eufic

FINAL REPORT

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

AUGUST, 2025

Plant-Based Dairy Alternatives: Perspectives from Nutrition Professionals in Portugal.
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
Contact: Dr Katerina Palascha katerina.palascha@eufic.org
European Food Information Council, Belgium

Table of Contents

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 Portugal regarding PBDAs. The sample consisted of 139 nutrition professionals, including dietitians-nutritionists, students in nutrition (4th year degree or masters), and researchers or academics in 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 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:** The vast majority of nutrition professionals believe PBDAs can be part of a healthy diet and many 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 strongly support fortification of PBDAs with micronutrients, many underestimate the prevalence of fortification of PBDAs in the Portuguese market (average estimate: 52%; actual: 80% (Pimenta Martins et al., 2022)). 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 a considerable proportion view them as nutritionally inferior and fewer nutrition professionals believe they are nutritionally superior to dairy.
- **Information needs:** Nutrition professionals are most interested in information about fortification, bioavailability, nutritional composition, clinical evidence of health benefits, processing and additives, and sustainability of PBDAs.
- **Professional Practices:** Most nutrition professionals recommend PBDAs to 10% -30% of their clients. Perceptions about the degree of fortification of PBDAs in Portugal, nutritional value compared to dairy, and personal consumption patterns 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, with most nutrition professional favouring the inclusion of only fortified

PBDAs. Personal consumption patterns and perceptions about the lactose-free nature of PBDAs, their environmental friendliness, role in the diet, and nutritional value 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 Portugal 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, fortification, role in the diet, 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**.

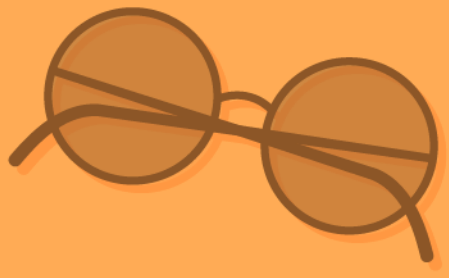
To date, **limited research** has explored the perceptions of health professionals regarding PBDAs, with most studies conducted in the United States and Canada (Goff et al., 2023; Asher et al., 2021; Clark et al., 2022a; Clark et al., 2022b). For example, it has been found that health professionals generally 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 Portugal 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 Portuguese 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 Portugal, **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

Six respondents did not provide consent to the survey and five 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 = 204), 68% provided sufficient data[1] to be included in the analysis (n = 139).

The sample consisted of 82% **dietitians-nutritionists**, 16% **students in nutrition** (4th year degree or masters), and 2% **researchers or academics** in nutrition (FIGURE 1). Respondents (excluding students) had a mean of 9 years of **professional experience** (SD = 7) and 64% were working directly with patients/clients. The respondents had a mean **age** of 33 years (SD = 9) and 91% were **women**. Most respondents (65%) reported having no specific **dietary restrictions or preferences**. Small proportions of the sample (14% or less) reported being flexitarian, vegetarian, vegan, or following other diets (FIGURE 2).

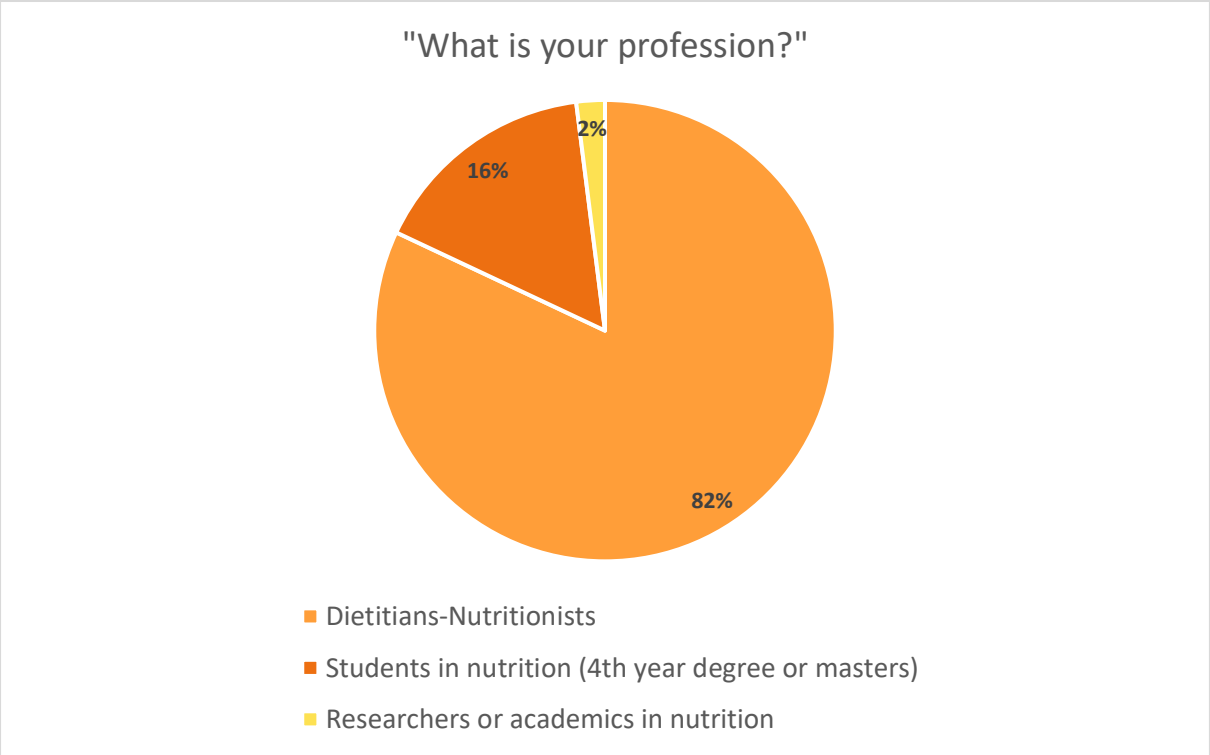


FIGURE 1. Professional groups surveyed (in % of total sample analysed)

[1] Up to question 36 of the survey.

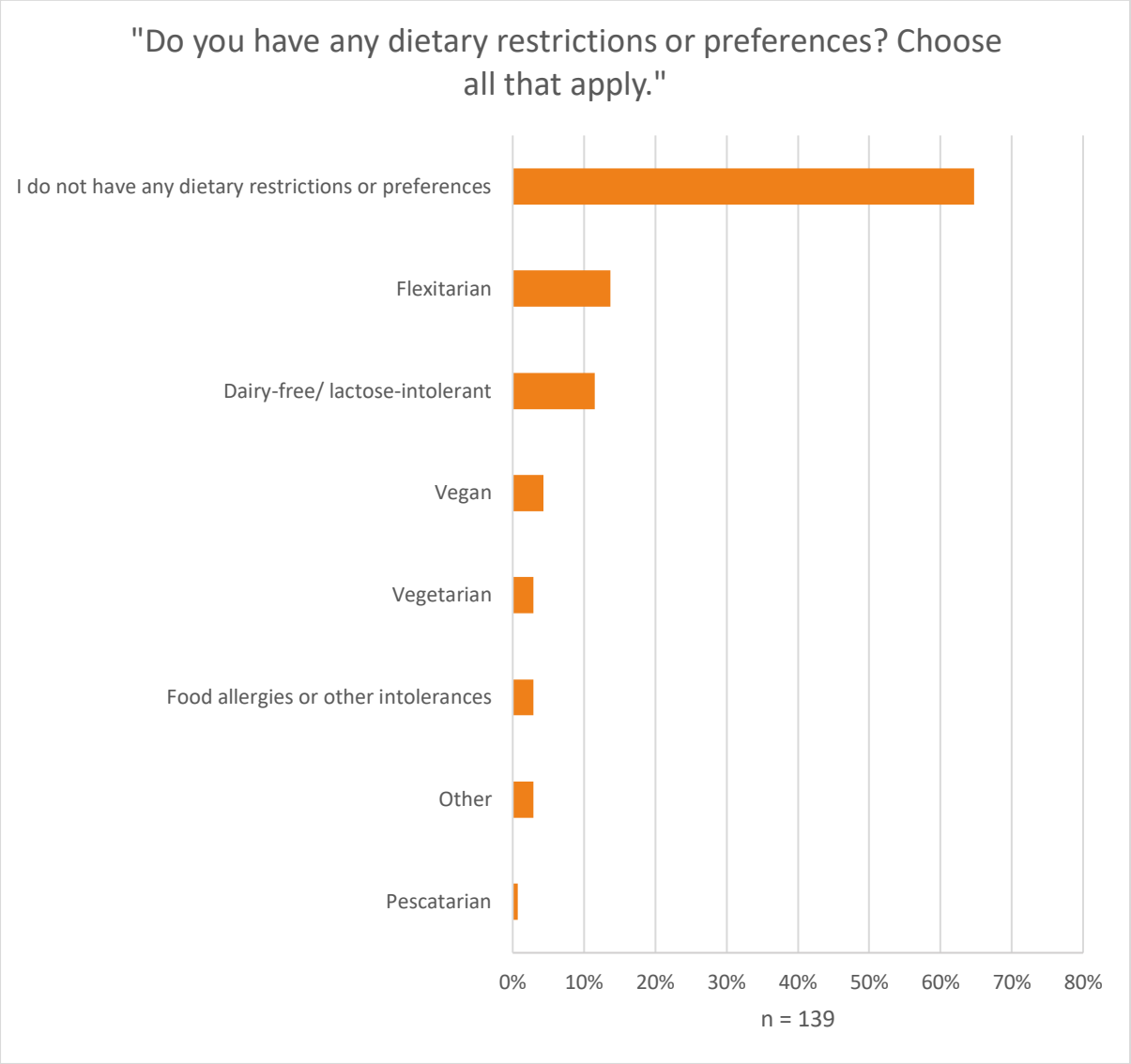


FIGURE 2. Dietary restrictions or preferences of nutrition professionals (in % of total sample analysed)
Note: The following response options were not selected by none of the respondents: Kosher, Halal, Flexi-vegan.

Familiarity, exposure, and consumption patterns

Nutrition professionals reported relatively high levels of **familiarity** with PBDAs, with 69% of the sample being either very or extremely familiar, 30% being somewhat familiar, and only 5% being either not so familiar with these products (FIGURE 3). No significant differences in familiarity were found between the various professional groups surveyed (p = 0.54).

Exposure to PBDAs while shopping was also high, with 93% of nutrition professionals encountering these products at least frequently. Only 4% reported occasional exposure and 2% mentioned that they rarely or never came across PBDAs when shopping (FIGURE 4). Exposure to PBDAS was positively associated with familiarity (p = 0.02). The more frequently nutrition professionals came across PBDAs when shopping, the more familiar they were with these products.

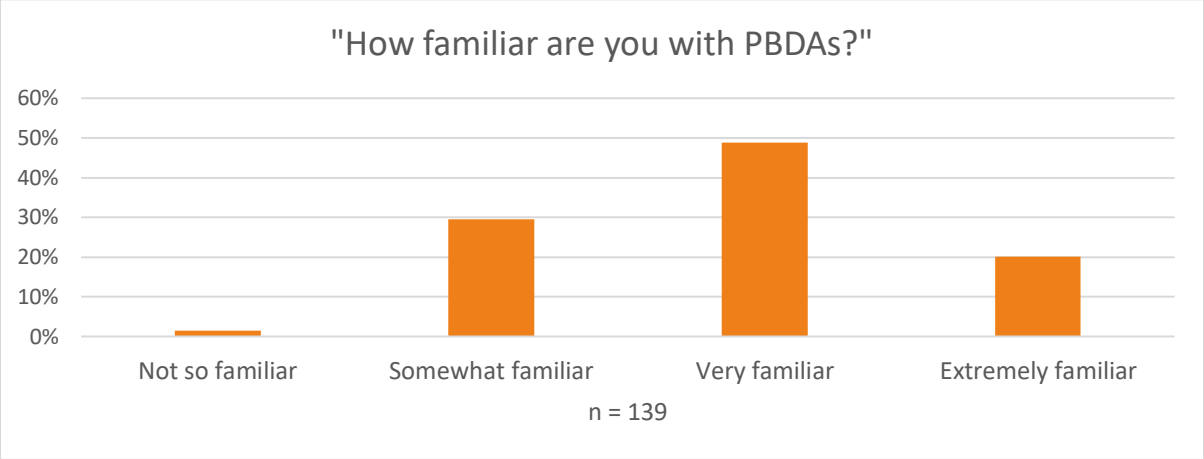


FIGURE 3. Familiarity with plant-based dairy alternatives (PBDAs) (in % of total sample analysed)
Note: The following response option was not selected by none of the respondents: Not at all familiar.

