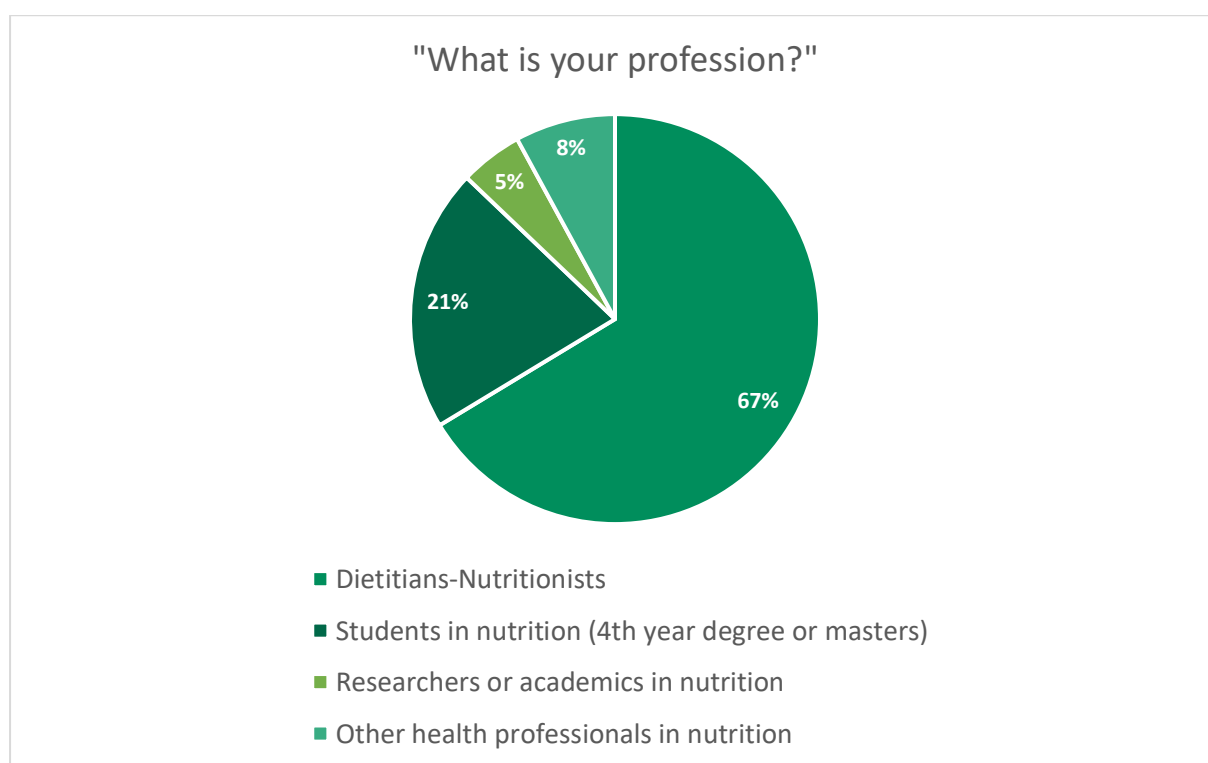


FIGURE 1. Professional groups surveyed (in % of total sample analysed)

¹ Up to question 36 of the [survey](#).

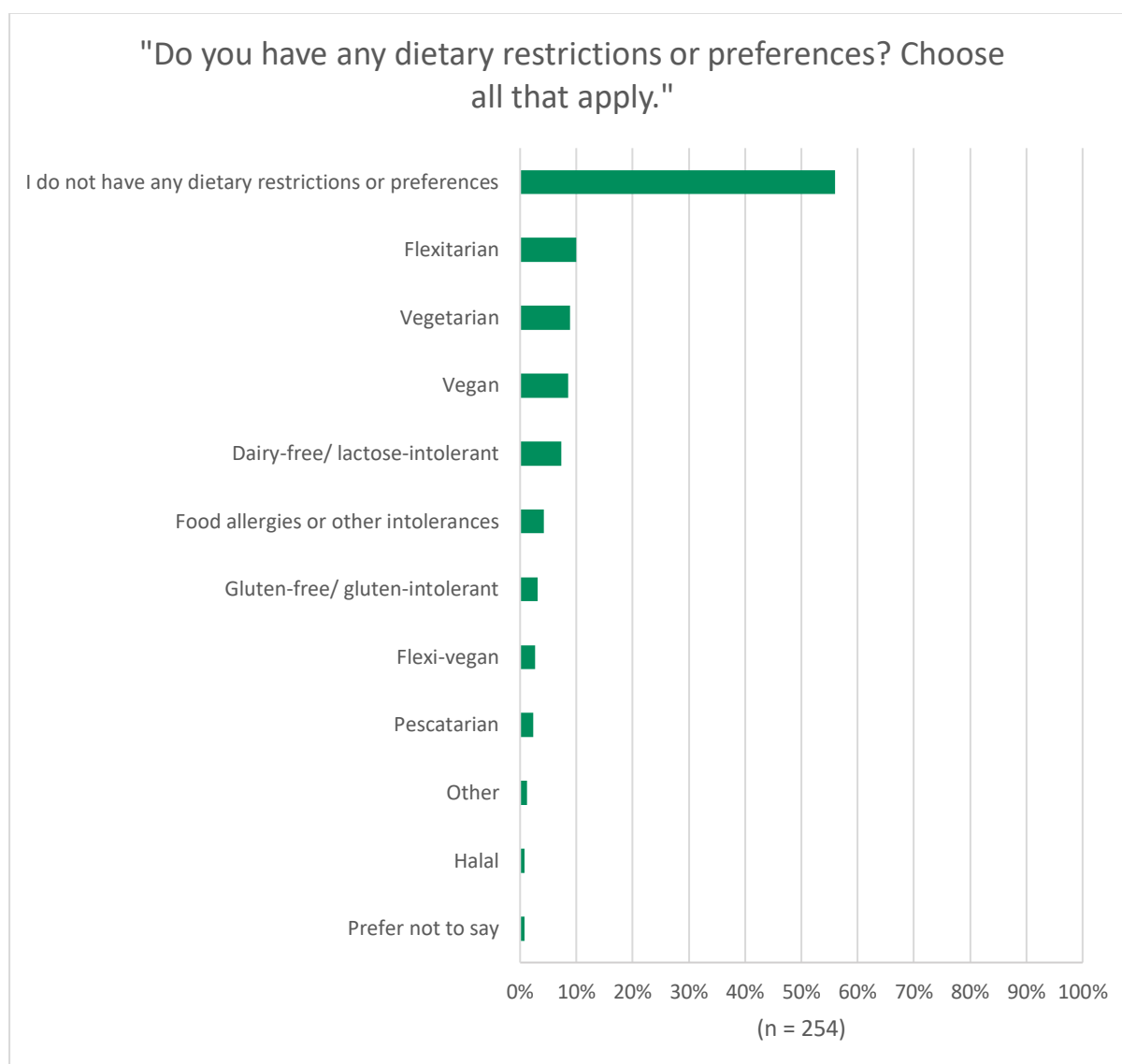


FIGURE 2. Dietary restrictions or preferences of nutrition professionals (in % of total sample analysed)



Familiarity, exposure, and consumption patterns

Nutrition professionals reported relatively high levels of **familiarity** with PBDAs, with 71% of the sample being either very or extremely familiar, 25% being somewhat familiar, and only 5% being either not so familiar or not at all familiar with these products (FIGURE 3). No significant differences in familiarity were found between the various professional groups surveyed ($p = 0.87$).

Exposure to PBDAs while shopping was also high, with 89% of nutrition professionals encountering these products at least frequently. Only 7% reported occasional exposure and 5% mentioned that they rarely or never came across PBDAs when shopping (FIGURE 4). Exposure to PBDAs was positively associated with familiarity ($p < 0.001$). The more frequently nutrition professionals came across PBDAs when shopping, the more familiar they were with these products.

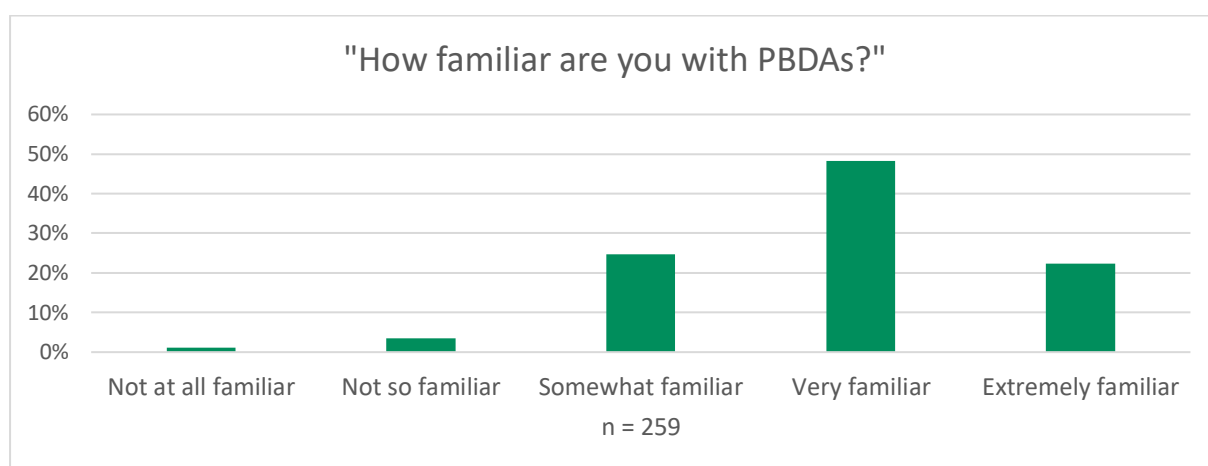


FIGURE 3. Familiarity with plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

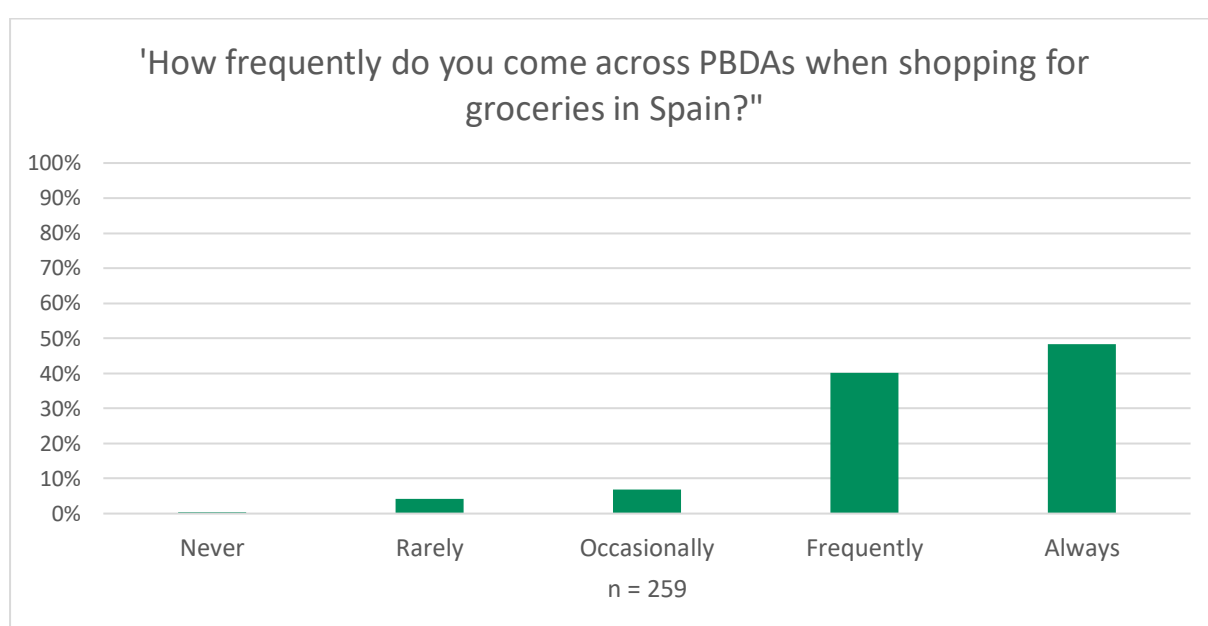


FIGURE 4. Exposure to plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

PBDA consumption varied widely among nutrition professionals and was depended on the presence of dietary restrictions or preferences (FIGURE 5). Nutrition professionals who had dietary restrictions or preferences (n = 109) consumed PBDAs more frequently compared to those without (n = 145) ($p < 0.001$). Among the former group, substantial proportions consumed PBDAs on a daily (44%) or weekly basis (28%). In contrast, 33% of those without any dietary restrictions or preferences reported never consuming PBDAs or consuming them monthly (19%) or less often (19%).

Regarding **preferred types of plant-based drinks**, soy drink was the most preferred drink (34%), followed by oat drink (24%), almond drink (15%), and finally coconut drink (4%) (FIGURE 6). Notably, 22% of nutrition professionals indicated no specific preference among the various drink options.