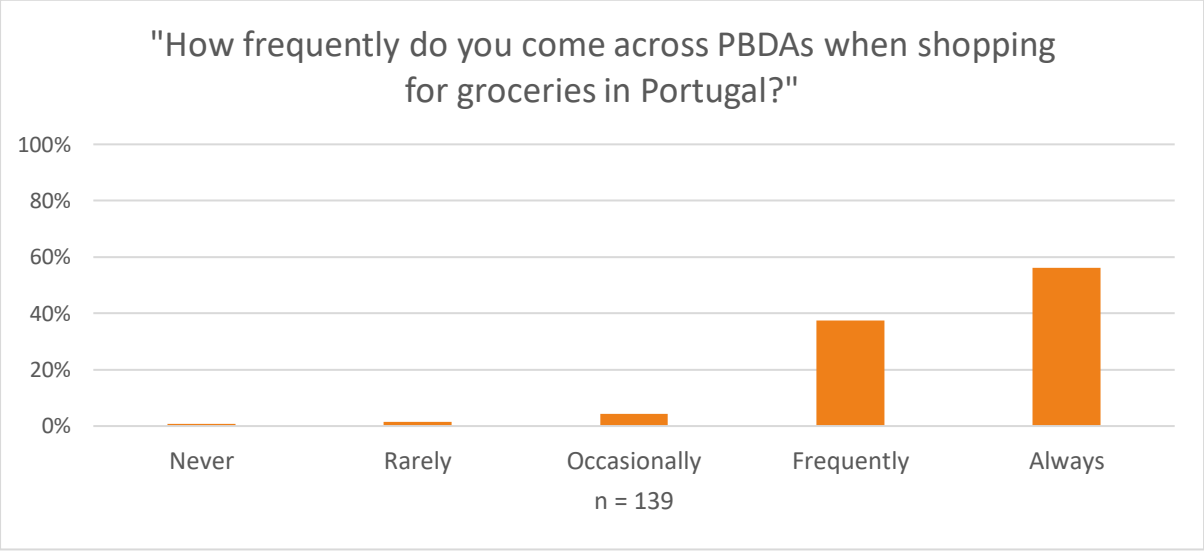


FIGURE 4. Exposure to plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

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 = 48) consumed PBDAs more frequently compared to those without (n = 90) ($p < 0.001$). Among the former group, 31% consumed PBDAs on a daily, 21% on a weekly basis, 8% on a monthly basis, and 23% less often, while 17% reported never consuming these products. In contrast, 43% of those without any dietary restrictions or preferences reported never consuming PBDAS or consuming them monthly (13%) or less often (32%).

Regarding **preferred types of plant-based drinks**, 31% of nutrition professionals indicated no specific preference among the various drink options. Twenty-eight percent indicated soy drink as their most preferred drink, followed by almond drink (20%), oat drink (17%), and finally coconut drink (4%) (FIGURE 6).

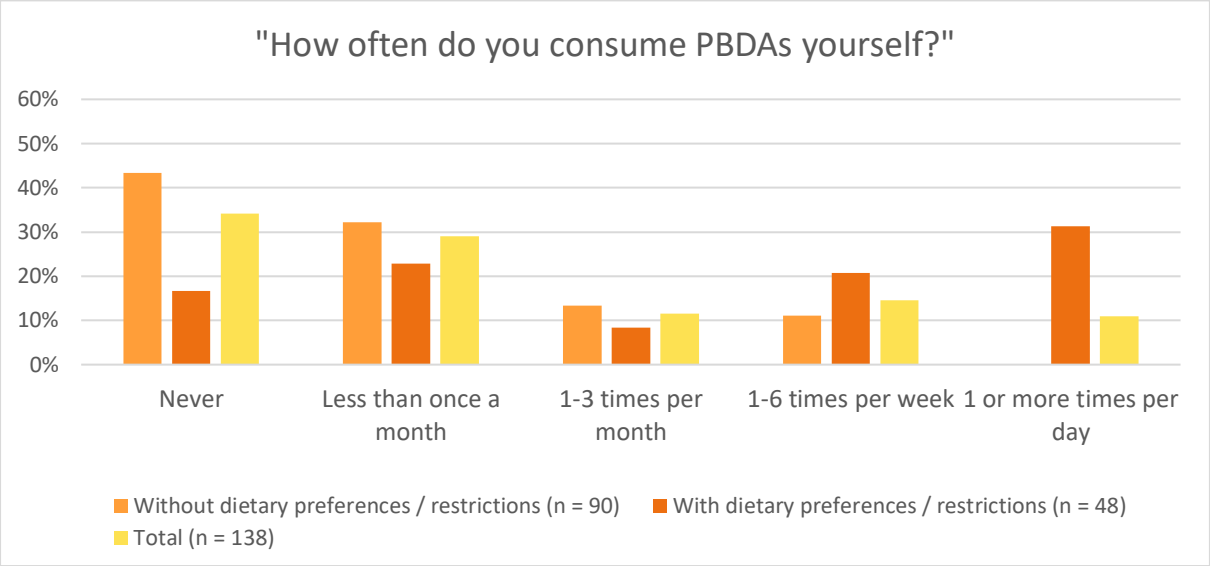


FIGURE 5. Frequency of consuming plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

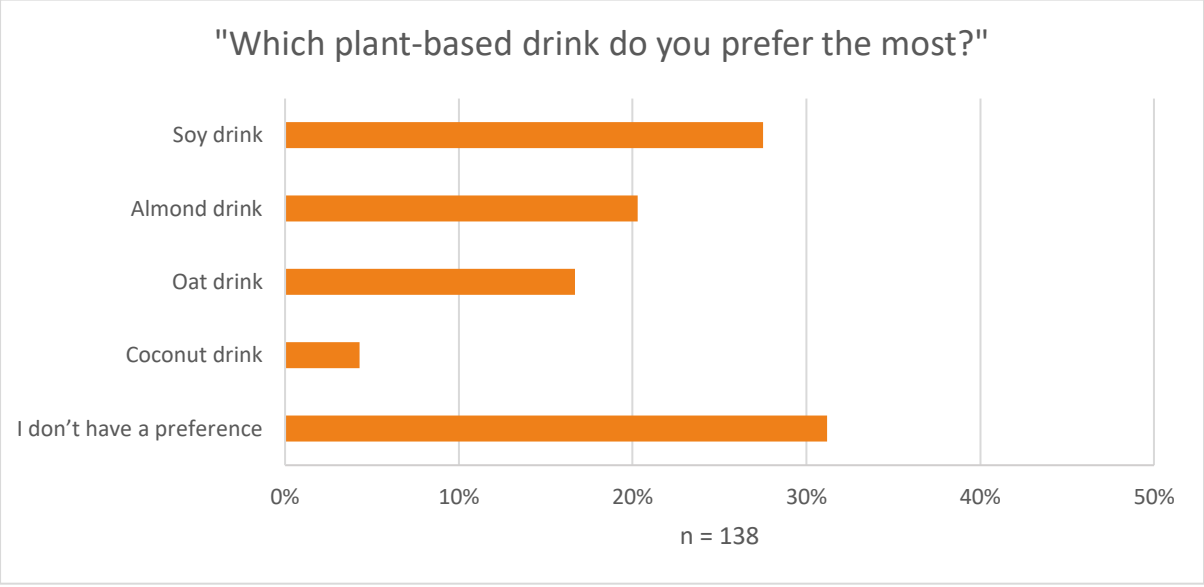


FIGURE 6. Preference for plant-based drinks (in % of total sample analysed)

Perceptions, knowledge, and information needs

A large majority (93%) of nutrition professionals agreed with the statement that PBDAs can be **part of a healthy diet**. Most were aware that PBDAs are **lactose-free** (94%), **cholesterol-free** (60%), and understood that their **nutritional profile depends on the plant source** from which they are made (90%) (FIGURE 7). Among those who recognized plant source as a key determinant of nutritional value (n = 125), 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 (20%), oats (7%), nuts (6%), and rice (2%) (FIGURE 8).

While 68% 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.

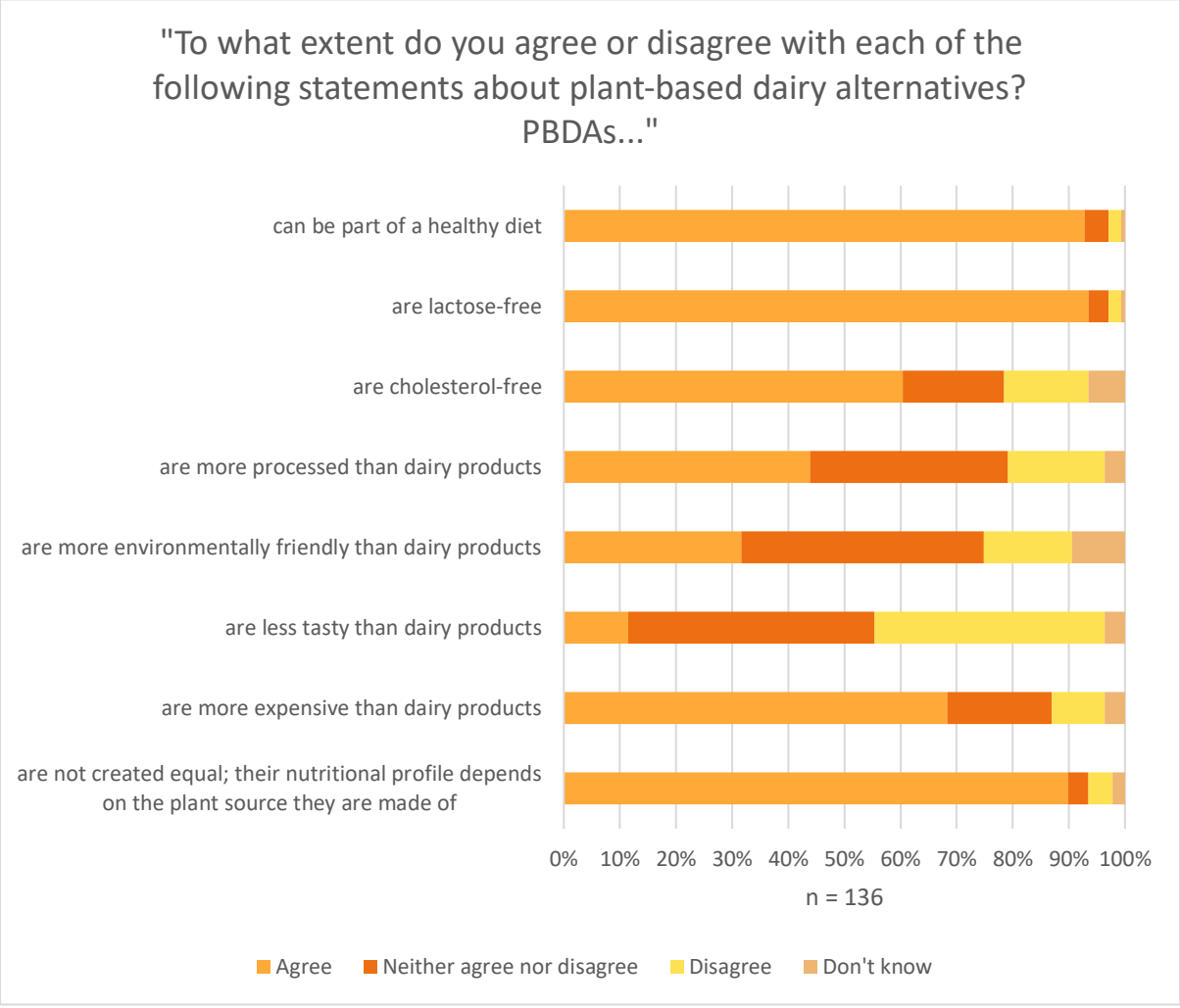


FIGURE 7. Perceptions about plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

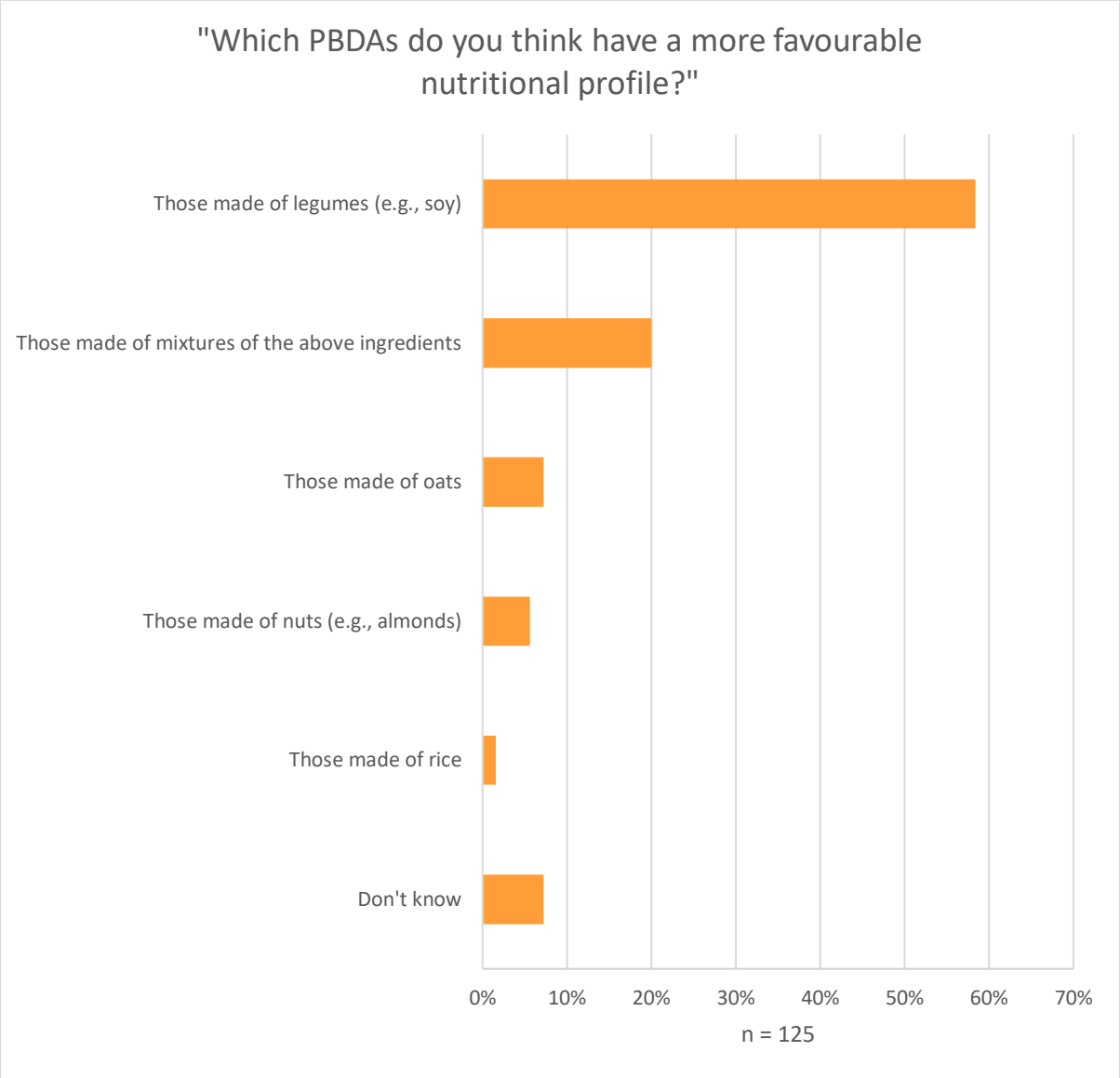


FIGURE 8. Perceptions about the nutritional profile of various plant-based dairy alternatives (PBDAs) (in % of total sample analysed)
Note: The following response option was not selected by none of the respondents: Those made of coconuts.

Nutrition professionals generally had a positive attitude towards **fortification of PBDAs with vitamins and/or minerals**, with 96% of the sample being in favour of fortification (FIGURE 9). Those who were in favour thought that fortification helps PBDAs become more nutritious (81%) and more equivalent to dairy products (63%) (FIGURE 10). Fewer nutrition professionals (14%) supported fortification for marketing purposes. Those who selected 'Other' in response to why PBDAs should be fortified (3 out of 134) (see **Appendix** for an overview of the qualitative responses), cited reasons such as ensuring the nutritional adequacy of plant-based diets (1 out of 134), addressing nutritional deficiencies (1 out of 134), or replacing dairy in those with lactose intolerance (1 out of 134).

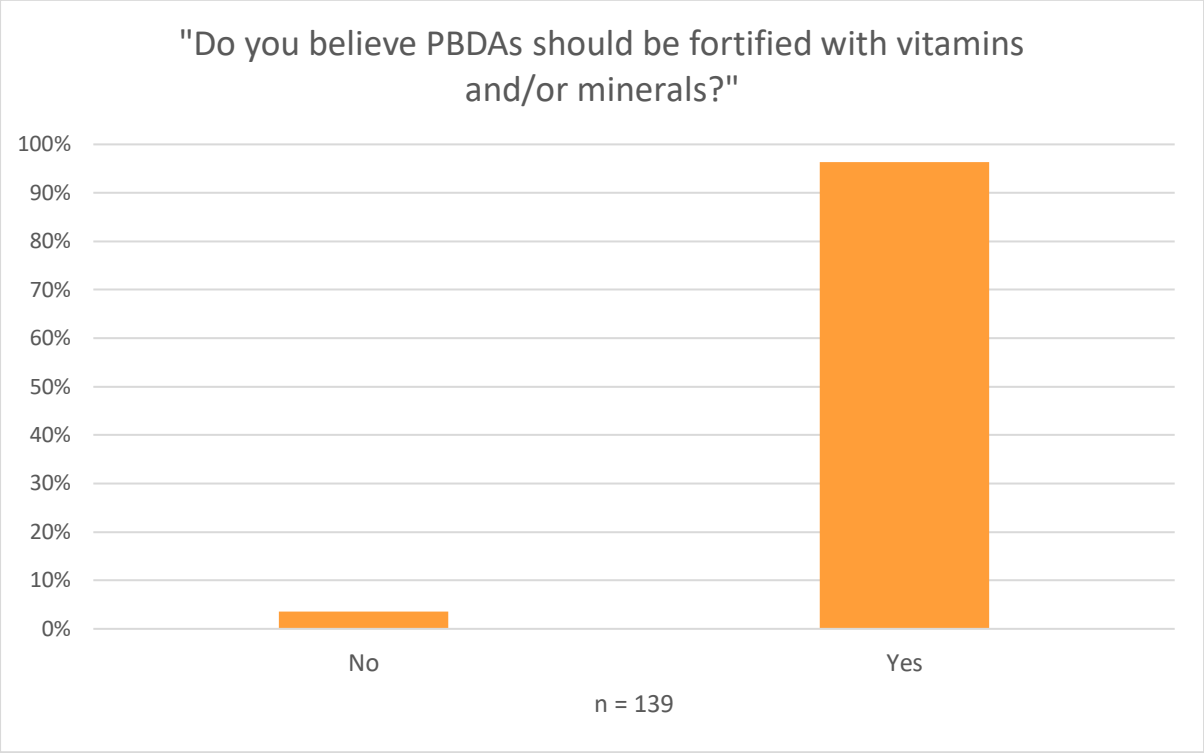


FIGURE 9. Attitudes towards fortification of plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

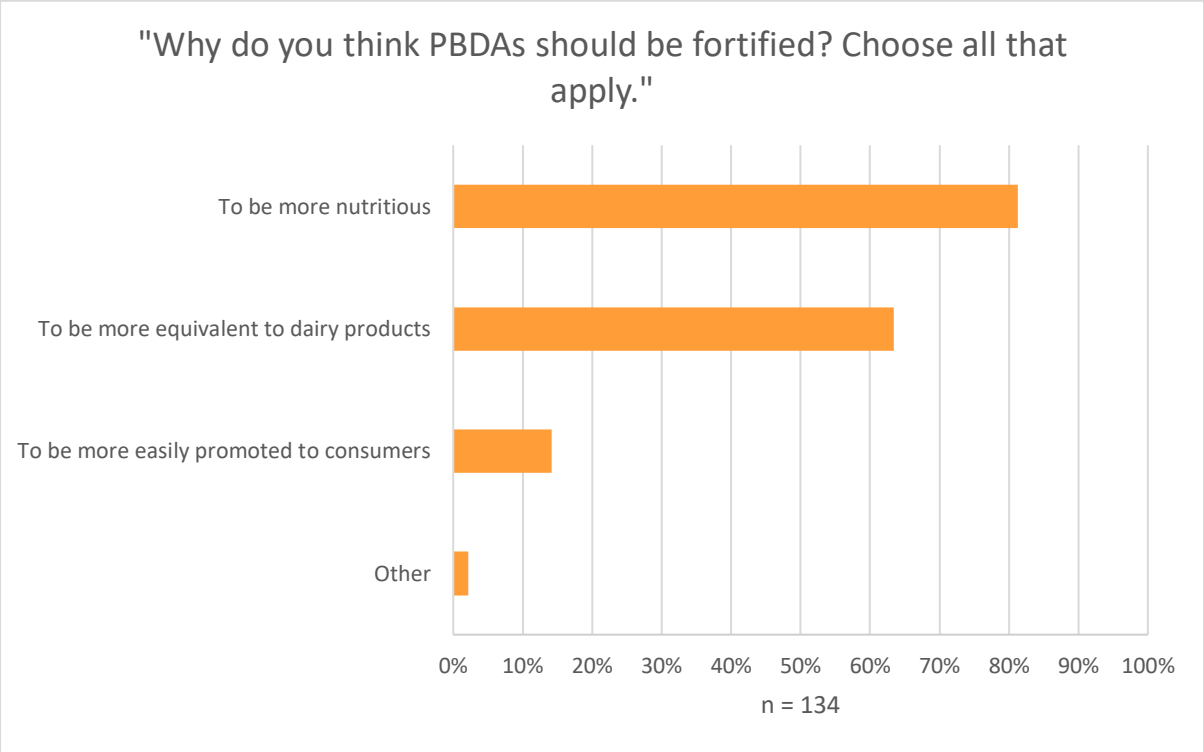


FIGURE 10. Motivations in favour of fortification of plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

In contrast, those who were against fortification (n = 5) expressed mixed opinions as to **why PBDAs should not be fortified** (FIGURE 11). Sixty percent believed that fortification would increase their cost, 60% thought that it would make these products more processed, 40% believed that fortification would not substantially change nutrient bioavailability of PBDAs, and another 40% thought these products are already nutritious.

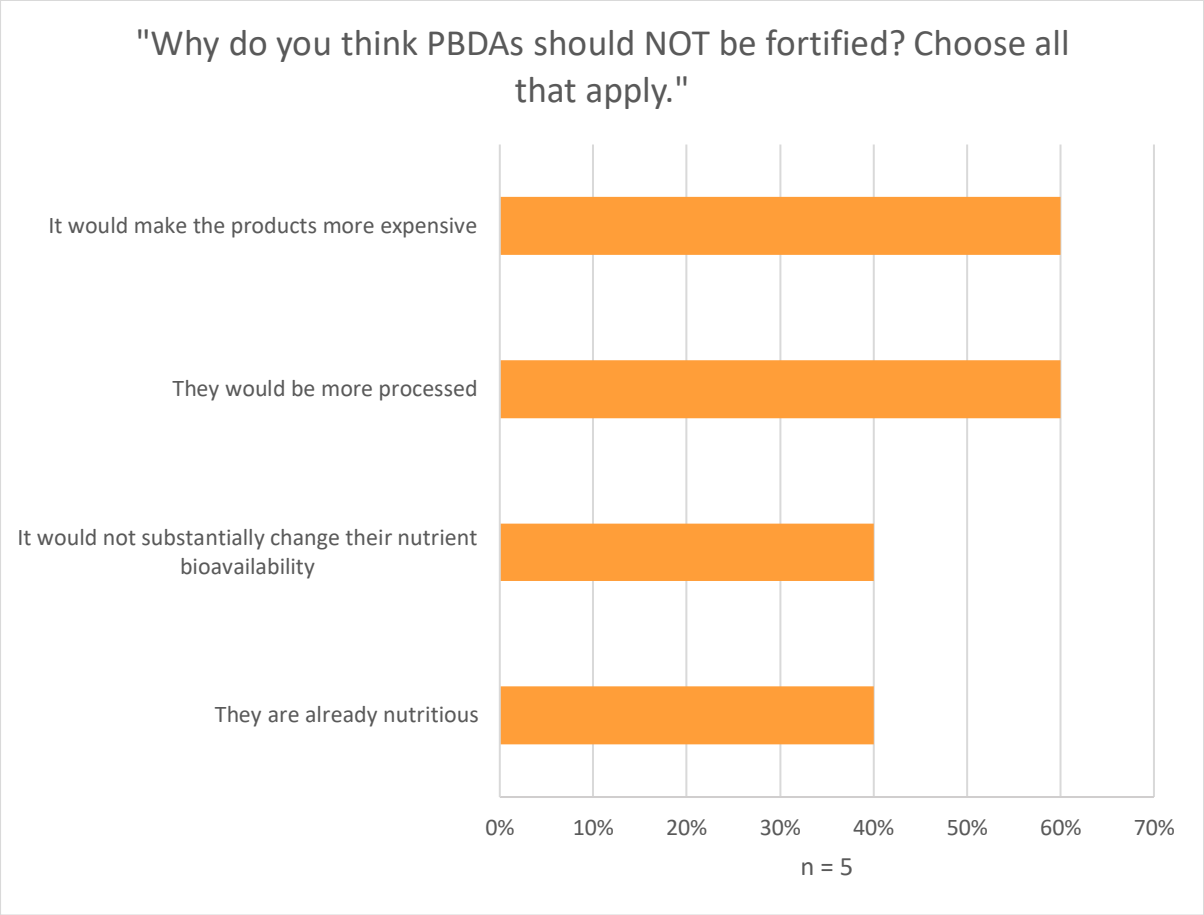


FIGURE 11. Motivations against fortification of plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

When asked to estimate the **proportion of PBDAs on the Portuguese market that are fortified with micronutrients**, the average estimate was 52% (SD = 19%) (FIGURE 12). This estimate ranged widely from 20% to 100%, indicating a diversity of opinions. Overall, nutrition professionals underestimated the level of fortification in Portugal, as 80% of PBDAs are fortified in the Portuguese market (Pimenta Martins et al., 2022). Most nutrition professionals thought PBDAs are most frequently fortified with calcium (91%), vitamin D (82%), and vitamin B12 (75%) (FIGURE 13). Smaller proportions of the sample (< 30%) thought PBDAs in Portugal are fortified with other micronutrients.