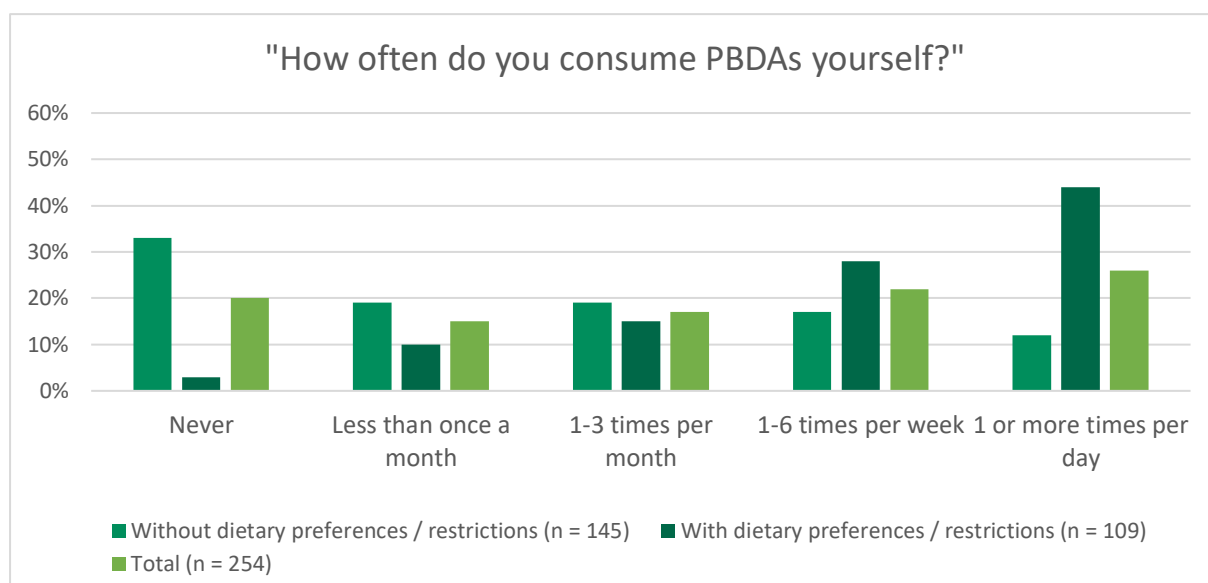


FIGURE 5. Frequency of consuming plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

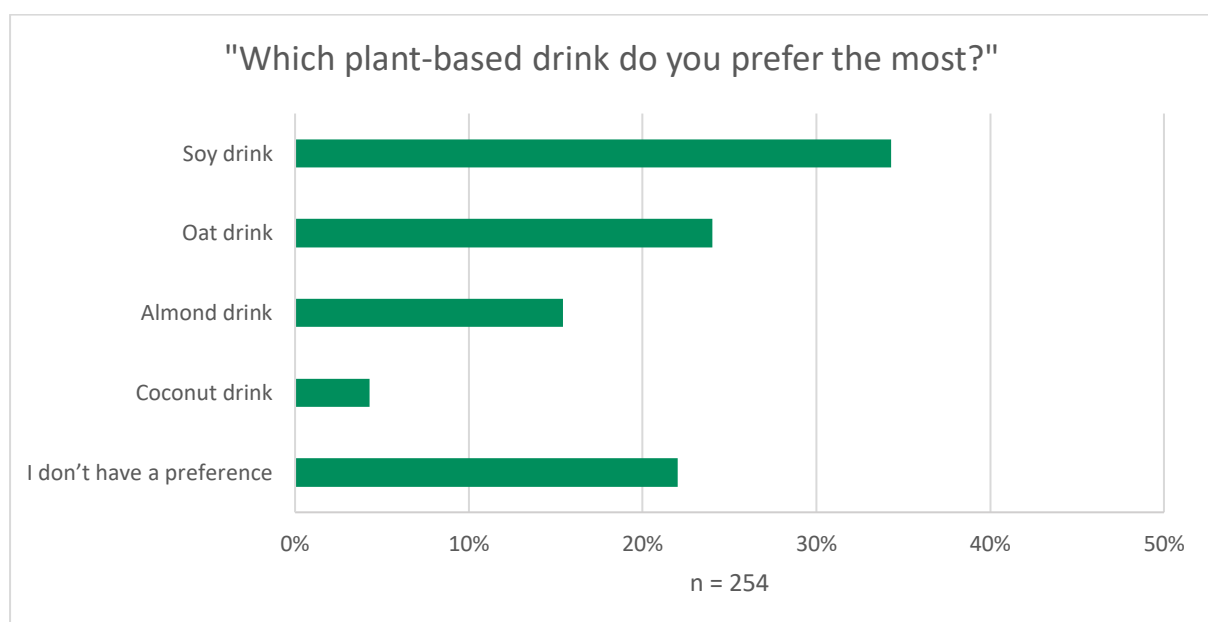


FIGURE 6. Preference for plant-based drinks (in % of total sample analysed)



Perceptions, knowledge, and information needs

A large majority (88%) of nutrition professionals agreed with the statement that PBDAs can be **part of a healthy diet**. Most were aware that PBDAs are **lactose-free** (90%), **cholesterol-free** (68%), and understood that their **nutritional profile depends on the plant source** from which they are made (83%) (FIGURE 7). Among those who recognized plant source as a key determinant of nutritional value (n = 216), the majority (58%) identified legume-based PBDAs (e.g., soy) as the ones with a **more favourable nutritional profile**, followed by those made with mixtures of plant sources (22%), nuts (9%), oats (4%), rice (1%), and coconuts (1%) (FIGURE 8).

While 61% of nutrition professionals agreed with the statement that PBDAs are more **expensive** than dairy products, opinions were divided regarding the **environmental friendliness**, **level of processing**, and **tastiness** of PBDAs as compared with dairy. In their comments at the end of the survey (see [Appendix](#) for an overview of the qualitative responses), one respondent (out of 259) commented that in most cases the contribution of PBDAs to the diet should be the same as that of any other processed food, while another one was more divided on the matter being cautious of both ultra-processed foods and excessive dairy consumption.

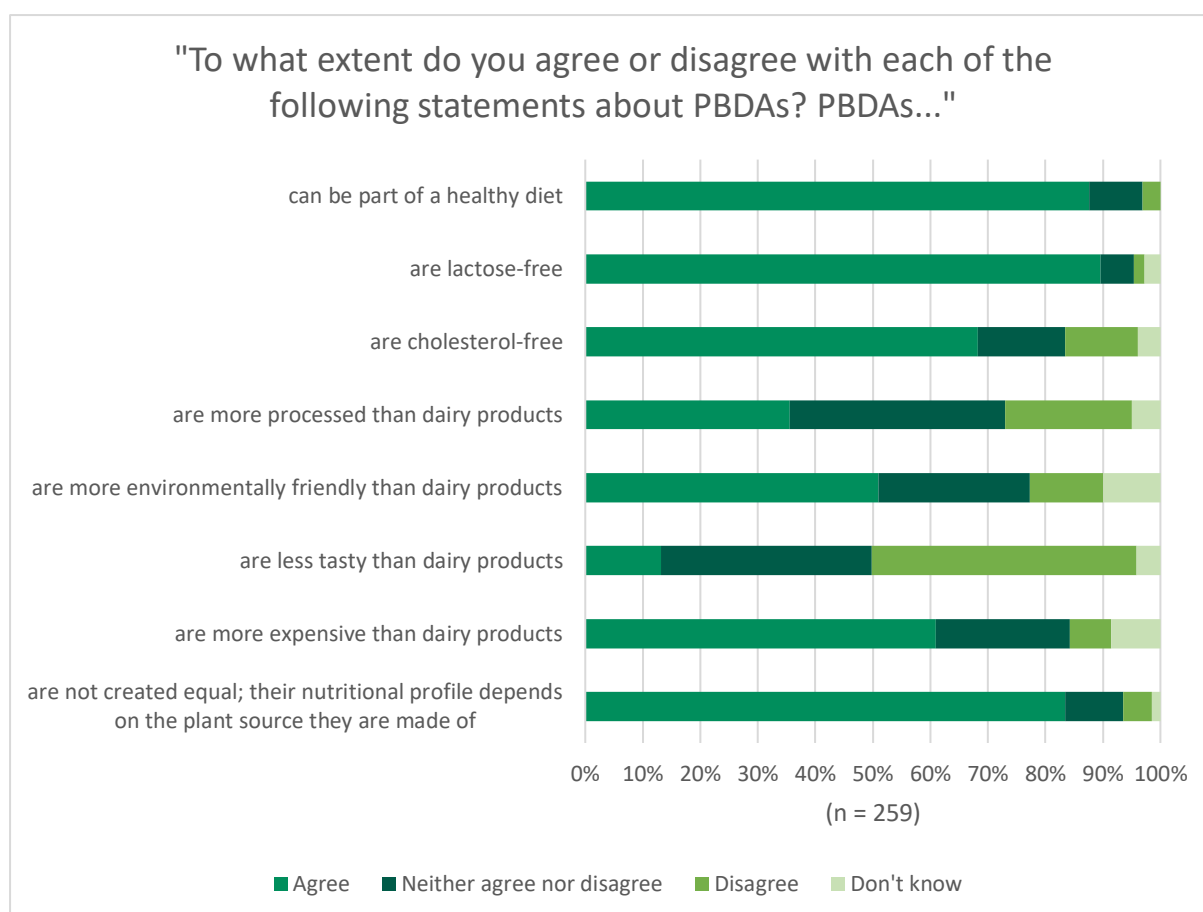


FIGURE 7. Perceptions about plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

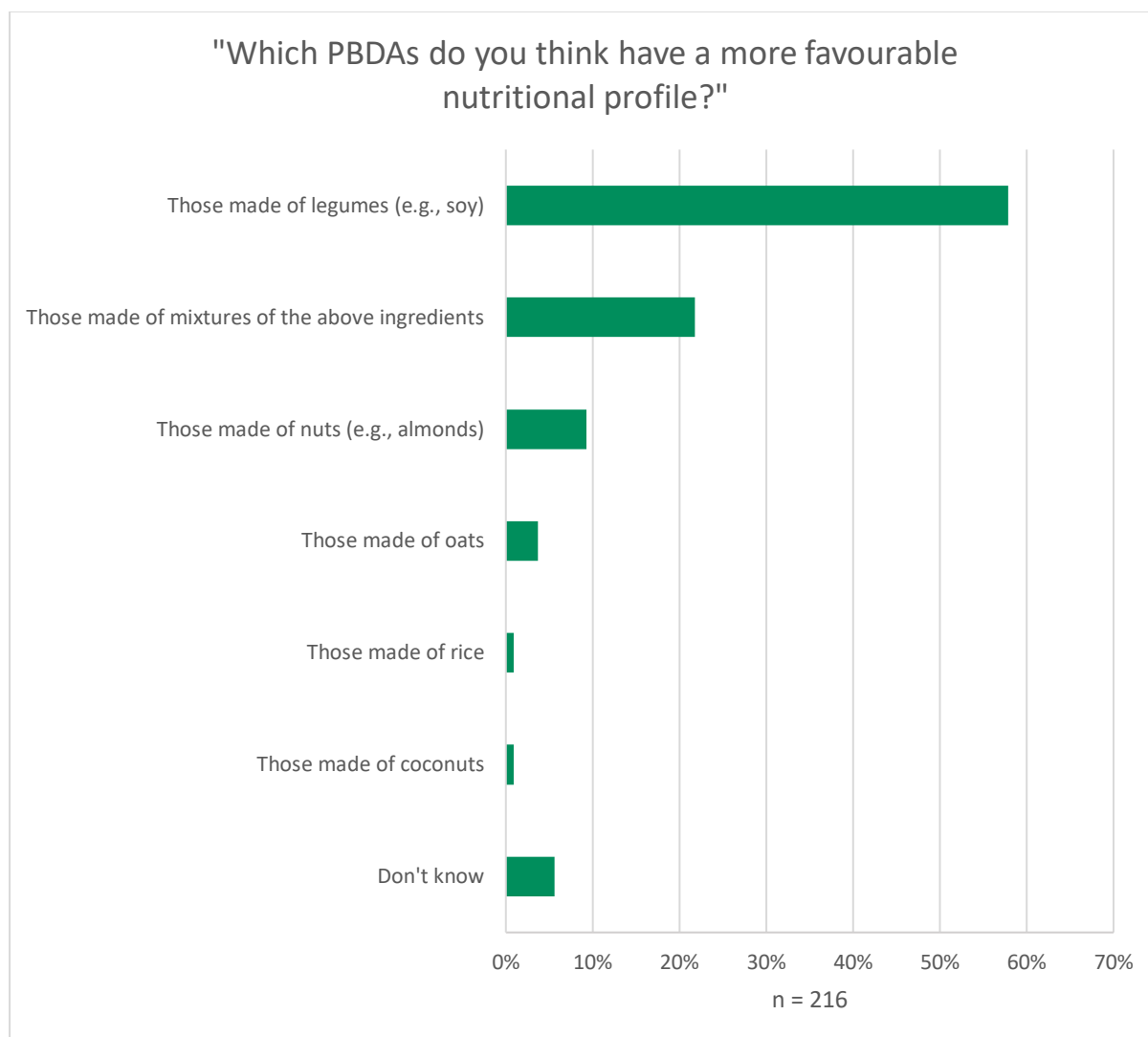


FIGURE 8. Perceptions about the nutritional profile of various plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

Nutrition professionals generally had a positive attitude towards **fortification of PBDAs with vitamins and/or minerals**, with 81% of the sample being in favour of fortification (FIGURE 9). Those who were in favour thought that fortification helps PBDAs become more nutritious (67%) and more equivalent to dairy products (55%) (FIGURE 10). Fewer nutrition professionals (19%) supported fortification for marketing purposes. Those who selected 'Other' in response to why PBDAs should be fortified (16 out of 210), cited reasons such as increasing micronutrient bioavailability (3 out of 210), avoiding external supplementation (2 out of 210), helping consumers meet their nutrient requirements (2 out of 210) and combat deficiencies (4 out of 210), expanding the variety of options available in the market (2 out of 210), or potentially preventing price hikes for these products (1 out of 210).

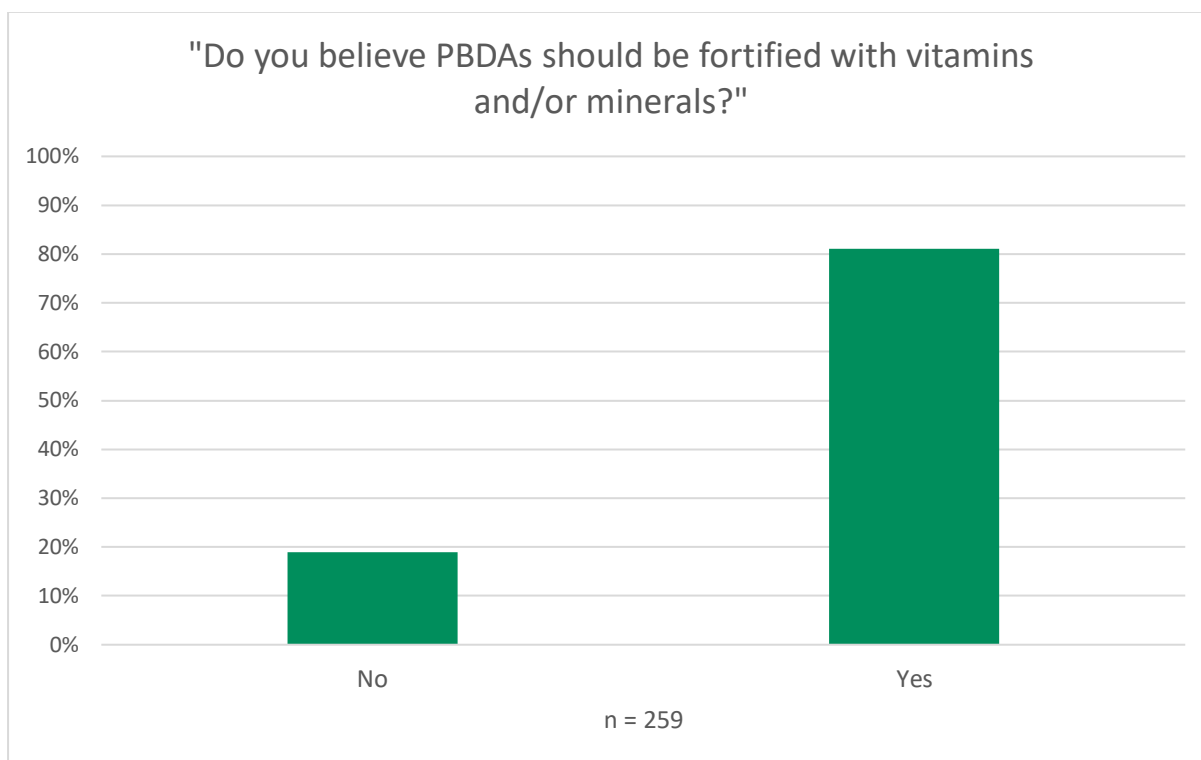


FIGURE 9. Attitudes towards fortification of plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

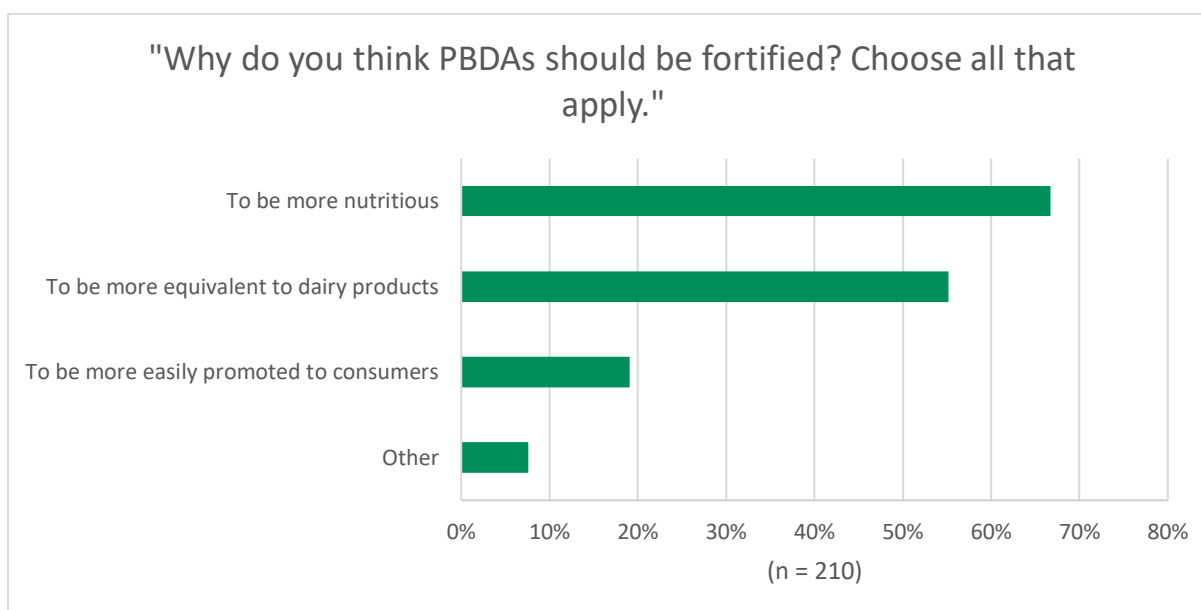


FIGURE 10. Motivations in favour of fortification of plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

In contrast, those who were against fortification (n = 49) expressed mixed opinions as to **why PBDAs should not be fortified** (FIGURE 11). Thirty five percent believed PBDAs are already nutritious, 31% thought that fortification would make these products more processed, a quarter thought that it would increase their cost, and 23% believed that fortification would not substantially change nutrient bioavailability of PBDAs. One third of this segment (16 out of 49) cited other reasons such as the idea that fortification is not necessary if the diet is sufficiently varied (6 out of 49) and that PBDAs should not be used as substitutes for dairy (therefore no need to fortify them to mimic the dairy profile) (3 out of 49). One respondent (out of 49) mentioned that current methods of fortification do not improve nutrient bioavailability, and another one hinted that heavy fortification could make these products ultra-processed. Finally, it was also mentioned that fortification should remain optional (1 out of 49) and that educating consumers about nutrient deficiencies could help them take measures to prevent them (1 out of 49).

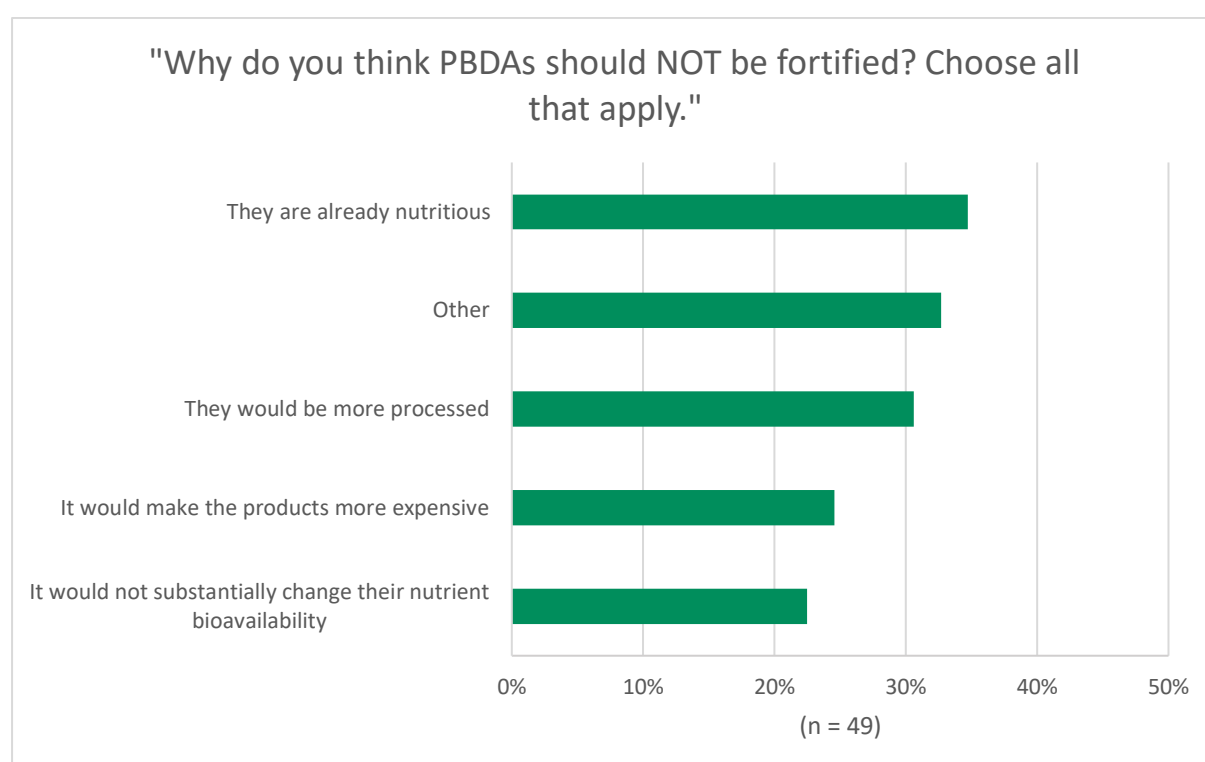


FIGURE 11. Motivations against fortification of plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

When asked to estimate the **proportion of PBDAs on the Spanish market that are fortified with micronutrients**, the average estimate was 55% (SD = 20%) (FIGURE 12). This estimate ranged widely from 10% to 100%, indicating a diversity of opinions. Overall, nutrition professionals overestimated the level of fortification in Spain, as only 17% of PBDAs are fortified in the Spanish market (Agencia Catalana De Seguridad Alimentaria, 2024). Most nutrition professionals thought PBDAs are most frequently fortified with calcium (92%), vitamin D (85%), and vitamin B12 (61%) (FIGURE 13). Smaller proportions of the sample (< 30%) thought PBDAs in Spain are fortified with other micronutrients. One respondent (out of 259) commented at the end of the survey that PBDAs are fortified with too many nutrients and that fortification should rather focus on a few key nutrients like iodine, calcium,

and vitamin B12. Another respondent mentioned that PBDAs should be enriched only with substances that can be absorbed by the intestine.

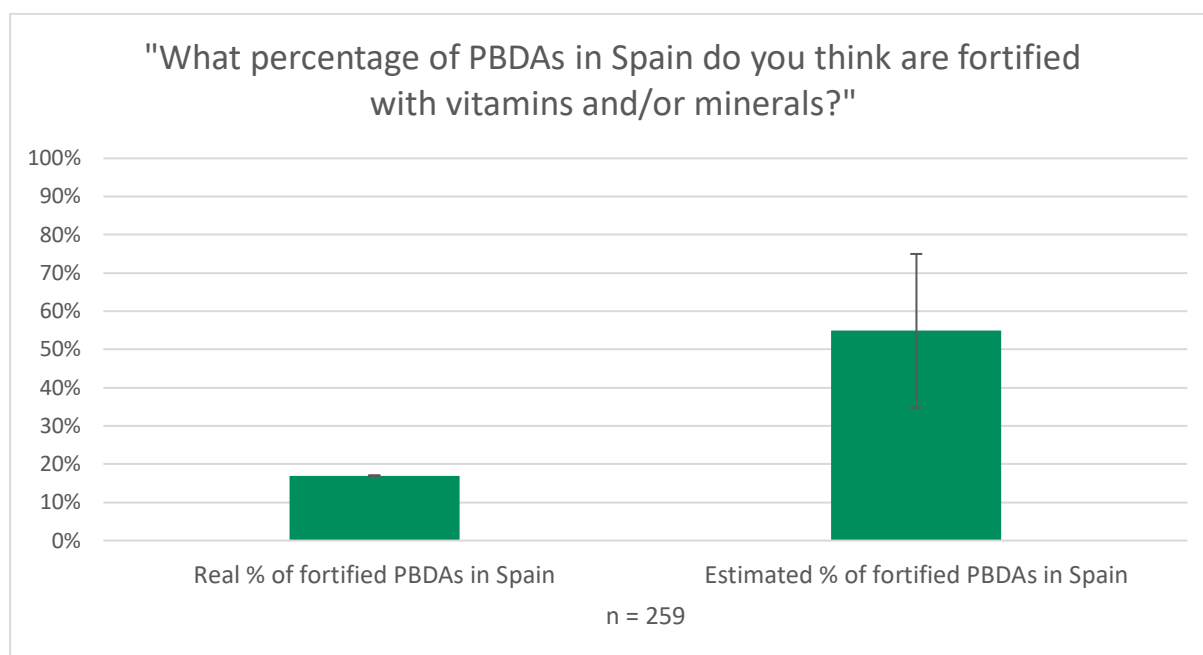


FIGURE 12. Real and perceived level of fortification of plant-based dairy alternatives (PBDAs) in Spain (in % of total sample analysed)

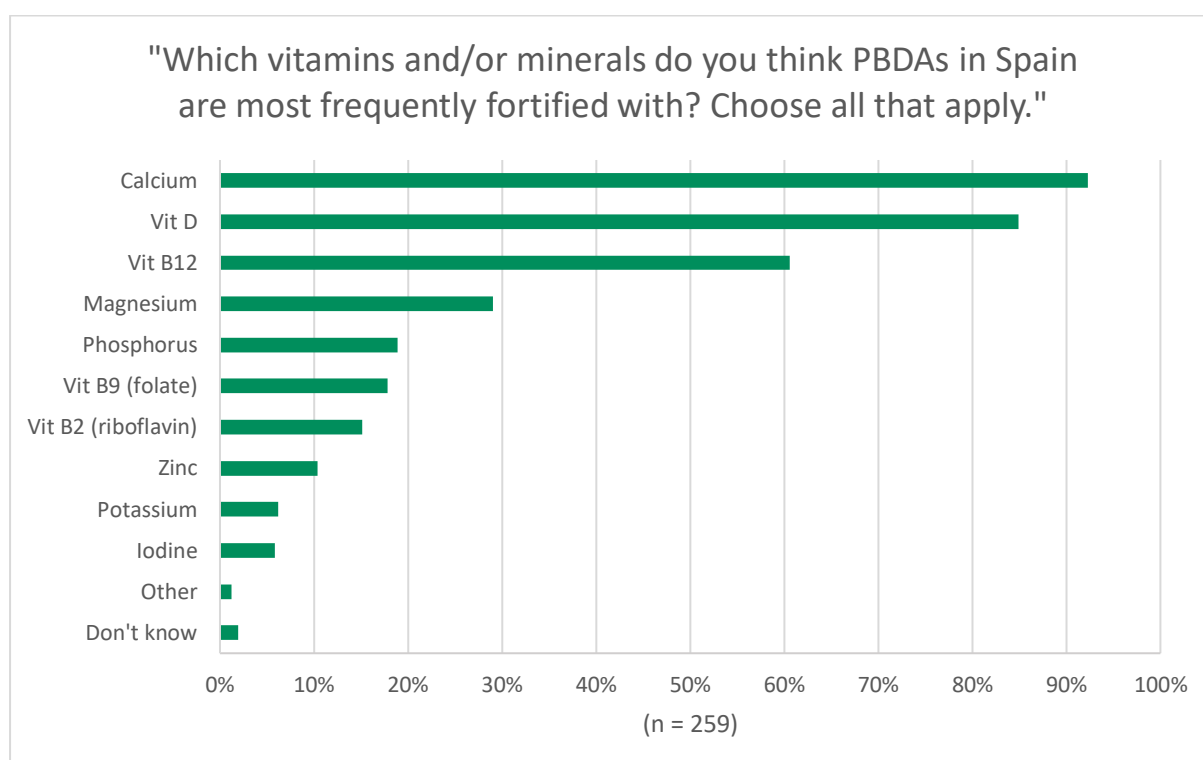


FIGURE 13. Perceptions about types of fortification of plant-based dairy alternatives (PBDAs) in Spain (in % of total sample analysed)

Nutrition professionals were also asked which micronutrients they think the Spanish population is most deficient in. Vitamin D was indicated by most respondents (76%) as the **most commonly deficient micronutrient in the Spanish population**, followed by calcium (45%) and iron (42%) (FIGURE 14). Other micronutrients such as magnesium, iodine, and folate were indicated by fewer respondents (< 30%).

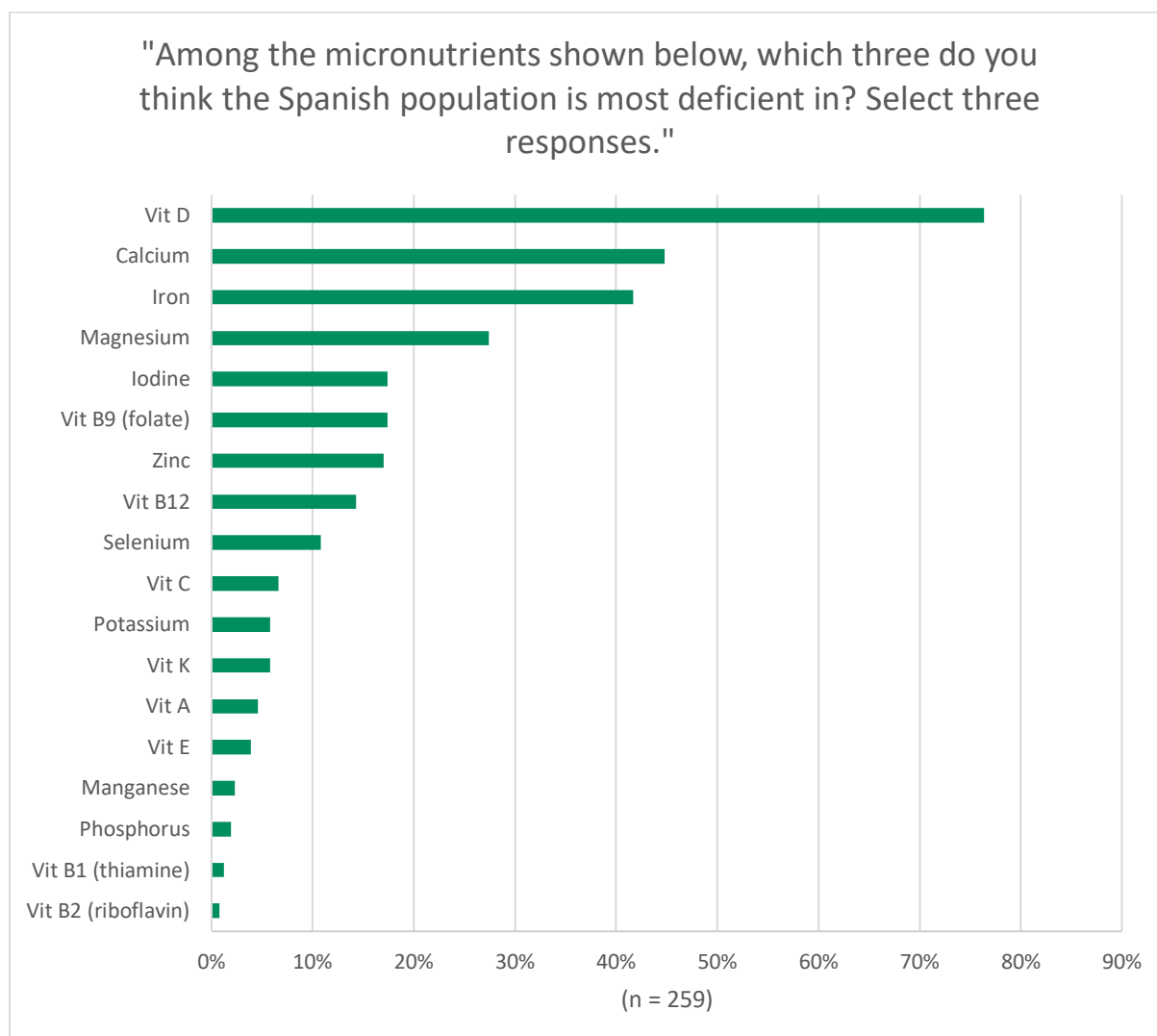


FIGURE 14. Perceptions about deficiencies of micronutrients in the Spanish population (in % of total sample analysed)
Note: The following response option was not selected by none of the respondents: Vit B3 (niacin).