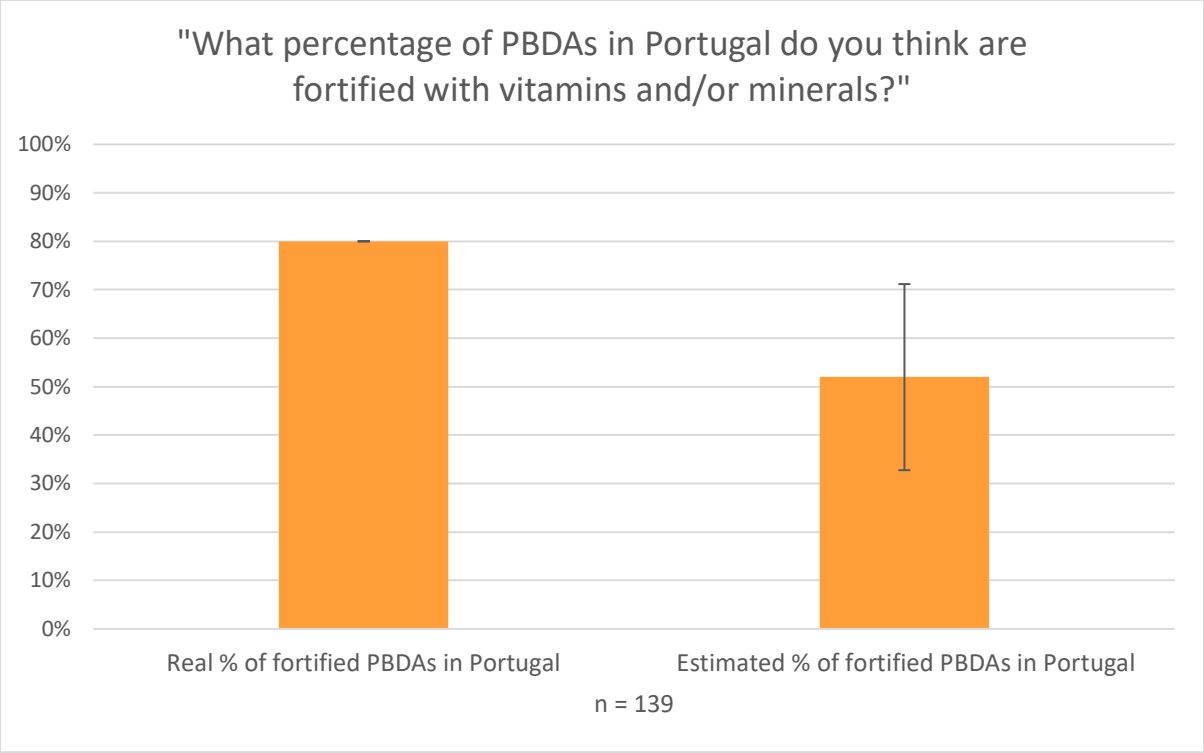


FIGURE 12. Real and perceived level of fortification of plant-based dairy alternatives (PBDAs) in Portugal (in % of total sample analysed)

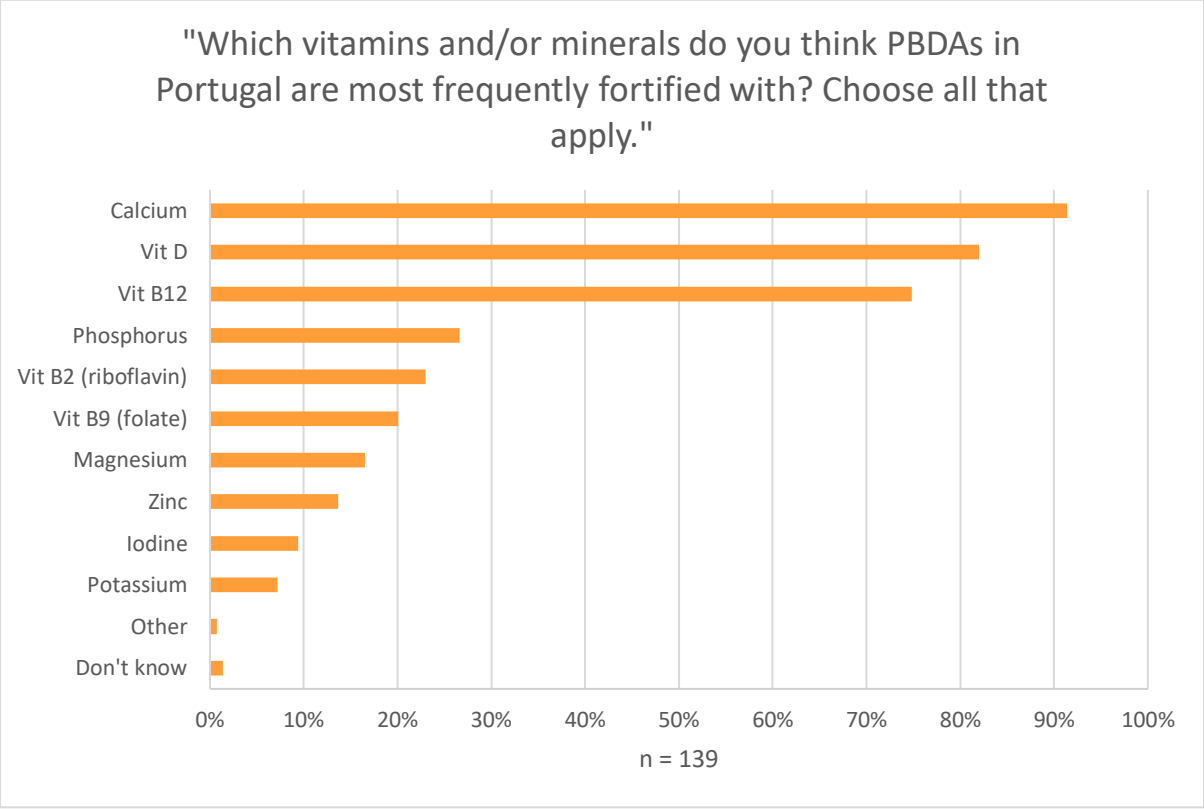


FIGURE 13. Perceptions about types of fortification of plant-based dairy alternatives (PBDAs) in Portugal (in % of total sample analysed)

Nutrition professionals were also asked which micronutrients they think the Portuguese population is most deficient in. Vitamin D was indicated by most respondents (69%) as the **most commonly deficient micronutrient in the Portuguese population**, followed by iodine (60%) and calcium (33%) (FIGURE 14). Other micronutrients such as iron, selenium, folate, and vitamin B12 were indicated by fewer respondents (< 30%).

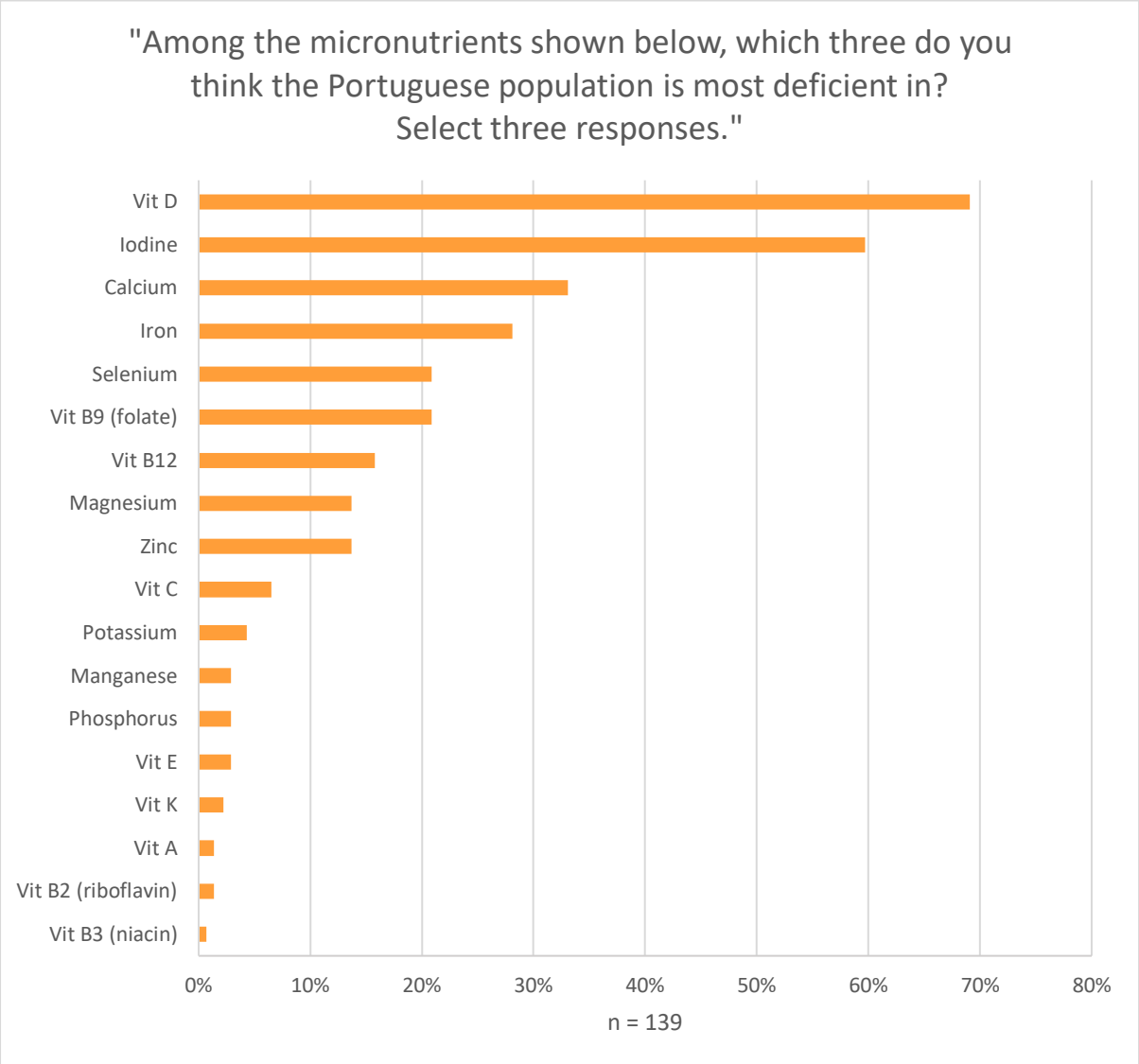


FIGURE 14. Perceptions about deficiencies of micronutrients in the Portuguese population (in % of total sample analysed)
Note: The following response option was not selected by none of the respondents: Vit B1 (thiamine).

When asked to compare the **nutritional value** of PBDAs and dairy products, 66% of the sample believed they are nutritionally equivalent, 23% viewed PBDAs as nutritionally inferior and 9% as nutritionally superior to dairy, while 2% were unsure (FIGURE 15). Among those who considered PBDAs equivalent to dairy, 87% thought that this is the case only when PBDAs are fortified, while 13% 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 42% of this segment believing that, only when fortified, PBDAs are superior to dairy.

Perceptions of **superiority** were not significantly associated with awareness of PBDAs being cholesterol-free (p = 0.64) or lactose-free (p = 0.78). Likewise, perceptions of **inferiority** were not significantly associated with awareness of the cholesterol-free (p = 0.76) or lactose-free (p = 0.38) nature of PBDAs.

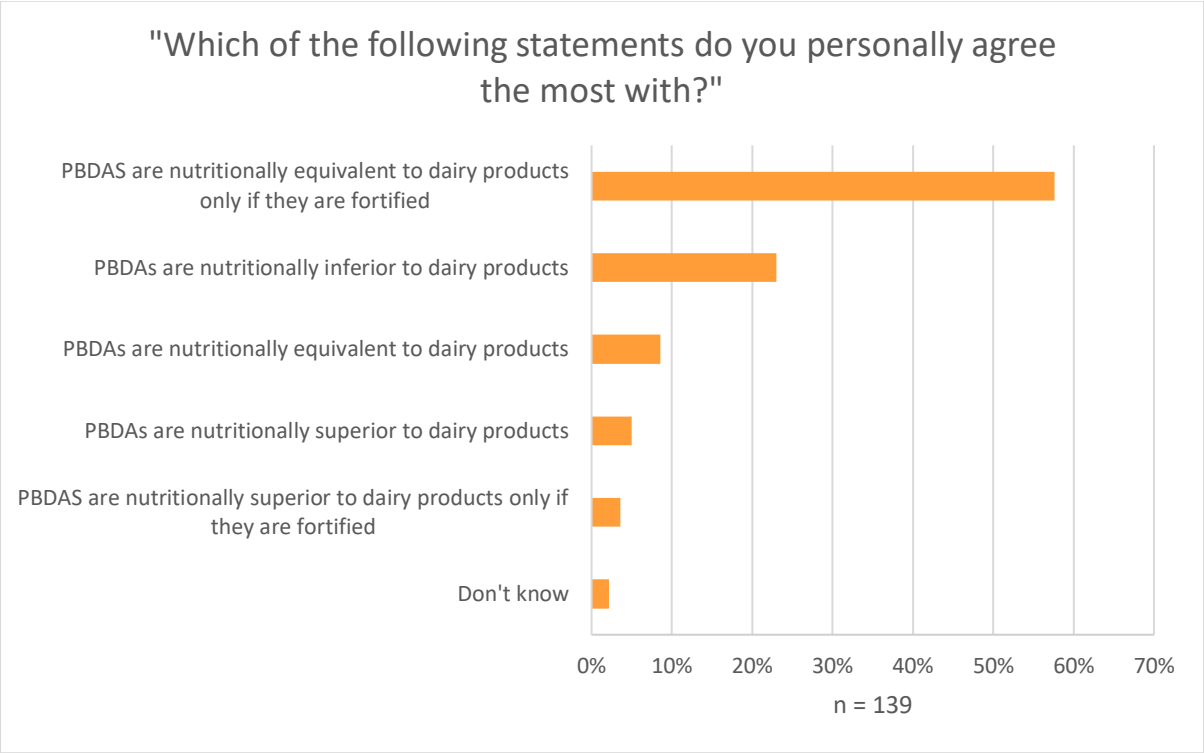


FIGURE 15. Perceptions about nutritional value of plant-based dairy alternatives (PBDAs) compared to dairy products (in % of total sample analysed)

When it comes to **specific nutrients**, large proportions of the sample believed that, compared to dairy, non-fortified PBDAs contain less protein (68%), fat (55%), saturated fat (75%), dietary cholesterol (69%), vitamin D (66%), vitamin B12 (72%), and calcium (78%) (FIGURE 16). Conversely, many nutrition professionals thought that fibre (68%), carbohydrate (48%), and sugar (54%) content is higher in PBDAs compared to dairy. Opinions on calories and other micronutrients were more mixed. For micronutrients like magnesium, potassium, and zinc, over one third of the sample reported uncertainty. Some nutrition professionals mentioned in their final comments that nutritional comparison is difficult as it depends on the plant ingredients from which PBDAs are made (1 out of 139), the type of product (drink versus yogurt) (1 out of 139), and on whether ingredients such as sugar or protein have been added to them (2 out of 139). For example, one respondent (out of 139) mentioned that plant-based drinks fare better nutritionally compared to plant-based yogurts, which have a lot of sugar and little protein, or plant-based cheeses, which are mainly based on starch and coconut fat. Another respondent mentioned that plant-based drinks would be recommended more to consumers if they had more added protein and reduced amount of carbohydrates/sugar. Finally, one respondent mentioned that it is important to make more non-genetically modified soy drinks available on the market.