When asked to compare the **nutritional value** of PBDAs and dairy products, 51% of the sample believed they are nutritionally equivalent, 24% viewed PBDAs as nutritionally inferior and 15% as nutritionally superior to dairy, while 10% were unsure (FIGURE 15). Among those who considered PBDAs equivalent to dairy, 76% thought that this is the case only when PBDAs are fortified, while 24% thought they are equivalent irrespective of fortification. Likewise, among those who believed PBDAs are superior to dairy, opinions diverged as to whether superiority depends on fortification, with 48% of this segment believing that, only when fortified, PBDAs are superior to dairy.

Perceptions of **superiority** were closely tied to awareness of PBDAs being cholesterol-free ($p = 0.01$), but not to awareness of them being lactose-free ($p = 0.07$). Among those who thought PBDAs are superior to dairy, 85% agreed that these products are free from dietary cholesterol, compared to 63% of the rest of the sample.

Perceptions of **inferiority** were not significantly associated with awareness of the cholesterol-free ($p = 0.49$) or lactose-free ($p = 0.97$) nature of PBDAs.

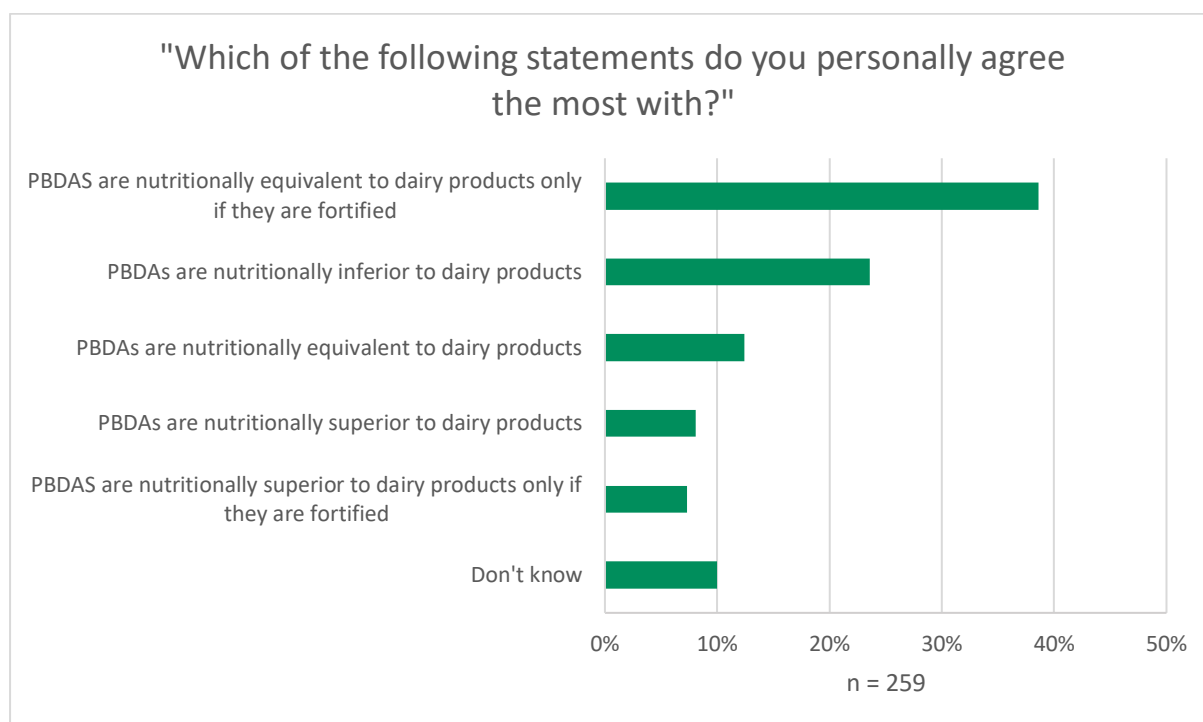


FIGURE 15. Perceptions about nutritional value of plant-based dairy alternatives (PBDAs) compared to dairy products (in % of total sample analysed)

When it comes to **specific nutrients**, large proportions of the sample believed that, compared to dairy, non-fortified PBDAs contain less protein (55%), fat (75%), saturated fat (88%), dietary cholesterol (85%), vitamin D (75%), vitamin B12 (80%), and calcium (76%) (FIGURE 16). One respondent (out of 259) commented at the end of the survey that PBDAs do not provide protein with high biological value (i.e., containing all essential amino acids in the right proportions for human needs) and another one thought that they lack healthy molecules/compounds that are found in dairy. Conversely, many nutrition professionals thought that fibre (80%) and carbohydrate (49%) content is higher in PBDAs compared to dairy. Opinions on sugar, calories, and other micronutrients were more mixed. For micronutrients like vitamin B2, folate, phosphorus, magnesium, iodine, potassium, and zinc, over one third of the sample reported uncertainty. Some nutrition professionals commented in their final comments that the biggest drawback of these products is the high level of sugar or sweeteners (3 out of 259) and one respondent thought that PBDAs should be more natural with no sunflower oil or additives like guar gum added to them. Some nutrition professionals mentioned that nutritional comparison is difficult as it depends on both the plant ingredients from which PBDAs are made (7 out of 259) and the type of product (drink versus yogurt) (2 out of 259).

Perceptions about the nutrient content of PBDAs were significantly associated with viewing PBDAs as nutritionally superior or inferior to dairy. For example, larger shares of those who viewed PBDAs as **inferior** to dairy believed that PBDAs have lower levels of protein (82% vs 47% in the rest of the sample) ($p = 0.001$), fibre (5% vs 1.5%) ($p = 0.05$), vitamin D (89% vs 70%) ($p = 0.04$), vitamin B2 (59% vs 36%) ($p = 0.01$), folate (53% vs 27%) ($p = 0.002$), calcium (95% vs 70%) ($p < 0.001$), phosphorus (61% vs 34%) ($p = 0.002$), and magnesium (53% vs 21%) ($p < 0.001$), and higher levels of fat (10% vs 2%) ($p = 0.01$), saturated fat (5% vs 0.5%) ($p = 0.01$), carbohydrates (59% vs 46%) ($p = 0.002$), and sugar (64% vs 27%) ($p < 0.001$) than dairy. Conversely, larger shares of those who viewed PBDAs as **superior** to dairy believed that PBDAs have equal levels of carbohydrates (50% vs 30%) ($p = 0.05$) and sugar (53% vs 30% in the rest of the sample) ($p = 0.01$), higher levels of calcium (28% vs 11%) ($p = 0.01$), magnesium (35% vs 15%) ($p = 0.001$), potassium (33% vs 17%) ($p = 0.03$), and zinc (20% vs 9%) ($p = 0.02$), and lower caloric content (65% vs 43%) ($p = 0.04$) than dairy.

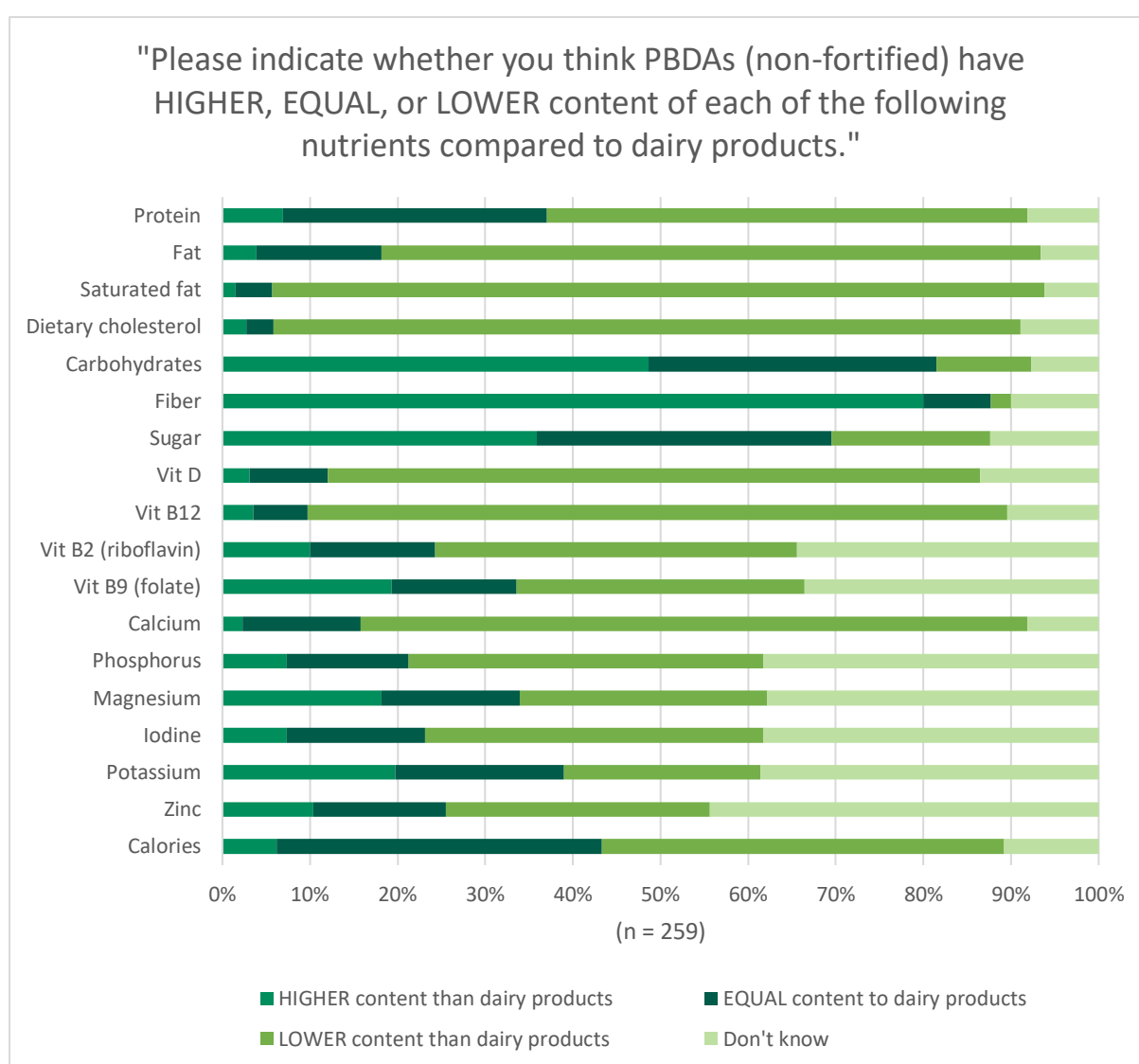


FIGURE 16. Perceptions about the nutrient and calorie content of plant-based dairy alternatives (PBDAs) compared to dairy (in % of total sample analysed)

Although nutrition professionals generally agreed that PBDAs can have a role in a healthy diet, opinions diverged regarding the **specific role of these products in relation to dairy**. Forty six percent of the sample believed that PBDAs can fully substitute dairy, though 63% of them specified this is only true if PBDAs are fortified. Another 32% of the sample believed that PBDAs should be consumed alongside dairy without substituting them and 15% thought they can only partly substitute dairy (FIGURE 17). For example, one respondent (out of 259) noted at the end of the survey that even in cases of lactose intolerance, consumers can still tolerate certain dairy products in certain quantities, therefore dairy should never be completely replaced with PBDAs. In contrast, another respondent noted that consumers with lactose intolerance should be recommended fortified PBDAs instead of lactose-free dairy. Finally, a small minority (7%) thought PBDAs cannot substitute dairy. For example, one respondent (out of 259) noted that PBDAs are a different food group and should not be compared to dairy, while another one called for clear standards before PBDAs can be labelled as milk or yogurt substitutes.