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 compared to dairy PBDAs have lower levels of protein (88% vs 62% in the rest of the sample) ($p = 0.03$), vitamin B12 (91% vs 66%) ($p = 0.04$), folate (69% vs 40%) ($p = 0.01$), phosphorus (75% vs 43%) ($p = 0.01$), magnesium (59% vs 30%) ($p = 0.01$), iodine (78% vs 44%) ($p = 0.01$), potassium (66% vs 29%) ($p < 0.001$), and zinc (63% vs 31%) ($p = 0.01$), and higher levels of fat (28% vs 10%) ($p = 0.03$) and sugar (75% vs 48%) ($p = 0.03$). Conversely, larger shares of those who viewed PBDAs as **superior** to dairy believed that PBDAs have equal levels of vitamin D (33% vs 8% in the rest of the sample) ($p = 0.05$), vitamin B12 (33% vs 6%) ($p = 0.01$), vitamin B2 (42% vs 12%) ($p = 0.004$), and potassium (42% vs 20%) ($p = 0.03$) compared to dairy.

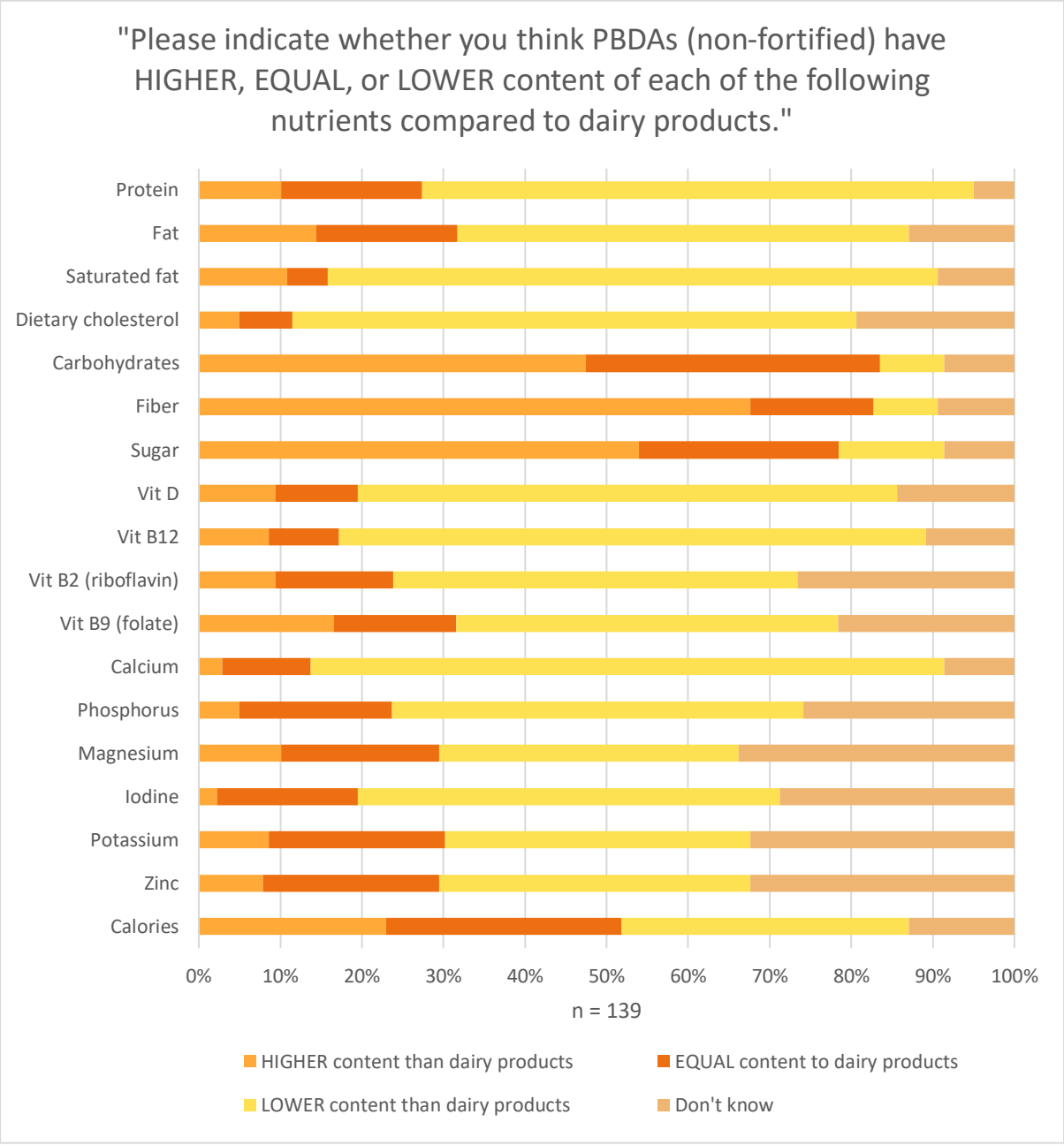


FIGURE 16. Perceptions about the nutrient and calorie content of plant-based dairy alternatives (PBDAs) compared to dairy (in % of total sample analysed)

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 84% of them specified this is only true if PBDAs are fortified. Another 27% of the sample thought that PBDAs can only partly substitute dairy and 19% believed they should be consumed alongside dairy without substituting them (FIGURE 17). Finally, a small minority (8%) thought PBDAs cannot substitute dairy.

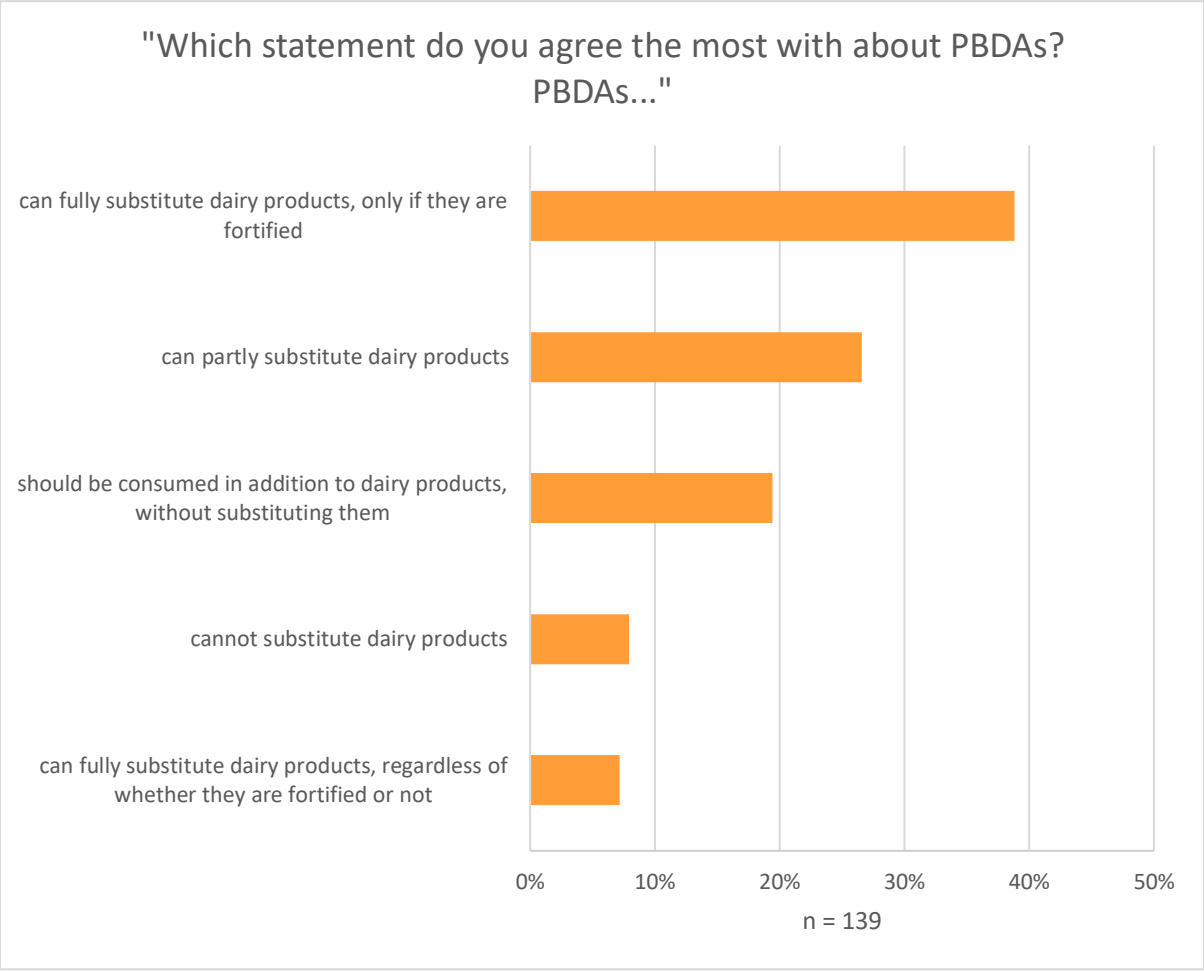


FIGURE 17. Perceived role of plant-based dairy alternatives (PBDAs) in relation to dairy (in % of total sample analysed)

Finally, regarding their **information needs**, over 80% of nutrition professionals expressed interest in receiving information on fortification, bioavailability, and nutritional composition of PBDAs, 76% were interested in clinical evidence on the health benefits of PBDAs, 62% would like to know about their processing and additives, and 53% wanted information on their sustainability and environmental impact (FIGURE 18). Fewer nutrition professionals (under 40%) were interested in consumer trends and preferences and practical applications of PBDAs. Finally, at the end of the survey one respondent (out of 139) mentioned that education on choosing plant-based drinks with less sugar and fat would be useful for consumers. There were no significant differences in the information needs between students and the other professional groups surveyed.

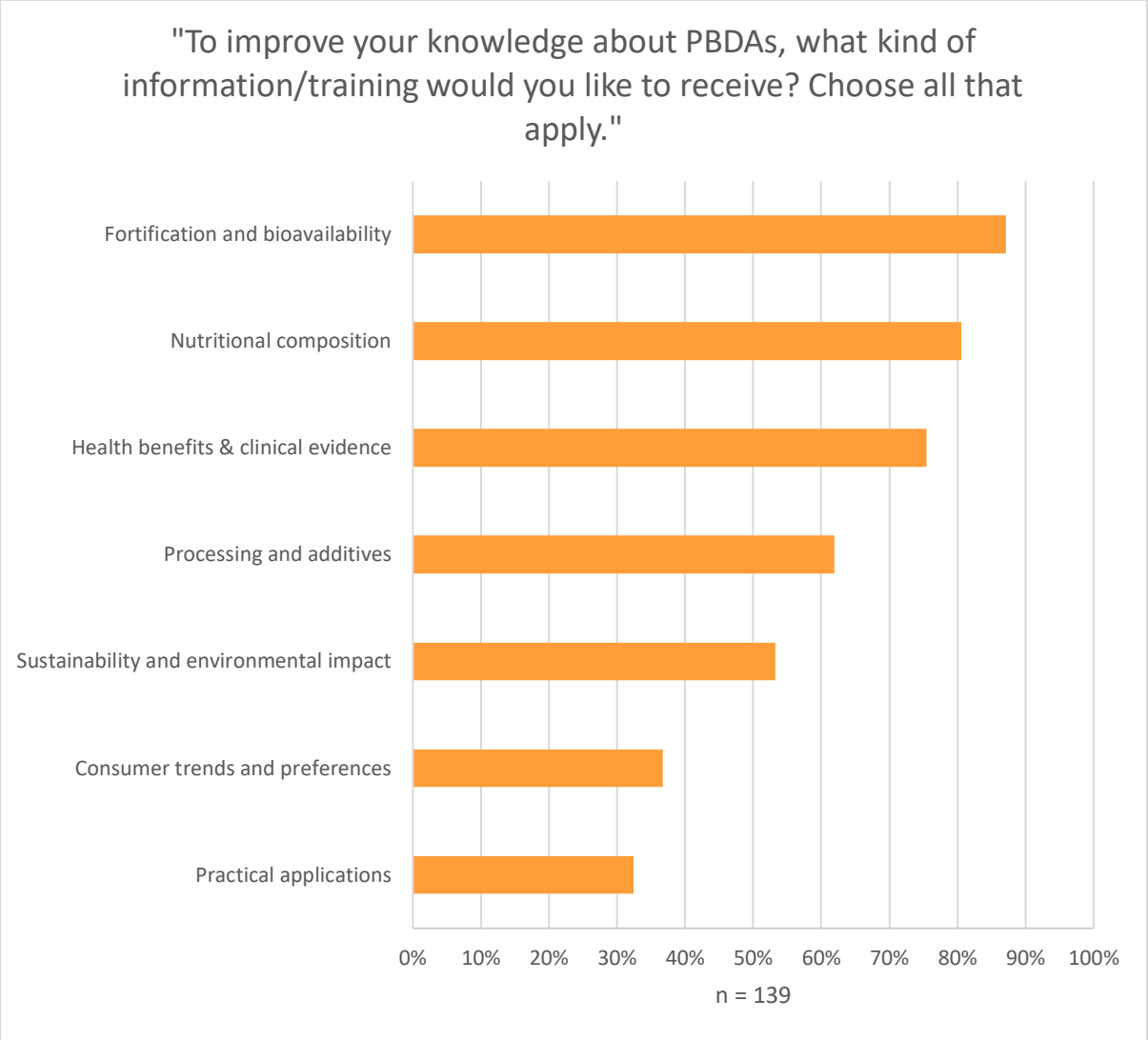
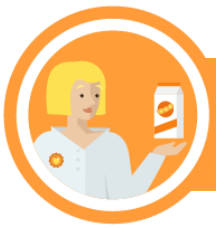


FIGURE 18. Information needs with regards to plant-based dairy alternatives (PBDAs) (in % of total sample analysed)



Current use in professional practice

Among those nutrition professionals who were working with patients/clients, 45% reported **recommending PBDAs** to 10% - 30% of their clients, 30% were recommending them to more than 30% of their clients, and 24% were recommending them to fewer than 10% of their clients (FIGURE 19). Only 1% were not recommending PBDAs at all. Among those not currently working with patients/clients, 86% were positive about recommending PBDAs to consumers (FIGURE 20). There were no significant differences in the frequency of (p = 0.89) or attitude towards (p = 0.15) recommending PBDAs between the various professional groups surveyed.