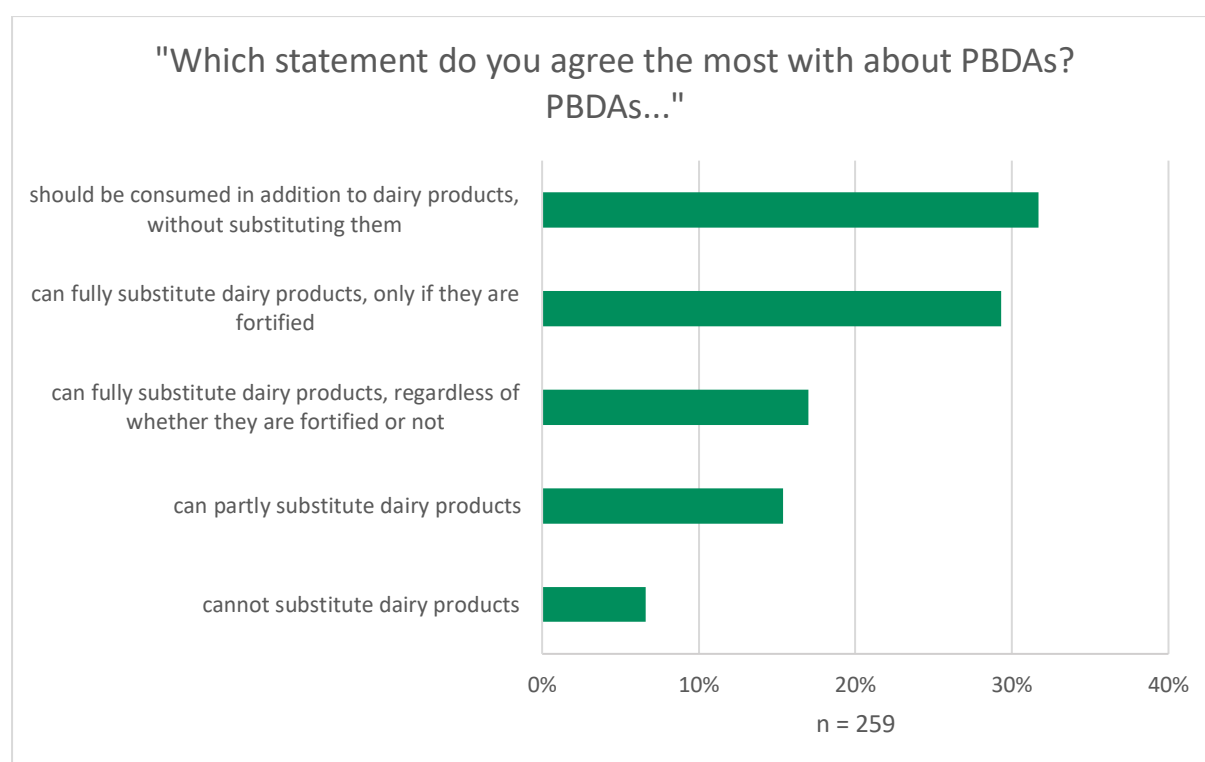


FIGURE 17. Perceived role of plant-based dairy alternatives (PBDAs) in relation to dairy (in % of total sample analysed)

Finally, regarding their **information needs**, 84% of nutrition professionals expressed interest in receiving information and clinical evidence on the health benefits of PBDAs (FIGURE 18). One respondent (out of 259) called for preventive education to help consumers understand how foods like conventional dairy may contribute to health problems, which are widespread but not necessarily unavoidable. Over 70% of the sample wanted information on fortification, bioavailability, and nutritional composition of PBDAs, and over 60% were interested in their processing, additives, and environmental impact. Fewer nutrition professionals (under 40%) were interested in practical applications and consumer trends and preferences. Other types of information about PBDAs that nutrition professionals cited included information about added sugar and sweeteners (1 out of 259)

or genetically modified ingredients (e.g., soy) (1 out of 259). Finally, it was also mentioned that labels such as 'sugar-free', '0% added sugar', or 'light' that are frequently used in PBDAs can be misleading as consumers do not understand the differences between them (1 out of 259). There were no significant differences in the information needs between students and the other professional groups surveyed.

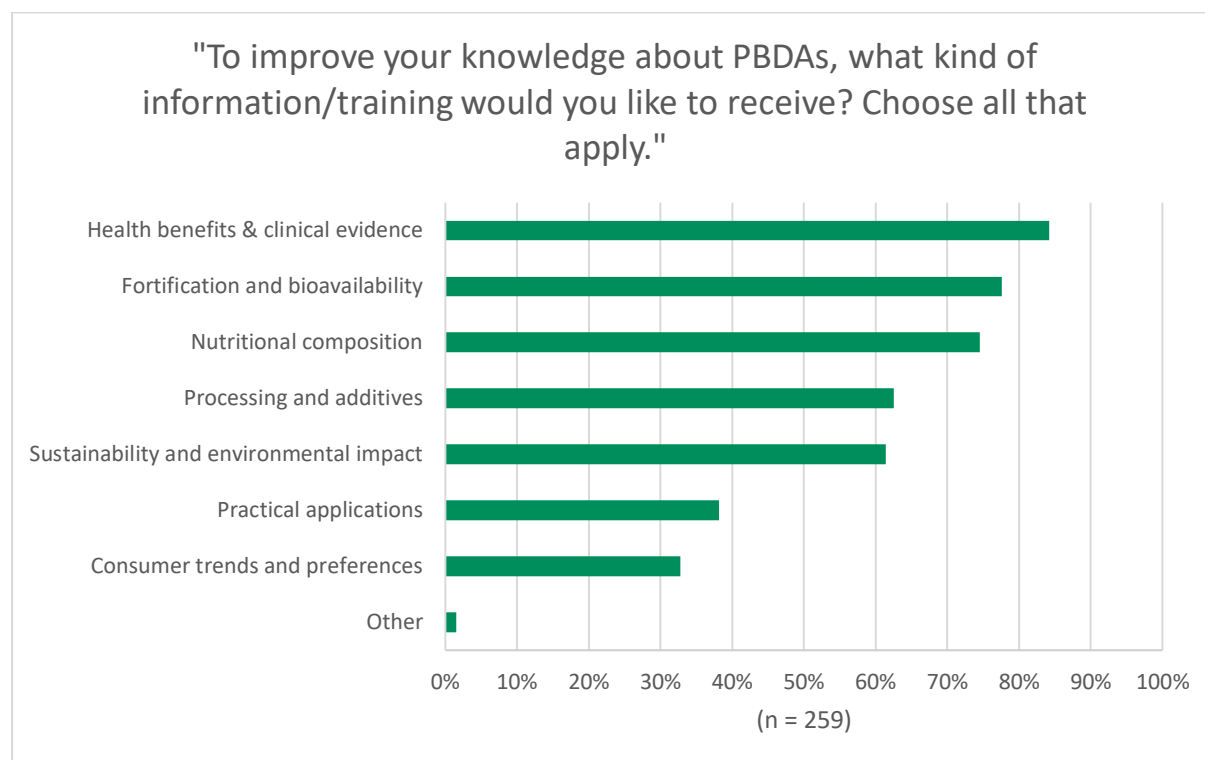


FIGURE 18. Information needs with regards to plant-based dairy alternatives (PBDAs) (in % of total sample analysed)



Current use in professional practice

Among those nutrition professionals who were working with patients/clients, 40% reported **recommending PBDAs** to more than 30% of their clients, 37% were recommending them to 10% - 30% of their client base, and 18% to fewer than 10% of their clients (FIGURE 19). Only 5% were not recommending PBDAs at all. Among those not currently working with patients/clients, 87% were positive about recommending PBDAs to consumers (FIGURE 20). There were no significant differences in the frequency of ($p = 0.79$) or attitude towards ($p = 0.70$) recommending PBDAs between the various professional groups surveyed.

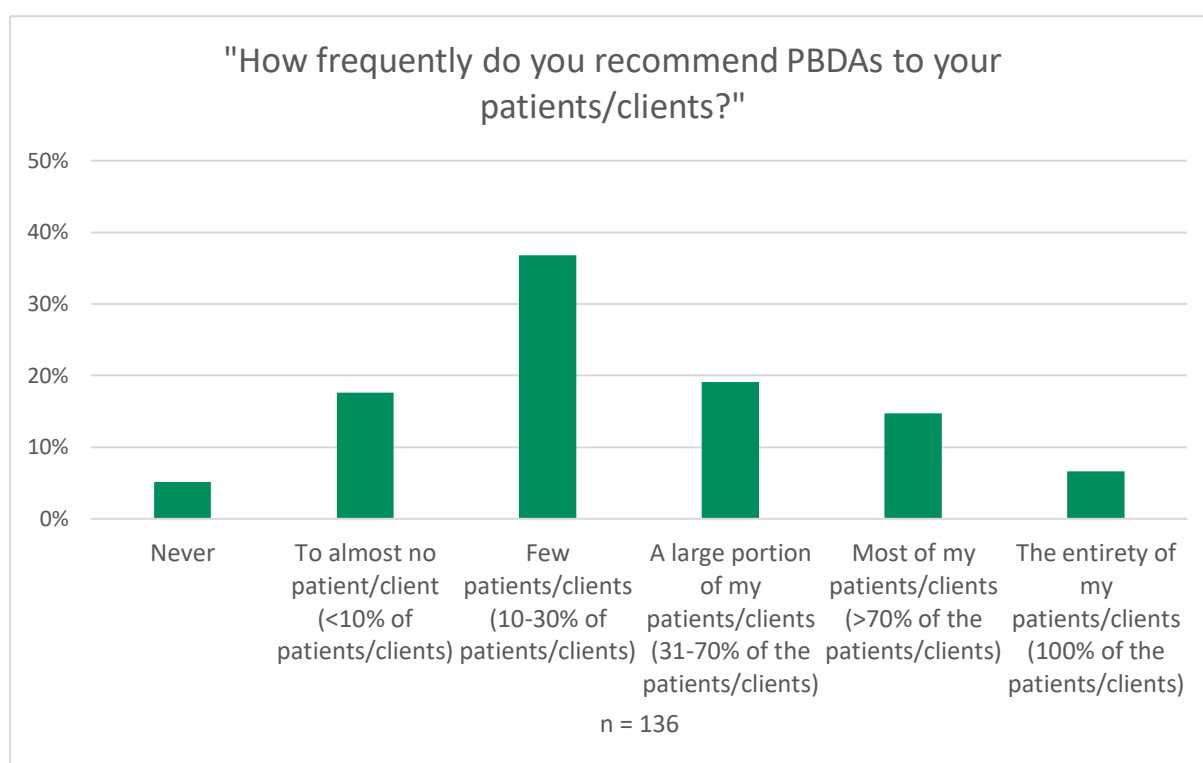


FIGURE 19. Frequency of recommending plant-based dairy alternatives (PBDAs) to patients/clients (in % of total sample analysed)

Familiarity, personal consumption, and perceived nutritional value compared to dairy significantly predicted the frequency of recommending PBDAs to patients/clients. Those who viewed PBDAs as nutritionally equivalent to dairy were recommending PBDAs more frequently than those who were uncertain about how PBDAs fare nutritionally compared to dairy ($b = 0.89$, $p = 0.02$). Also, the more familiar nutrition professionals were with PBDAs ($b = 0.37$, $p = 0.01$) and the more frequently they consumed these products themselves ($b = 0.26$, $p = 0.005$), the more frequently they recommended these products. Other factors such as years of professional experience, exposure to PBDAs when shopping, estimated percent of fortified PBDAs in Spain, perceived role in the diet, or other perceptions (e.g., environmental impact, level of processing, affordability, tastiness compared to dairy) did not significantly predict the frequency of recommending PBDAs.

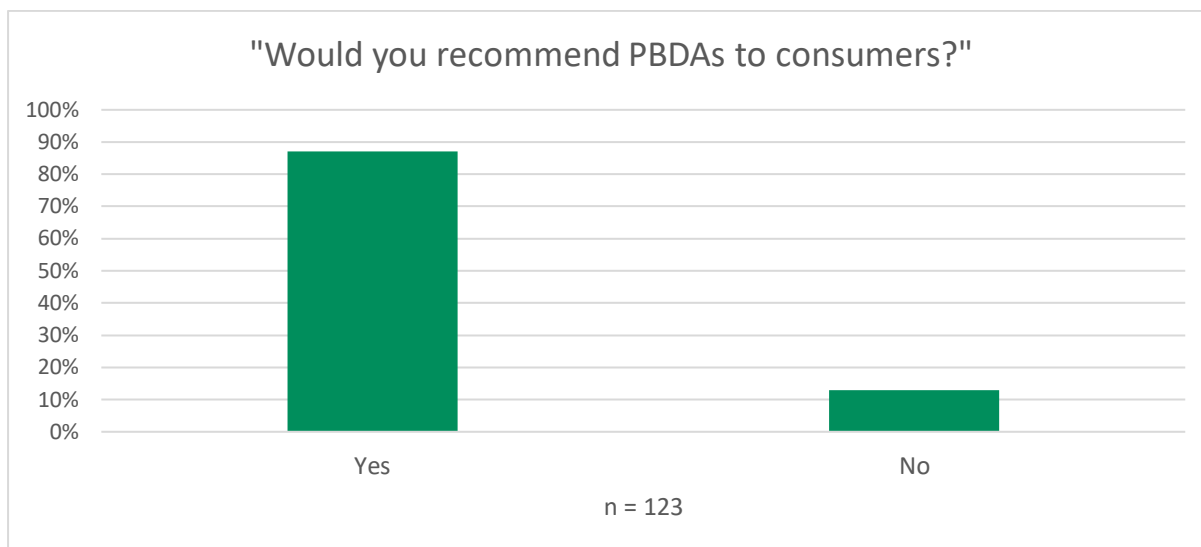


FIGURE 20. Attitudes towards recommending plant-based dairy alternatives (PBDAs) to consumers in those not working directly with patients/clients (in % of total sample analysed)

The most common **reasons for not recommending PBDAs** were beliefs that these products are unnecessary (70%) or not nutritious unless fortified (61%) (FIGURE 21). Fewer respondents cited concerns about their healthiness, affordability, processing, or lack of information. Among those who cited other reasons (n = 2), one respondent wished to learn more about potential side effects and another one emphasized that PBDAs are mainly suited for individuals with dietary restrictions (e.g., lactose intolerance, vegan, dairy-free).

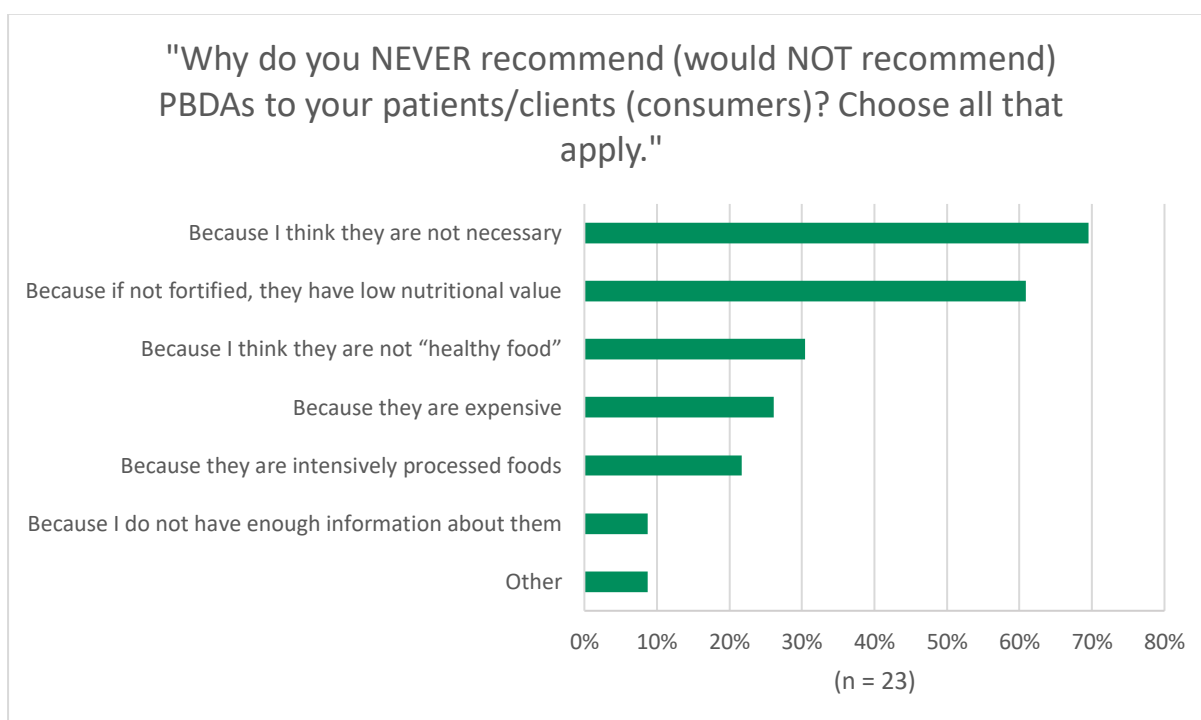


FIGURE 21. Reasons why nutrition professionals never (or are unwilling to) recommend plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

Note: The following response options were not selected by none of the respondents: Because of their taste & texture, Because of cultural, religious, or ethical considerations.

While 34% of the sample would recommend PBDAs to all consumers, most nutrition professionals would **target specific groups** like people who follow restricted diets (75%), adults (52%), or people who already consume these products (49%) (FIGURE 22). Smaller proportions of the sample would recommend PBDAs in younger or older ages or in people with specific health conditions. Other potential target groups cited included people with allergies (1 out of 259), autoimmune diseases (1 out of 259), or digestive problems (2 out of 259), people who value sustainability (1 out of 259), and women going through menopause (1 out of 259).

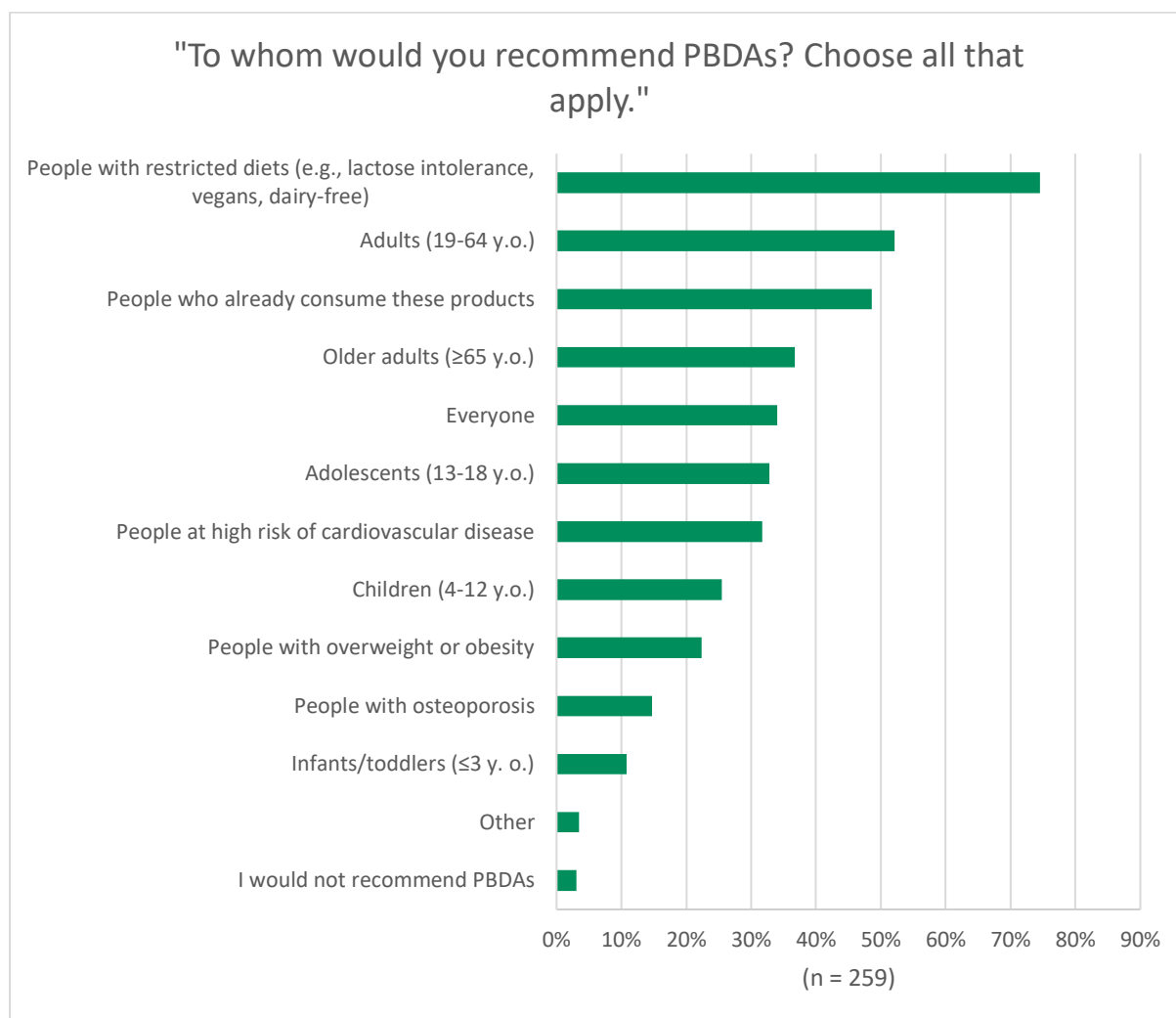


FIGURE 22. Target population groups for recommending plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

Regarding the **purposes for which nutrition professionals would recommend PBDAs**, half of the sample cited dietary diversity and 46% cited sustainability or ethical reasons (FIGURE 23). However, most nutrition professionals would recommend PBDAs to deal with lactose intolerance and dairy allergies (87%) or to accommodate vegan and other plant-based diets (87%). Smaller proportions of the sample (less than 40%) would recommend PBDAs to accommodate dietary restrictions related to culture or religion, promote health, accommodate texture or taste preferences, manage chronic diseases or weight, or for convenience and product innovation purposes. Other purposes cited included providing alternatives for people who consume a lot of dairy (1 out of 259) or avoiding

intestinal malabsorption that is common in dairy (2 out of 259), while one respondent mentioned that PBDAs might be appropriate for those going through menopause due to their high content in phytosterols.

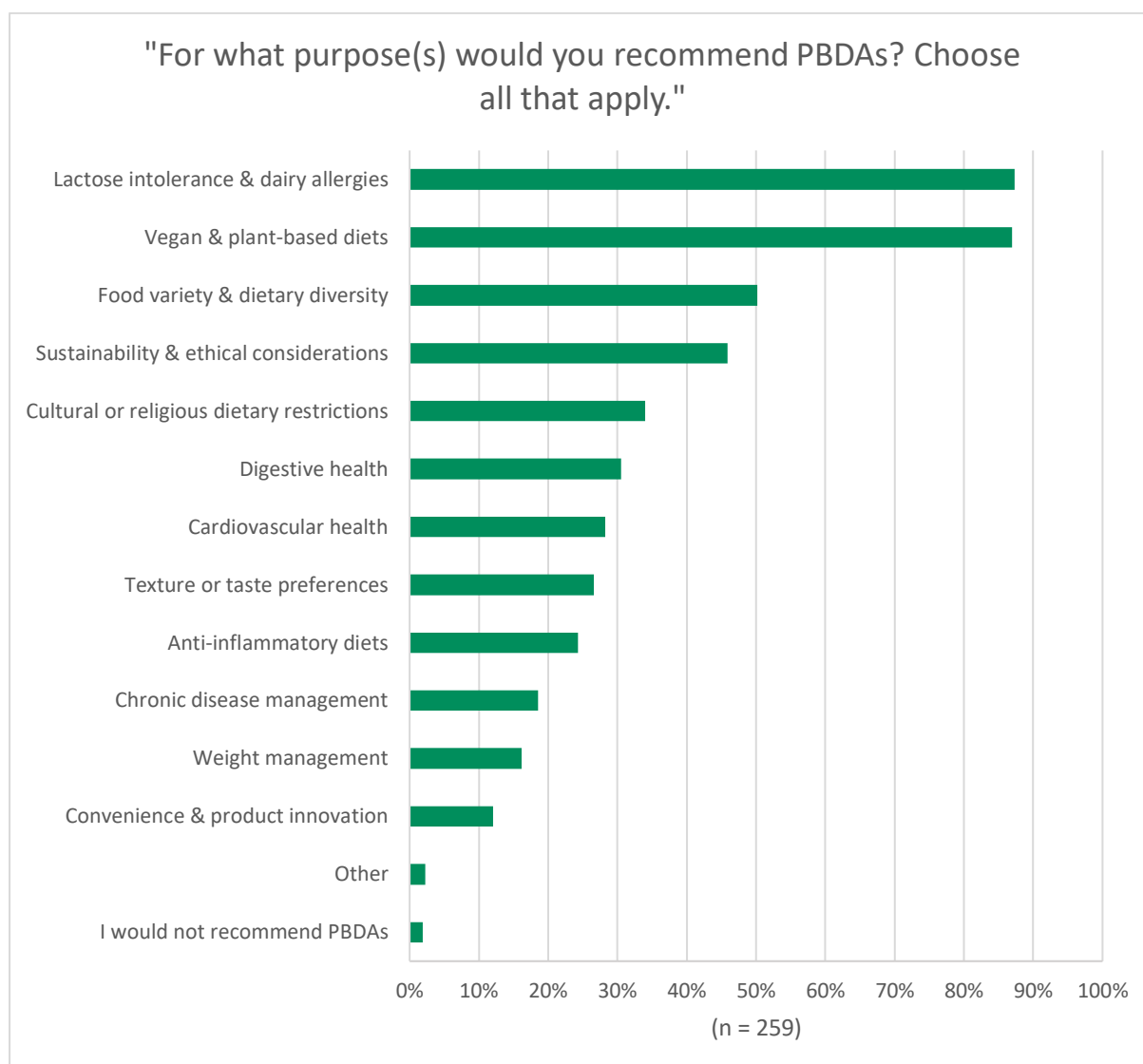


FIGURE 23. Purposes for recommending plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

Attitudes toward recommending fortified vs. non-fortified PBDAs were closely tied to how nutrition professionals perceived the role of PBDAs in the diet ($p < 0.001$). Among those who believed PBDAs, regardless of fortification, can fully substitute dairy, the majority (86%) would recommend either version (FIGURE 24). In contrast, 61% of those who thought fortification is a requirement for PBDAs to fully substitute dairy would recommend only fortified versions. Those who saw PBDAs as partly substituting or complementing dairy, were more divided on this matter (i.e., about half would recommend either version, while 43% would recommend only fortified versions). Finally, the majority (41%) of those who thought PBDAs cannot substitute dairy would not recommend PBDAs at all.

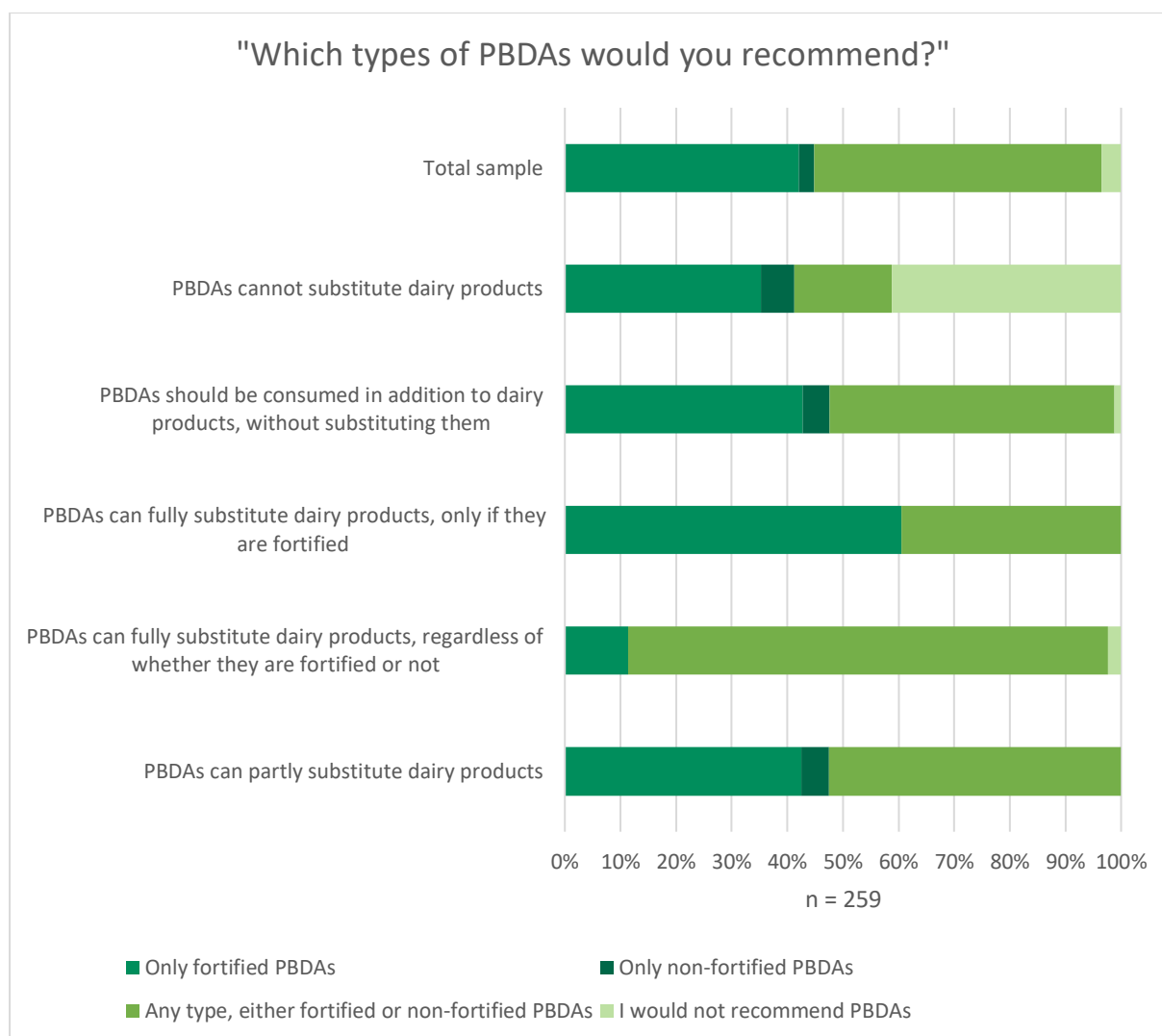


FIGURE 24. Preference for versions of plant-based dairy alternatives (PBDAs) to recommend by perceived role of PBDAs in the diet and in the total sample (in % of total sample analysed)



Inclusion in national dietary guidelines

Nutrition professionals were generally positive about **including PBDAs in the Spanish dietary guidelines**, with only 7% of the sample being against inclusion and 15% not taking a position due to lack of information (FIGURE 25). Of those in favour, 58% supported including either fortified or non-fortified versions, while 42% favoured including only fortified PBDAs. There were no significant differences between the various professional groups in the likelihood of being in favour of inclusion ($p = 0.22$) or in the likelihood of being in favour of only PBDAs that are fortified being included in dietary guidelines (i.e., conditional inclusion) ($p = 0.86$).