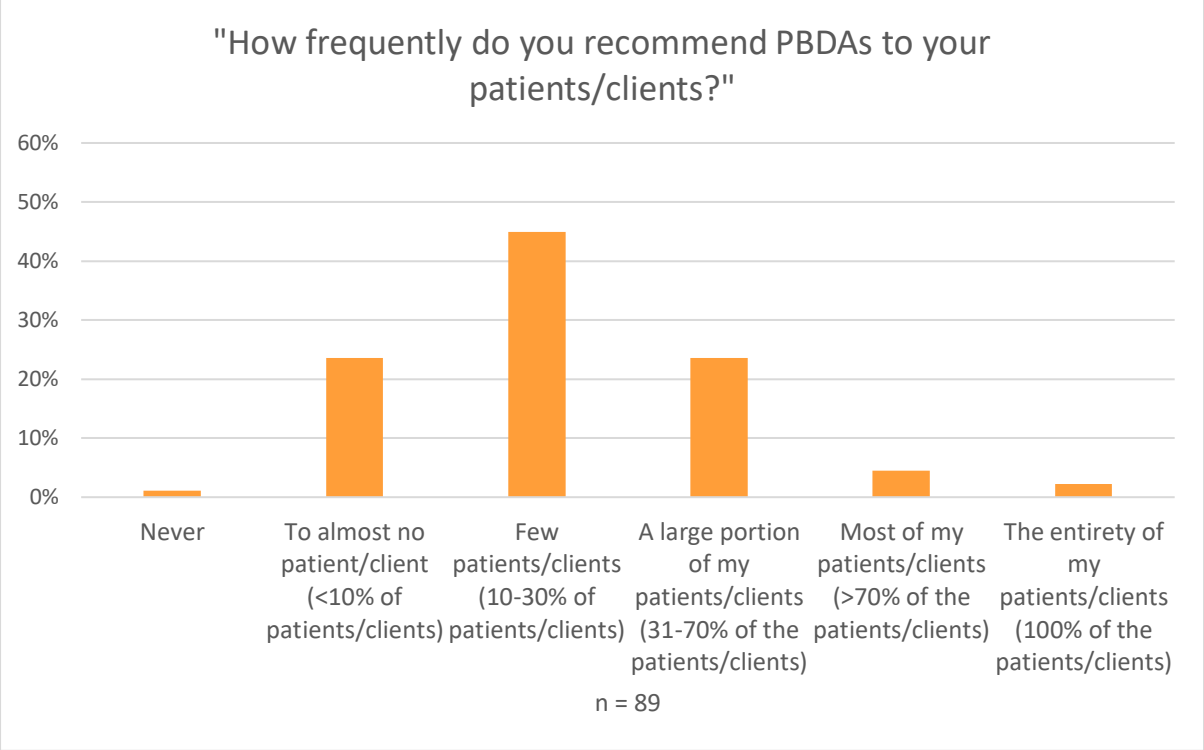


FIGURE 19. Frequency of recommending plant-based dairy alternatives (PBDAs) to patients/clients (in % of total sample analysed)

Perceived **percentage of fortified PBDAs in Portugal,** perceived **nutritional value compared to dairy**, and **personal consumption** significantly predicted the frequency of recommending PBDAs to patients/clients. The higher the percentage of PBDAs that nutrition professionals thought are fortified in Portugal, the more frequently they recommended PBDAs to their clients (b = 0.02, p = 0.01). Also, those who viewed PBDAs as nutritionally equivalent to dairy were recommending PBDAs more frequently than those who viewed PBDAs as nutritionally superior to dairy (b = 1.27, p = 0.05). Finally, the more frequently nutrition professionals consumed these products themselves, the more frequently they recommended these products (b = 0.18, p = 0.02). Other factors such as years of professional experience, familiarity with or exposure to PBDAs when shopping, 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

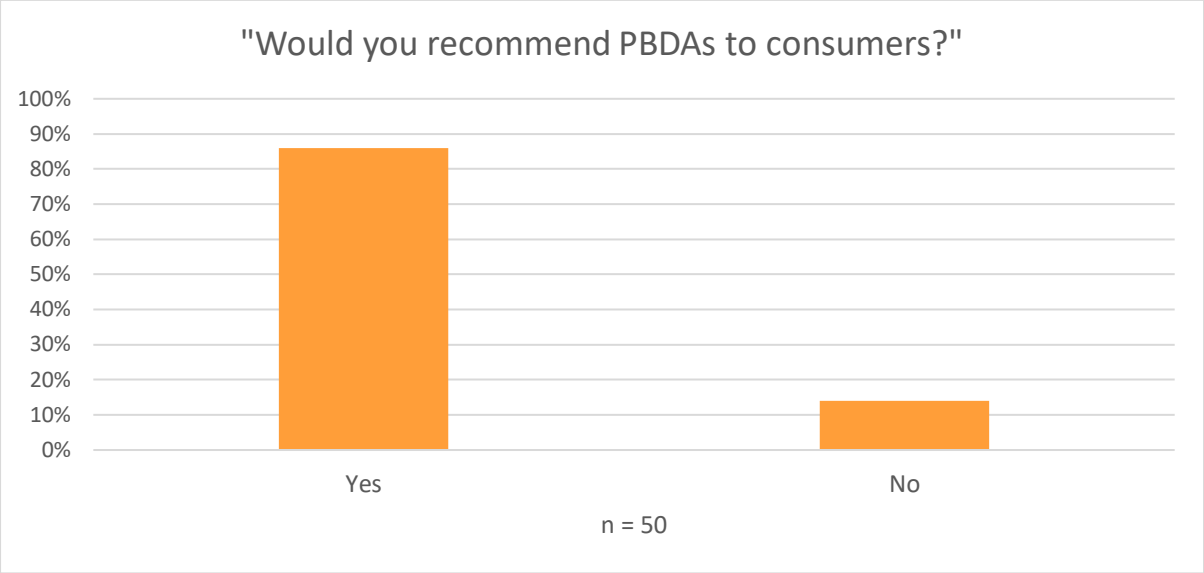


FIGURE 20. Attitudes towards recommending plant-based dairy alternatives (PBDAs) to consumers in those not working directly with patients/clients (in % of total sample analysed)

The most common **reasons for not recommending PBDAs** were beliefs that these products are not nutritious unless fortified (88%) and that they are intensively processed foods (63%) (FIGURE 21). Thirty-eight percent of this segment thought that PBDAs are not healthy or necessary in the diet. Fewer respondents mentioned that the main reason for not recommending these products is that they lack information or that PBDAs are expensive.

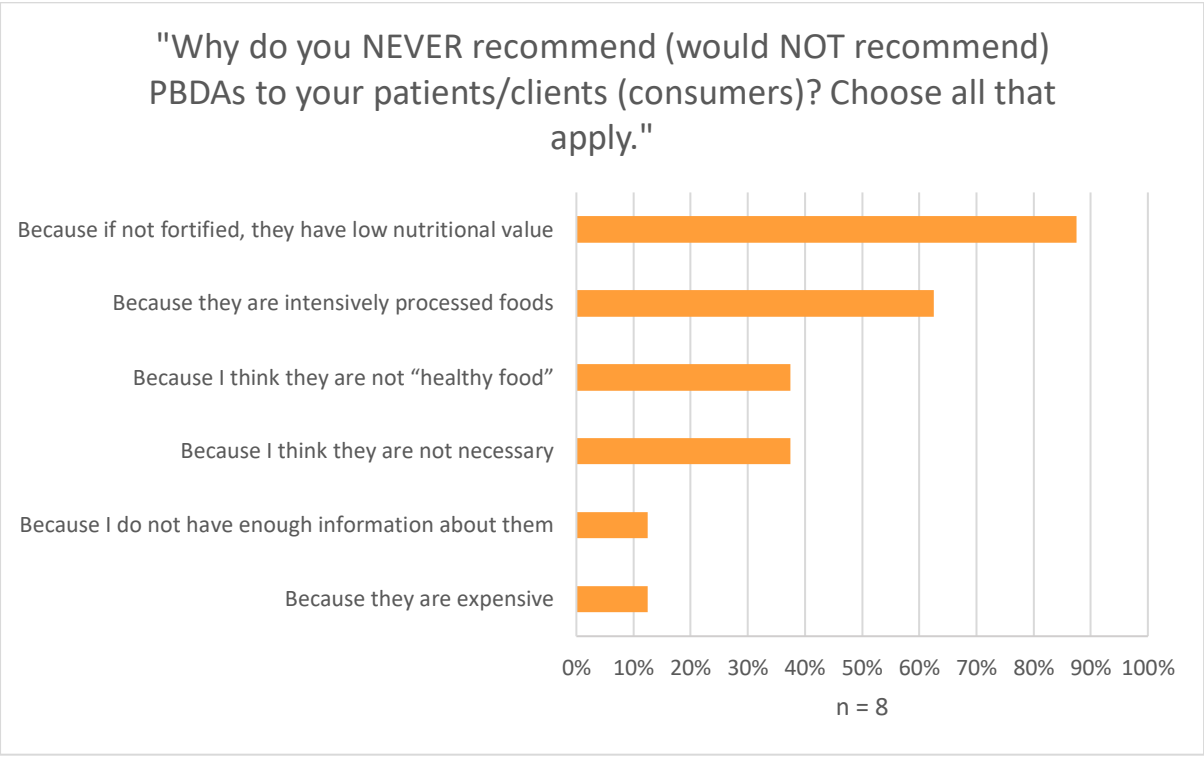


FIGURE 21. Reasons why nutrition professionals never (or are unwilling to) recommend plant-based dairy alternatives (PBDAs) (in % of total sample analysed)
Note: The following response options were not selected by none of the respondents: Because of their taste & texture, Because of cultural, religious, or ethical considerations.

Most nutrition professionals would **recommend PBDAs to specific groups** like people who follow restricted diets (86%), adults (67%), or people who already consume these products (66%) (FIGURE 22). Smaller proportions of the sample would recommend PBDAs in younger or older ages or in people with specific health conditions. Only 14% would recommend them to everyone. Other potential target groups cited included clients who are willing to try these products (2 out of 139), or those who prefer their taste/texture, provided their nutritional needs are met (1 out of 139).