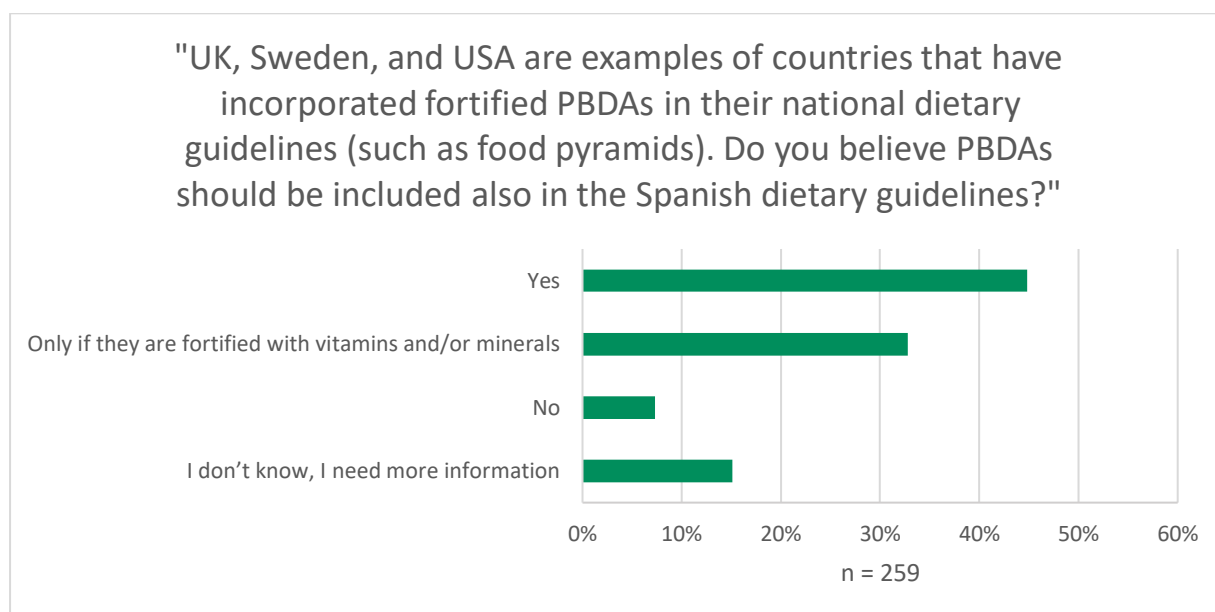


FIGURE 25. Attitudes towards including plant-based dairy alternatives (PBDAs) in the Spanish dietary guidelines (in % of total sample analysed)

Support for inclusion was significantly associated with perceptions of **processing, environmental impact, and role and nutritional value compared to dairy**. Specifically, those who considered PBDAs as more processed than dairy (36%) were 0.6 times less likely to be in favour of inclusion than those who did not ($b = -0.91$, $p = 0.03$). In contrast, those who considered PBDAs as more environmentally friendly than dairy (51%) were 2.1 times more likely to be in favour of inclusion than those who did not ($b = 1.13$, $p = 0.01$). Notwithstanding, opinions as to whether PBDAs are more environmentally friendly and more processed than dairy were mixed. With regards to environmental friendliness, 51% agreed with the statement that PBDAs are more environmentally friendly than dairy, 13% disagreed, 26% neither agreed nor disagreed, and 10% did not know. Likewise, 36% agreed with the statement that PBDAs are more processed than dairy, 22% disagreed, 38% neither agreed nor disagreed, and 5% did not know. Similarly, those who believed that PBDAs can fully substitute dairy as long as they are fortified (29%) were 3.2 times more likely to be in favour of inclusion compared to those who believed that PBDAs can only partly substitute dairy (15%) ($b = 1.43$, $p = 0.04$). This suggests that the more nutrition professionals trust fortification to make PBDAs nutritionally

equivalent to dairy, the more likely they are to support their official inclusion in dietary guidelines. Finally, those who viewed PBDAs as nutritionally equivalent to dairy (12%) were 0.8 times more likely to be in favour of inclusion compared to those who were unsure about how PBDAs fare nutritionally compared to dairy (10%) ($b = 1.51$, $p = 0.05$).

Conversely, **support for conditional inclusion** was significantly associated with perceptions of **environmental impact**, **role in the diet**, and **nutritional value in relation to dairy**. Specifically, those who viewed PBDAs as more environmentally friendly than dairy (51%) were 0.6 times less likely to be in favour of conditional inclusion than those who did not ($b = -0.84$, $p = 0.05$). Similarly, those who believed that PBDAs can fully substitute dairy as long as they are fortified (29%) were 2.6 times more likely to be in favour of conditional inclusion compared to those who believed that PBDAs can only partly substitute dairy (15%) ($b = 1.29$, $p = 0.03$). Finally, those who viewed PBDAs as nutritionally inferior to dairy (24%) were 14.4 times more likely to be in favour of conditional inclusion ($b = 2.73$, $p = 0.003$) compared to those who viewed PBDAs as equivalent to dairy irrespective of fortification (12%) and those who viewed PBDAs as nutritionally equivalent to dairy as long as they are fortified (39%) were 13.5 times more likely to be in favour of conditional inclusion ($b = 2.67$, $p = 0.001$) compared to those who viewed PBDAs as equivalent to dairy irrespective of fortification (12%).

Sixty seven percent of the sample thought that, if PBDAs were included in the Spanish dietary guidelines, their **recommended consumption frequency** should match that of dairy products, assuming equal portion sizes (FIGURE 26). In contrast, 15% felt the frequency should be higher, 13% said it should be lower, and 4% were unsure.

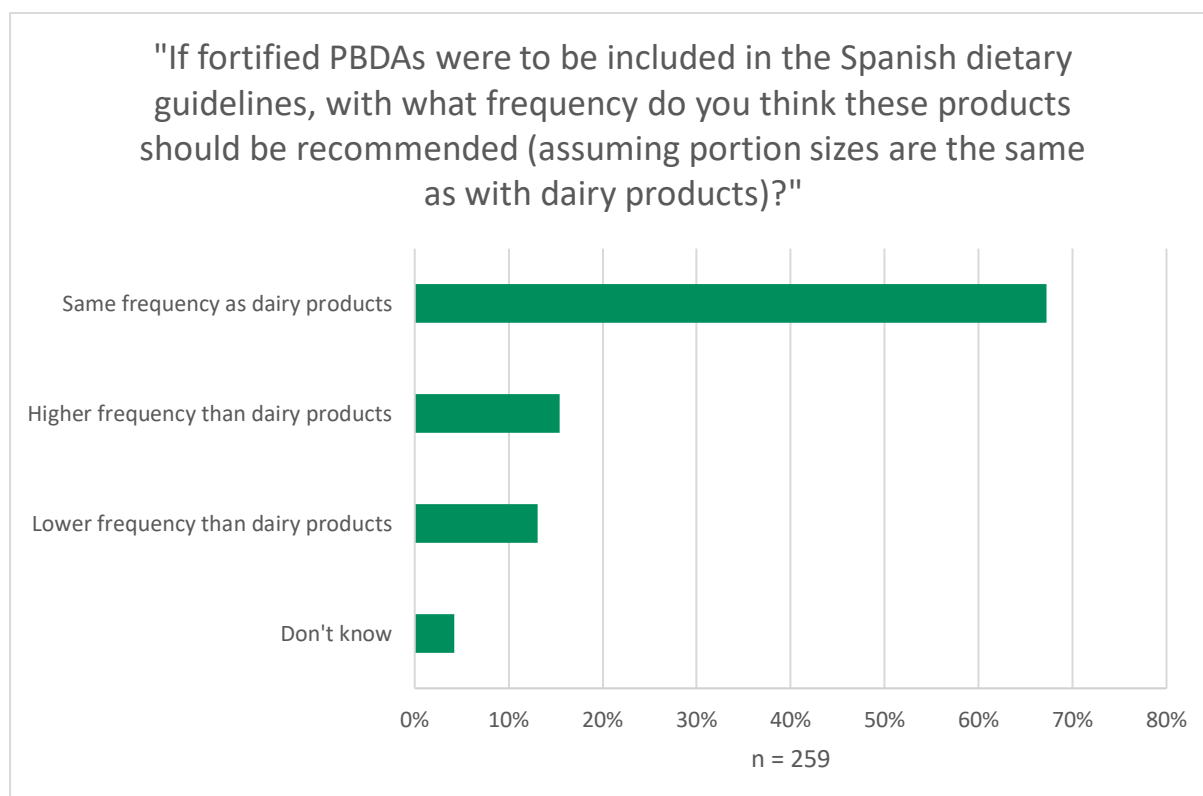


FIGURE 266. Preferred frequency of recommending plant-based dairy alternatives (PBDAs) if included in the Spanish dietary guidelines (in % of total sample analysed)

Finally, about one third of the sample (34%) thought that, if PBDAs were to be included in the national dietary guidelines, they should be recommended to everyone (FIGURE 27). However, larger proportions of nutrition professionals thought these products should be **recommended only to specific groups** such as people who follow restricted diets (53%), adults (41%), or people who already consume these products (37%). Fewer nutrition professionals would recommend PBDAs in younger or older ages, or in people with specific health conditions. Other groups that nutrition professionals thought could be recommended to consume PBDAs included people who are concerned about sustainability (1 out of 259), women going through menopause (1 out of 259), people with digestive (2 out of 259) or autoimmune diseases (2 out of 259), or people with nutrient deficiencies (1 out of 259).

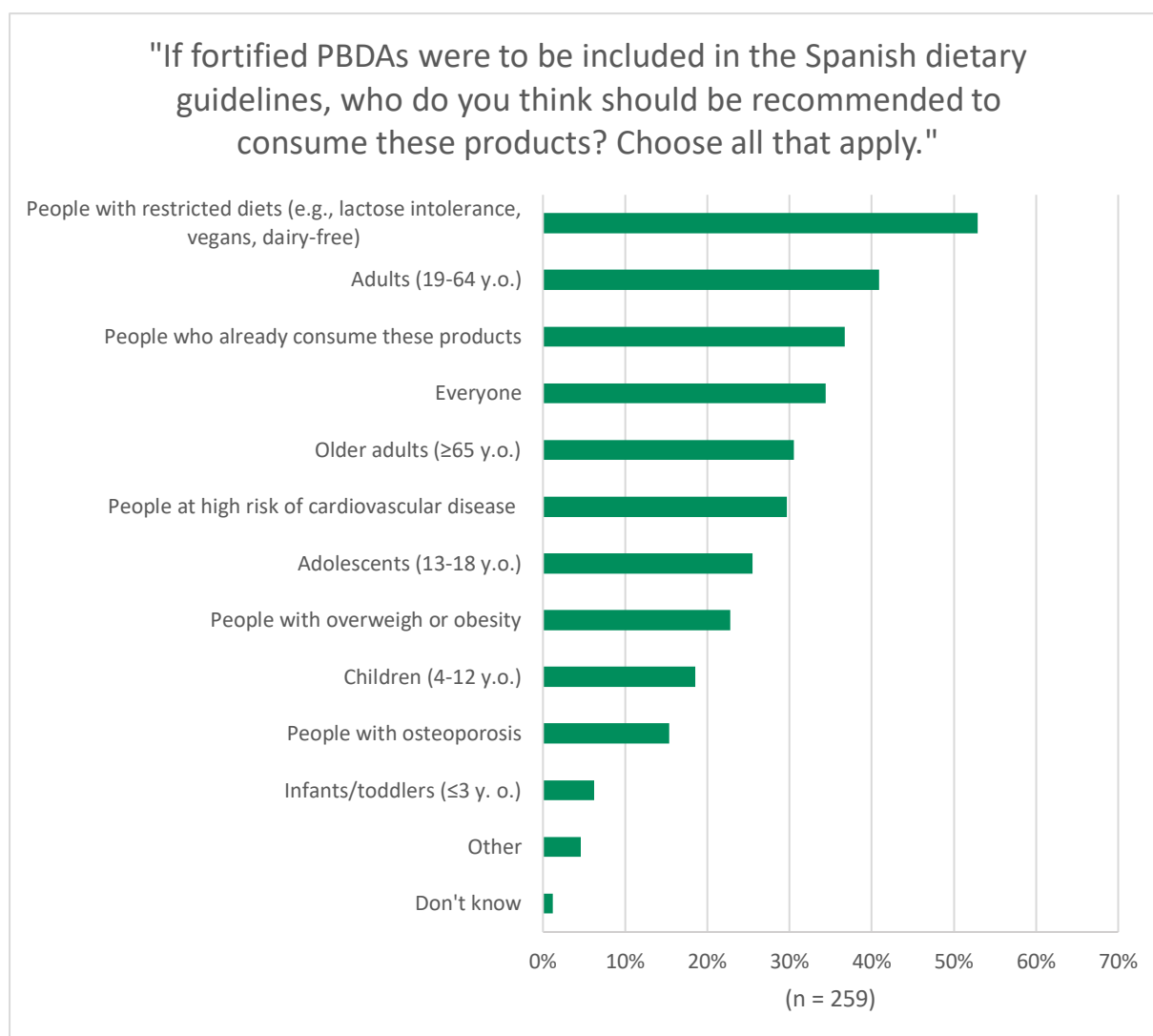


FIGURE 277. Target population groups for plant-based dairy alternatives (PBDAs) if included in the Spanish dietary guidelines (in % of total sample analysed)

Conclusions

This research offers an in-depth look at the perceptions, practices, and information needs of nutrition professionals in Spain regarding PBDAs. Overall, the findings suggest that while PBDAs are **broadly recognized** and **increasingly integrated** into professional practice, significant **knowledge gaps** and **divided opinions** persist, particularly in relation to their nutritional value, role in the diet, need for fortification, environmental impact, and degree of processing.

A large majority of nutrition professionals are familiar with PBDAs and generally **support their inclusion in a healthy diet**. Yet, most nutrition professionals believe these products are **suitable for specific segments** such as people who follow restricted diets, adults, or people who already consume these products. Recommendations are typically driven by a desire to **accommodate such dietary preferences or restrictions** or to **promote dietary diversity and sustainability** (e.g., PBDAs could be an alternative way to include more legumes and nuts in the diet). Previous studies that have investigated health professional attitudes towards PBDAs also show that while support for including PBDAs in a healthy diet is broad, health professionals view PBDAs as replacement to dairy mainly for certain individuals, such as those with dairy intolerances/allergies or those at high risk of cardiovascular disease (Clark et al., 2022a; Clark et al., 2022b; Goff et al., 2023). Meanwhile, our results indicate that there is **less support for recommending these products to younger (<18) or older (>65) ages**. These findings align with previous research highlighting concerns about the suitability of PBDAs for nutritionally vulnerable groups such as children and the elderly, due to their varying nutrient profiles and potential to contribute to deficiencies if not appropriately managed (Clegg et al., 2021).

Furthermore, in our study it was found that **viewing PBDAs as nutritionally equivalent to dairy** was associated with **more frequent recommendation** than being uncertain about their nutritional value relative to dairy. **Familiarity** and **personal consumption** were also strong predictors of professional recommendations, suggesting that individual experience heavily shapes professional behaviour. These results align with previous research showing that PBDA recommendations of health professionals in the US reflect their own personal consumption patterns (Clark et al., 2022b).