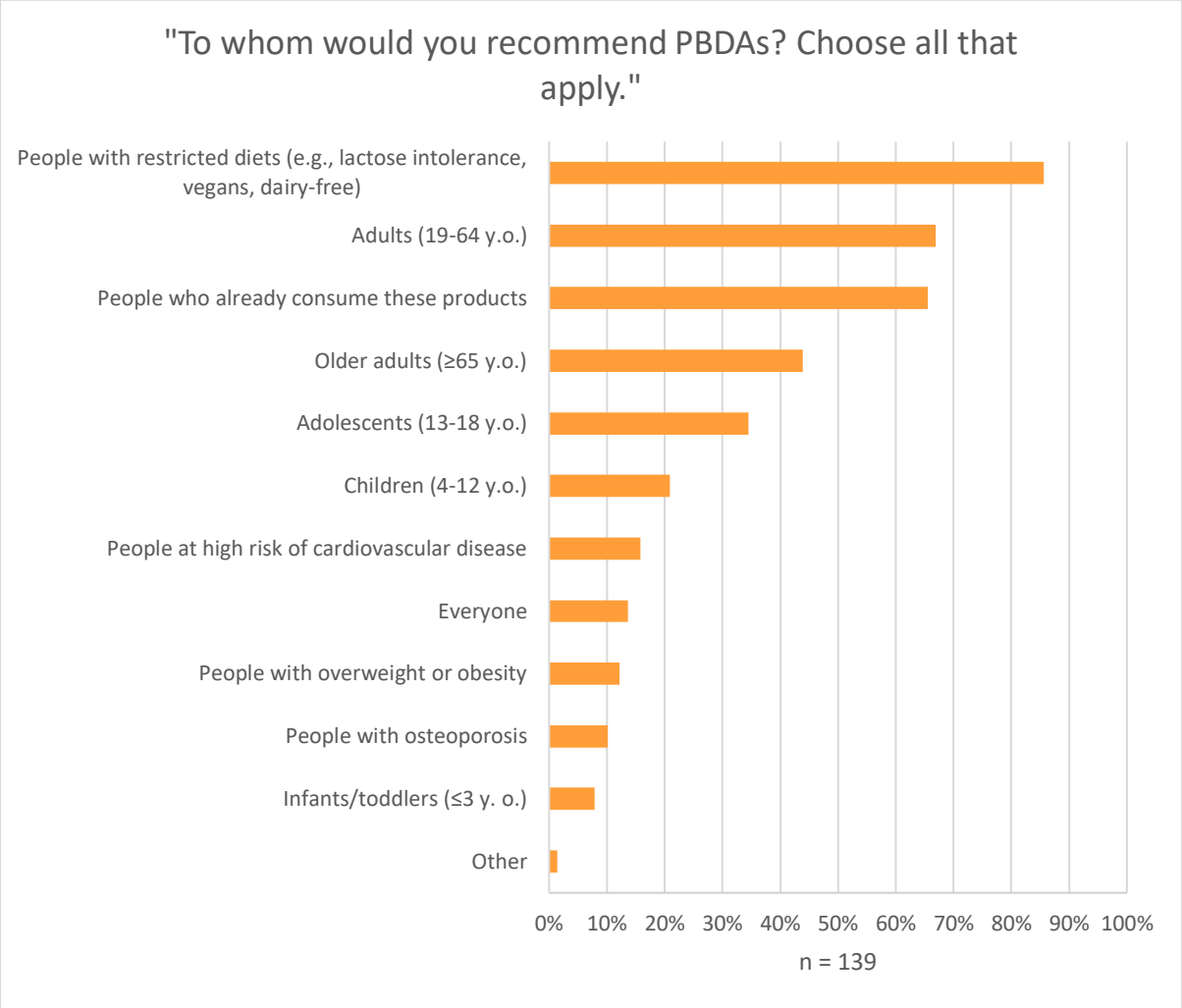


FIGURE 22. Target population groups for recommending plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

Regarding the **purposes for which nutrition professionals would recommend PBDAs**, 40% of the sample indicated dietary diversity or accommodating texture and taste preferences (FIGURE 23). However, most nutrition professionals would recommend PBDAs to deal with lactose intolerance and dairy allergies (96%), or to accommodate vegan and other plant-based diets (86%) or dietary restrictions related to culture or religion (52%). Smaller proportions of the sample (less than 40%) would recommend PBDAs for sustainability or ethical considerations, to promote health, to manage chronic diseases or weight, or for convenience and product innovation purposes. Other purposes cited included kidneys' disease (1 out of 139) or irritable bowel syndrome (1 out of 139).

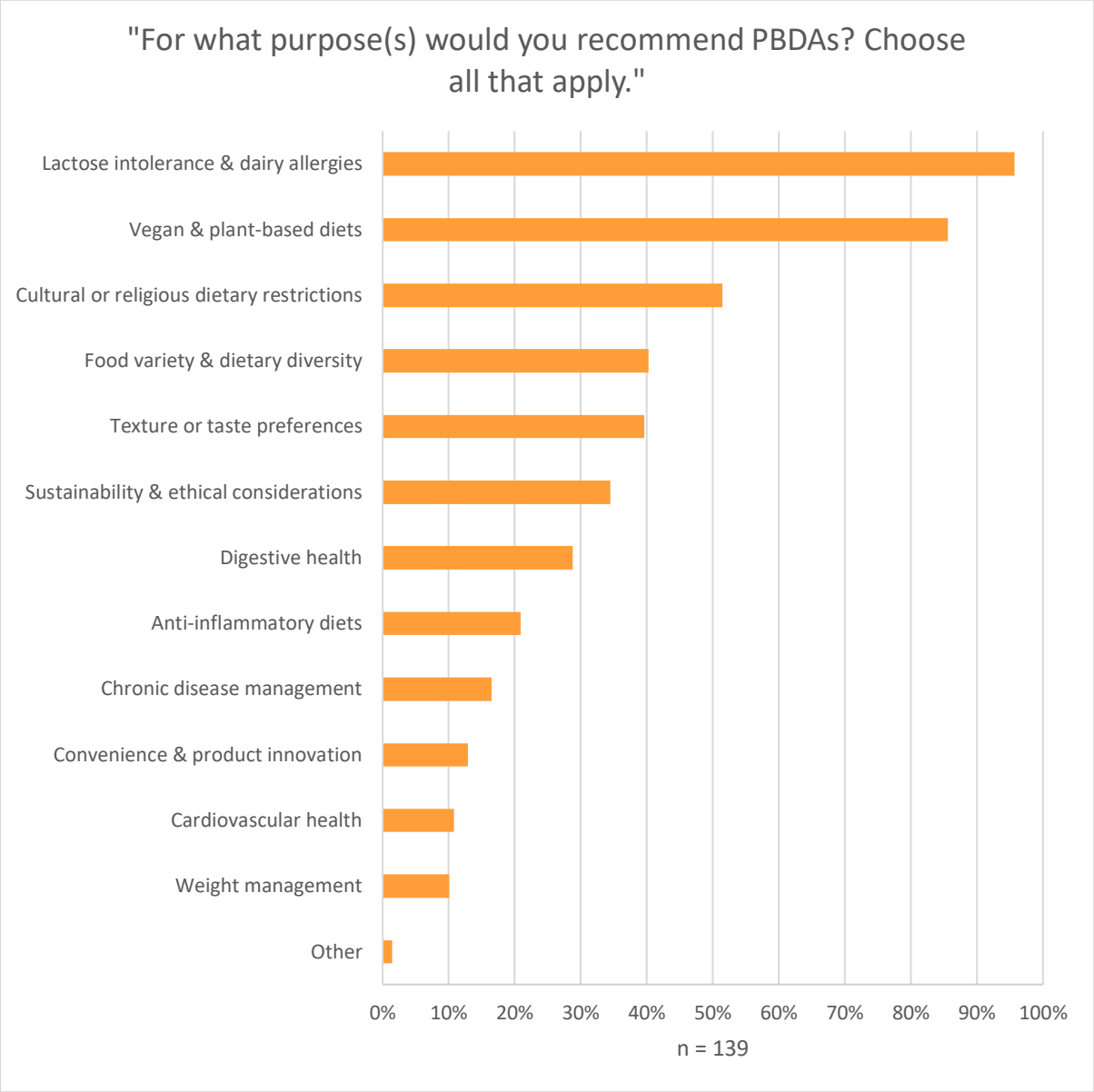


FIGURE 23. Purposes for recommending plant-based dairy alternatives (PBDAs) (in % of total sample analysed)

Attitudes toward recommending fortified vs. non-fortified PBDAs were closely tied to how nutrition professionals perceived the role of PBDAs in the diet ($p < 0.01$). Among those who believed PBDAs, regardless of fortification, can fully substitute dairy, the majority (60%) would recommend either version (FIGURE 24). In contrast, 82% of those who thought fortification is a requirement for PBDAs to fully substitute dairy and 63% of those who viewed PBDAs as complementing dairy would recommend only fortified versions. Those who saw PBDAs as partly substituting dairy and those who thought PBDAs cannot substitute dairy, were more divided on this matter (i.e., 54% and 46%, respectively, would recommend only fortified versions).

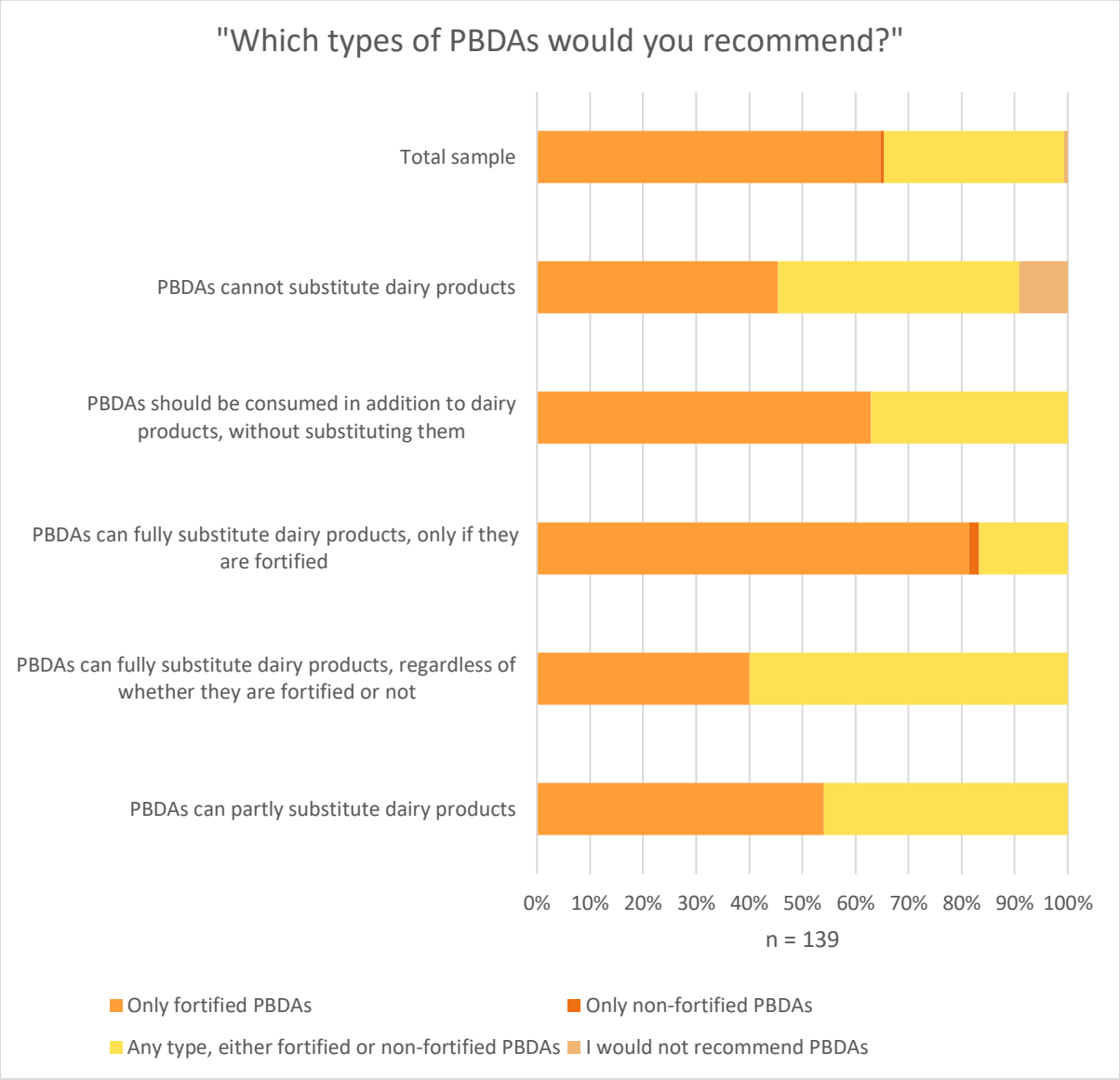


FIGURE 24. Preference for versions of plant-based dairy alternatives (PBDAs) to recommend by perceived role of PBDAs in the diet and in the total sample (in % of total sample analysed

Inclusion in national dietary guidelines

Nutrition professionals were generally positive about **including PBDAs in the Portuguese dietary guidelines**, with only 4% of the sample being against inclusion and 19% not taking a position due to lack of information (FIGURE 25). Of those in favour, 62% favoured including only fortified PBDAs, while 38% supported including either fortified or non-fortified versions. There were no significant differences between the various professional groups in the likelihood of being in favour of inclusion ($p = 0.92$) or in the likelihood of being in favour of only PBDAs that are fortified being included in dietary guidelines (i.e., conditional inclusion) ($p = 0.13$).