Views on the **nutritional adequacy of PBDAs** were diverse. While more than half of the respondents considered PBDAs nutritionally equivalent or even superior to dairy, particularly when fortified, many others remained sceptical, especially with respect to protein and micronutrient content. Some also felt that comparing the nutritional value of PBDAs to dairy is challenging, as it depends on both the plant sources used and the type of product (e.g., drink vs. yogurt) (Clegg et al., 2021). These results are in line with prior research. For example, Clark et al. (2022a) found that misconceptions exist among health professionals in the US about the nutritional properties of PBDAs and that opinions diverge about the nutritional value of PBDAs compared to dairy, with 33% viewing PBDAs as nutritionally inferior to dairy, 14% viewing them as superior, and 53% believing that neither PBDAs nor dairy are superior.

Perceptions about **whether PBDAs can substitute (partly/fully) or complement dairy** also diverged and these perceptions influenced **attitudes toward recommending fortified vs. non-fortified PBDAs** to consumers. Professionals who viewed fortification as essential for PBDAs to fully replace dairy were more likely to recommend only fortified versions, whereas those who believed PBDAs can fully replace dairy irrespective of fortification were willing to recommend either fortified or non-fortified

versions. Those who viewed PBDAs as partly substituting or complementing dairy remained divided on this matter.

Overall, nutrition professionals supported the **fortification of PBDAs with micronutrients**, but many tended to overestimate the percentage of PBDAs that are currently being fortified in the Spanish market. This could potentially lead to unintentionally misguiding consumers, and increase the risk of nutrient deficiencies.

Despite the ambivalences, **support for integrating PBDAs into the Spanish dietary guidelines** was high. This aligns with developments in several countries where PBDAs have already been incorporated into national dietary recommendations. For example, in Norway (Helsedirektoratet, 2023), Sweden (Livsmedelsverket, 2025), Germany (Deutsche Gesellschaft für Ernährung, 2024), the Netherlands (Voedingscentrum, 2016), and the UK (National Health Service, 2016), PBDAs are explicitly recommended for individuals who do not consume dairy, with a strong emphasis on choosing fortified products—particularly with calcium, vitamin B2, iodine, and vitamin B12. The U.S. (U.S. Department of Agriculture and U.S. Department of Health and Human Services, 2020), Canadian (Health Canada, 2019), and Dutch (Voedingscentrum, 2016) guidelines are more specific, recommending in particular fortified soy-based drinks and/or yogurts given their greater similarity in nutrient composition to dairy. Additionally, the U.S. guidelines provide age-specific recommendations, noting that fortified soy drinks, just like cow milk, are not suitable for infants under 12 months.

Recent research has explored how such developments are perceived by health professionals. A study was conducted in Canada to understand what registered dietitians think of Canada's Food Guide that was updated in 2019 to emphasize plant-based proteins and integrate dairy into the broader protein category (Asher et al., 2021). The study showed that the new Food Guide was generally well-received by dietitians, who now more frequently recommend plant-based proteins and non-dairy calcium sources to their clients. However, there was not complete agreement on eliminating the standalone dairy group, with 42% of dietitians expressing disagreement or uncertainty about this change. Primary reason for this lack of agreement was the lack of guidance on meeting calcium and vitamin D needs especially in certain population groups such as children, youth, or the elderly. This aligns with our findings, whereby relatively few nutrition professionals believed that PBDAs should be recommended to ages below 18 or above 65.

In the current research, support for including PBDAs in the Spanish dietary guidelines was especially high among those who saw PBDAs as more **environmentally friendly** than dairy and capable of **fully substituting dairy when fortified**. Given the divergent opinions on the environmental impact of PBDAs and the interest of many nutrition professionals in learning more about the sustainability of PBDAs, these findings highlight the increasing importance of providing clear information on the sustainability of PBDAs to inform dietary guidelines and support informed professional recommendations.

Implications for research, practice, policy

While previous research has paid limited attention to the information needs of health professionals regarding PBDAs, our research adds to the existing literature by placing greater emphasis on this area. Collectively, the data reveal a **clear opportunity for education and professional development** to address existing knowledge gaps and support evidence-based practice among nutrition professionals. Specifically, there seems to be a strong demand for clearer, evidence-based information on the **health effects, nutritional composition, bioavailability, fortification, level of**

processing, additives, and environmental impact of PBDAs. Clearer guidance on these aspects could help nutrition professionals make more informed decisions about incorporating PBDAs into their dietary recommendations. This information would also be useful for **policymakers** and **public health authorities**, and, in some cases, **environmental experts** responsible for the development of dietary guidelines. Meanwhile, **manufacturers** and **industry stakeholders** may consider transparent labelling and communication strategies that better convey the nutritional quality and fortification status of PBDAs. Further research and dissemination of clinical evidence on PBDAs could facilitate more informed recommendations by nutrition professionals and help align perceptions with actual product characteristics.

In conclusion, while PBDAs are increasingly accepted and used by nutrition professionals in Spain, clearer information and education are needed to support informed practice and decisions regarding their role in healthy and sustainable diets.

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Appendix – Qualitative responses

For what purpose(s) would you recommend PBDAs? Other, please specify:
As an alternative for people who include too many dairy products in their diet
To avoid intestinal permeability to cow's milk
Nutritionally, these drinks are not a substitute alternative.
Intestinal malabsorption
Menopause, due to phytosterols
Supplemented if no other dairy products are included.
To whom would you recommend PBDAs? Other, please specify:
Allergies or those who already take them and do not want dairy products
Depends on the composition and calcium content (for children)
Except people with allergies to certain nuts, legumes, etc.
The recommendation for anyone based on the answers to the previous question. That is, anyone who, for reasons of sustainability, for example, wants to find an alternative to dairy products (due to texture, taste, occasion of consumption, etc.)
The variety to recommend would be different in different cases
Menopause
Undiagnosed digestive discomfort
Note: I do recommend them as dairy substitutes, but I do not consider them essential in the diet
People with digestive problems and autoimmune diseases
Why do you NEVER (would NOT) recommend PBDAs to your patients/clients? Other, please specify:
Side effects should be reported
People on restricted diets (e.g., people with lactose intolerance, vegans, or those who do not consume dairy products)
Which vitamins and/or minerals do you think PBDAs in Spain are most frequently fortified with? Choose all that apply. Other, please specify:
Iron
Vitamin A
Vitamin A, Vitamin K
Why do you think PBDAs should NOT be fortified? Choose all that apply. Other, please explain:
I believe they should be fortified.
I believe that the population needs to be educated about the nutrients they may lack if they do not consume dairy and that they can take measures.
I believe they should be fortified.
It is better, but I do not believe in 'forcing' fortification.
It would be good to fortify them.
I don't think it's necessary to take fortified foods if the patient's diet is well planned. We can get those nutrients from other foods in their diet.
I don't think it should be done. Only if you want the product to have exactly the same nutrients as a dairy yoghurt, but I believe that all the nutrients can be obtained with the variety of foods included in the diet.
I don't disagree with fortifying them with some micronutrients. The important thing is that these drinks/yoghurts are not ultra-processed.
They do not replace dairy products.
Because they should not replace dairy products.
Because you can balance your diet with other foods.
Because in a healthy diet, the intake of vitamins/minerals does not depend exclusively on our consumption (or not) of dairy products/plant-based drinks.

Because these nutrients can be obtained through the consumption of other foods.
Because the way they are fortified is not absorbed by the body. They charge you more for nothing.
Because I don't think dairy products should be replaced by plant-based drinks and we have other sources of vitamins and minerals in a healthy diet.
They should be fortified.
Why do you think PBDAs should be fortified? Choose all that apply. Other, please explain:
I believe that both options, fortified and non-fortified, should be available so that consumers have more choice.
I think we are in a reductionist bias by analysing nutrients as if they were the only food you consumed exclusively in the diet, but ignoring that, to equate it in some aspects with dairy products, such as the amount and bioavailability of calcium in certain population groups like in childhood and adolescence.
When they are single-ingredient plant-based drinks (e.g. soya), they may be deficient in some nutrients such as vitamins and minerals that we find in milk. However, when mixed with other foods (soy and almonds), the calcium and other nutrient content could be balanced. In terms of the cost of the product, I think it would be more interesting to fortify it because it would help to avoid increasing the price of these foods too much, which is already quite high compared to milk and dairy products.
To cover possible nutritional deficiencies in the population. E.g. Fortified flours in the UK.
Given that the main ingredient in their composition is usually water and that I don't think the micronutrients they are fortified with are a bad thing, as people tend to be deficient in them, as long as it doesn't make the product much more expensive, I think it's fine for plant-based milks, for example, to continue to be fortified.
They facilitate the intake of certain nutrients.
They make it easier to meet requirements.
To prevent deficiencies in individuals who do not eat a proper diet and consume plant-based drinks and yoghurts
To improve the nutritional profile of these alternatives and, above all, to meet requirements according to the patient's/person's diet and nutritional status
To obtain B12 without resorting to supplements
So that external supplementation is not necessary, which may be more convenient for the patient (e.g. vitamin B12 or iodine)
So that they are products that can truly be included in the concept of healthy eating
To have more options
Because it is a good way to introduce nutrients that are increasingly lacking in the general population
Because they are consumed by people with milk allergies or intolerances
Because they tend to replace dairy products in cooking. Therefore, unless further changes are made to the diet, a source of calcium is usually reduced, although this has the positive effect of reducing cholesterol and saturated fats
If fortified PBDAs were to be included in the Spanish dietary guidelines, who do you think should be recommended to consume these products? Choose all that apply. Other, please explain:
Anyone except nursing babies.
No one
People with restrictions or concerns about sustainability
People allergic to cow's milk protein
Menopause
I would not recommend it
Digestive or autoimmune disorders
People with digestive and autoimmune problems
If it doesn't replace other foods, to anyone. For organoleptic preference, but not for nutritional needs
Only those people who have a deficiency of some nutrient should take them, but not as a habit since it is unnecessary; they are only economically beneficial for the companies but not for people's health.

Vegetarians
I would not recommend it.
To improve your knowledge about PBDAs, what kind of information/training would you like to receive? Choose all that apply. Other (please specify):
The level of processing
Hydrolysis of cereal-based beverages
All
Do you have any dietary restrictions or preferences? Choose all that apply. Other (please specify):
Celiac
Hashimoto's hypothyroidism
Do you have any remaining comments?
In addition to the above, it would also be interesting to assess hydrolysates in cereal drinks and added sugars/sweeteners.
I answered 'don't know' to some of the comparisons because it depends on whether the drink is made from soy, oats, almonds, etc.
I believe that consumers should have more information about plant-based drinks, mainly about their composition, before making generic recommendations in guidelines.
I think the biggest problem with plant-based drinks is their high sugar or sweetener content to make them taste better.
I think the population definitely needs to eat more vegetables. But they need to learn to do so by eating more legumes, as I see that this is where consumption is lowest.
I think the questions should be broken down into different types of dairy products and yoghurts or plant-based drinks, because there is a big difference in nutritional value between skimmed milk and mature cheese, just as there is between a calcium-enriched soya drink and a plant-based yoghurt with coconut oil (high in saturated fat and not recommended compared to other options) or a rice drink. In addition, I think questions could be included about which nutrients would be useful to supplement plant-based drinks with, not just what we find in the supermarket. For example, I think it might be interesting to consider supplementation with iodine, calcium and, at most, B12 in amounts similar to the equivalent dairy product, but I don't see the point in adding more micronutrients, as I see in many products of this type.
PBDAs should be a complement to dairy products if the consumer wishes, but never replace them except in cases of veganism (strict vegetarianism). Lactose intolerant people are usually only partially intolerant and can tolerate certain dairy products in certain quantities. Please do not remove dairy products entirely from their diet if they are not completely intolerant.
The questionnaire is very good, but I don't think the question about composition is well worded. This is because it will depend on the food used to create the dairy product. I feel that this will cause a lot of confusion in the final result. Soy is not the same as almonds or coconut. This is not the case with animal dairy products. Thank you
These products are just another option. Comparing them to dairy products is like comparing apples and oranges.
There is a lot of variability in plant-based drinks depending on their ingredients, so analysing their nutritional profile as a whole is very approximate.
There are molecules that cannot be synthesised in the laboratory and are only found naturally in dairy products. In addition, the processes involved in their production, such as maturation, generate unique compounds that cannot be reproduced artificially. These molecules may also have beneficial health effects, raising questions about whether plant-based products can truly replace dairy products.
This is a very heterogeneous food group that is difficult to generalise.
The bioavailability and nutrient content should be known
The plant-based drink I consume regularly is made from oats and soy, fortified with calcium, vitamin D2 and B12. This type of product can replace milk (which so many people find difficult to digest) with a

very adequate nutritional intake. What I am not so sure about is plant-based yoghurts. Even people who are lactose intolerant can usually consume normal yoghurt. What's more, their formulation is almost always worse than normal yoghurts (with more sugar, low protein content, etc.). Just as food substitutes must meet certain minimum requirements in order to be labelled as such, I think that minimum requirements should be established for these products so that they can be sold as milk/yoghurt substitutes.

Most plant-based drinks are high in sugar, and those that aren't mislead consumers with labels such as "sugar-free", "0% added sugar" and "light". Most consumers don't understand the differences and don't bother to read the ingredients. There is a lot of information missing.

Soy is genetically modified and this should be stated.

Plant-based drinks should be more natural, without added sunflower oil or additives such as guar gum. Furthermore, if they are enriched, it should be with substances that the intestine can absorb.

I consider it is not a necessary product in terms of nutritional health, but it is interesting from a commercial and economic point of view.

Nutritionally, I prefer soy. But due to hypothyroidism, I prefer to consume oats. I don't like the taste of almond.

Focus on educating the population about health, not disease. Conventional dairy products are precursors to many diseases related to intestinal permeability and overstimulation of the immune system, in addition to the common mucosal complex. This does not appear unless it is investigated. Alert the population to the adverse causes of many diseases that are now 'common' but should not be.

It is estimated that in Spain up to 50% of the population is lactose intolerant. But in the hospital where I work, instead of recommending that these people remove dairy products from their diet, doctors tell them to switch to lactose-free products. As if it weren't simpler and more logical to follow a dairy-free diet. It is very frustrating that health professionals here refuse to recommend the healthiest option for both patients and the planet, which is plant-based drinks enriched with vitamin D and calcium. I hope that thanks to the dissemination of information by organisations such as EUFIC, this will gradually change.

The survey fails to mention the percentage of plant-based content and its association with the nutritional value of beverages, but it is particularly striking that it does not mention that they are sources of free sugars, especially when they include sugars among their ingredients.

I only consider their use in people who do not consume milk due to intolerance and need a liquid substitute, for example in coffee. I do not believe that a plant-based drink is nutritionally comparable to milk. And given this consumption, yes, it should be fortified, but it will never provide high biological value protein.

I am against any ultra-processed foods, but I am also against the abuse of dairy products.

Their contribution to the diet may be the same as that of any other processed food... except in cases of CMPA or lactose intolerance, in which case they will be more important.

I also consume millet drinks and coconut and cashew-based yoghurts. As for the nutrient content of plant-based drinks, this should not be done in general, as the content of soy drinks, for example, provides more protein than milk, but the rest do not. I don't think it's well written. The same goes for the sugar content. It depends, as there are some with 0% sugar and others with added sugars. I insist, it's not a well-written question.

Qualitative responses that do not pertain to participant views on PBDAs (e.g., 'Interesting survey. Thank you!' or 'I hope I have helped! Best regards') are omitted.

DO YOU HAVE QUESTIONS? **CONTACT US!**

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