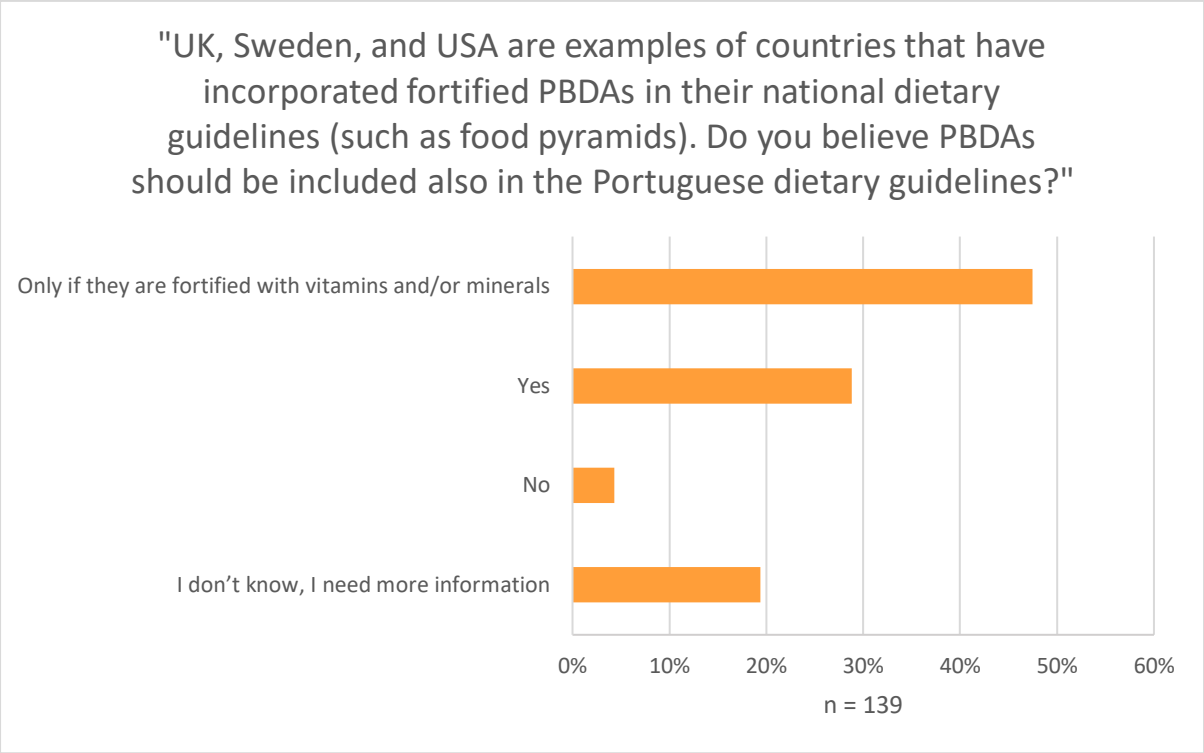


FIGURE 25. Attitudes towards including plant-based dairy alternatives (PBDAs) in the Portuguese dietary guidelines (in % of total sample analysed)

Support for inclusion was significantly associated with perceptions of whether PBDAs are **lactose-free** or more **environmentally friendly** than dairy, **nutritional value compared to dairy**, and **personal consumption**. Specifically, those who believed PBDAs are lactose-free (94%) were 14 times more likely to be in favour of inclusion than those who did not ($b = 2.73$, $p = 0.02$). Likewise, those who considered PBDAs as more environmentally friendly than dairy (32%) were 5 times more likely to be in favour of inclusion than those who did not ($b = 1.78$, $p = 0.03$). Notwithstanding, opinions as to whether PBDAs are more environmentally friendly than dairy were mixed, as 32% agreed with the statement that PBDAs are more environmentally friendly than dairy, 16% disagreed, 43% neither agreed nor disagreed, and 9% did not know. Moreover, those who believed that PBDAs are nutritionally equivalent to dairy as long as they are fortified (58%) were 13.5 times more likely to be

in favour of inclusion compared to those who believed that PBDAs are nutritionally equivalent to dairy irrespective of fortification (9%) (b = 2.67, p = 0.01). 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, the more frequently nutrition professionals consumed PBDAs themselves the more likely they were to be in favour of inclusion (b = 0.62, p = 0.02).

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 (32%) were 0.7 times less likely to be in favour of conditional inclusion than those who did not (b = -1.28, p = 0.03). Similarly, those who believed that PBDAs can fully substitute dairy irrespective of fortification (7%) were 0.9 times less likely to be in favour of conditional inclusion compared to those who believed that PBDAs can only partly substitute dairy (27%) (b = -2.88, p = 0.04). Finally, those who viewed PBDAs as nutritionally inferior to dairy (23%) were 17.5 times more likely to be in favour of conditional inclusion (b = 2.92, p = 0.05) compared to those who viewed PBDAs as nutritionally equivalent to dairy irrespective of fortification (9%).

Sixty eight percent of the sample thought that, if PBDAs were included in the Portuguese dietary guidelines, their **recommended consumption frequency** should match that of dairy products, assuming equal portion sizes (FIGURE 26). In contrast, 18% felt the frequency should be lower, 5% said it should be higher, and 9% were unsure.

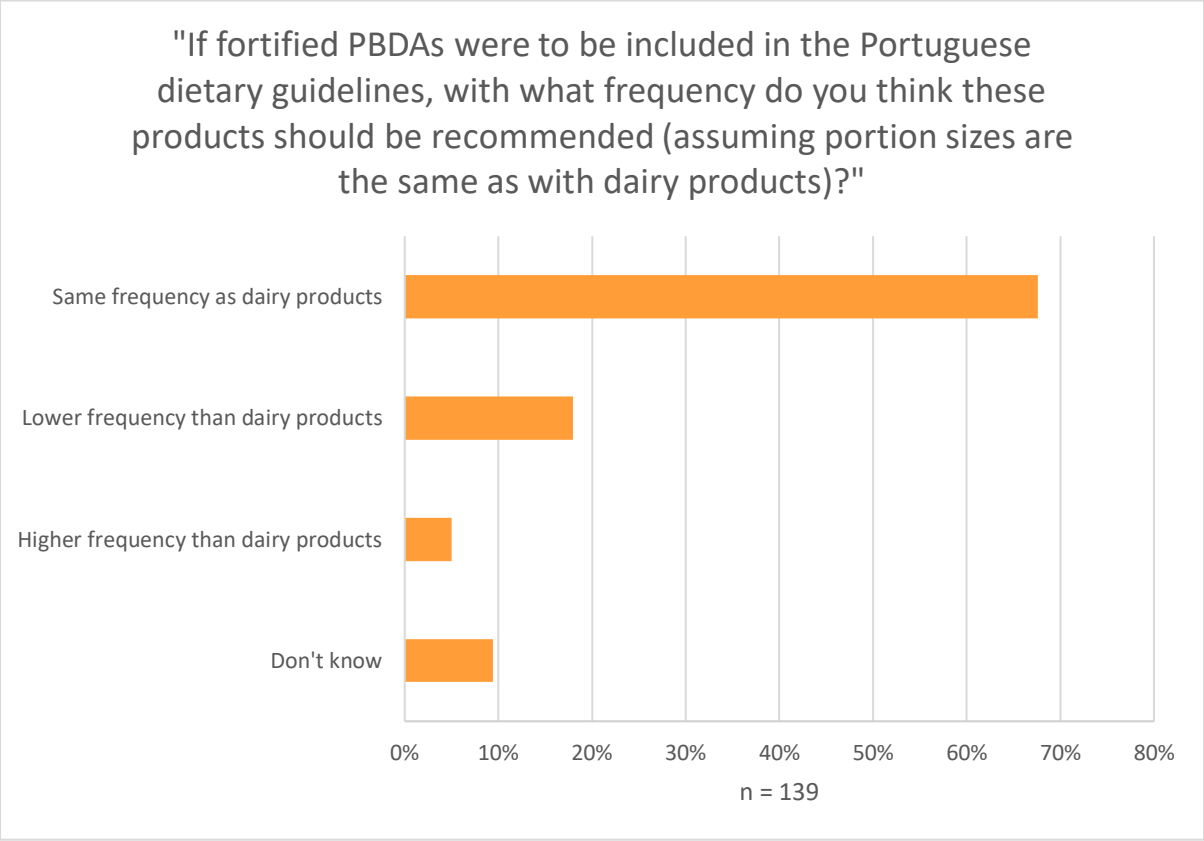


FIGURE 266. Preferred frequency of recommending plant-based dairy alternatives (PBDAs) if included in the Portuguese dietary guidelines (in % of total sample analysed)

Finally, most nutrition professionals thought that if PBDAs were to be included in the national dietary guidelines, they should be **recommended only to specific groups** such as people who follow restricted diets (74%), adults (52%), or people who already consume these products (48%) (FIGURE 27). Fewer nutrition professionals would recommend PBDAs in younger or older ages, or in people with specific health conditions and only 14% would recommend them to everyone. Other groups that nutrition professionals thought could be recommended to consume PBDAs included people with kidneys' disease (but without added phosphorus or potassium) (1 out of 139) or anyone looking for alternatives to animal-based products (1 out of 139). One respondent mentioned that these products could be recommended to everyone, with the exception of rice drinks up to the age of 3 years old (1 out of 139).

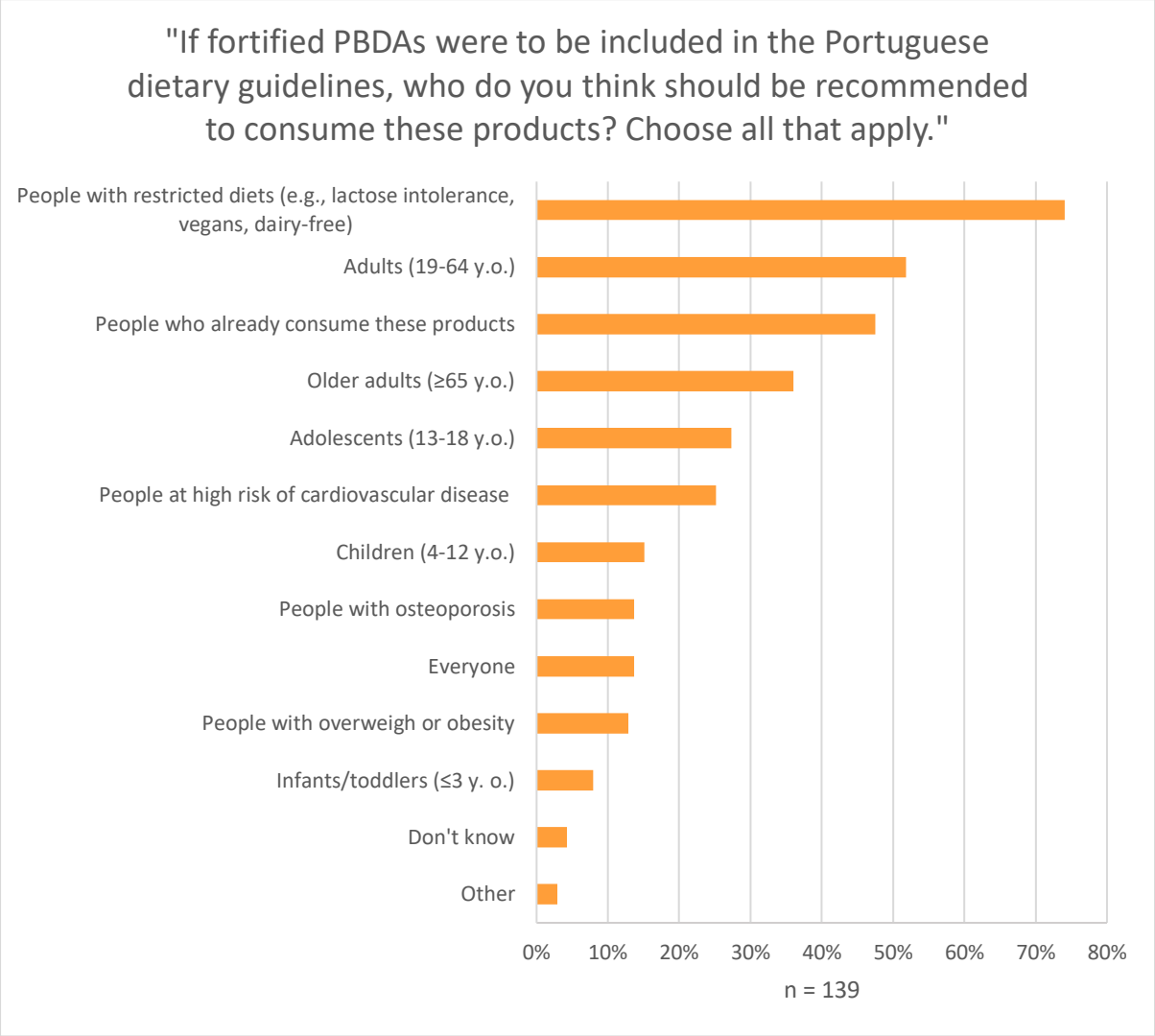


FIGURE 277. Target population groups for plant-based dairy alternatives (PBDAs) if included in the Portuguese dietary guidelines (in % of total sample analysed)

Conclusions

This research offers an in-depth look at the perceptions, practices, and information needs of nutrition professionals in Portugal regarding PBDAs. Overall, the findings suggest that while PBDAs are **broadly recognized**, **integration** into professional practice remains relatively limited, and **divided opinions** persist, particularly in relation to their nutritional value, role in the diet, environmental impact, and degree of processing.

A strong 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** (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 viewing them as nutritionally superior, suggesting that perceived superiority does not always translate to more frequent recommendations. Frequency of recommending PBDAs was also higher the higher the **share of PBDAs in Portugal nutrition professionals believed are fortified** with micronutrients and the more frequently they **consumed these products themselves**. This suggests that individual experience heavily shapes professional behaviour and aligns 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 most nutrition professionals considered PBDAs as nutritionally equivalent or even superior to dairy, particularly when fortified, a considerable share viewed them as nutritionally inferior to dairy and expressed concerns about the content of non-fortified PBDAs in protein, sugar, and key micronutrients such as calcium, vitamin D, and vitamin B12. Some also felt that comparing the nutritional value of PBDAs to dairy is challenging, as it depends on the plant sources used, any added ingredients (e.g., sugar, protein), 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 and

those viewing PBDAs as complementing (not substituting dairy) were more likely to recommend only fortified versions. In contrast, 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 dairy and those who thought PBDAs cannot substitute dairy remained divided on this matter.

Overall, nutrition professionals supported the **fortification of PBDAs with micronutrients**, but many tended to underestimate the percentage of PBDAs that are currently being fortified in the Portuguese market. This misperception could potentially limit the extent to which these products are recommended to consumers.

Despite the ambivalences, **support for integrating PBDAs into the Portuguese dietary guidelines** was high, with most nutrition professionals favouring conditional inclusion—restricted to fortified versions. 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 Portuguese dietary guidelines was especially high among those who saw PBDAs as **lactose-free**, more **environmentally friendly** than dairy, and **nutritionally equivalent to 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 **fortification, nutritional composition and bioavailability**, **health effects**, **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 nutrition professionals in Portugal are open to the integration of PBDAs into dietary patterns, particularly when these products are fortified, clearer information and education are needed to support informed practice and decisions regarding their role in healthy and sustainable diets.

References

Asher, K. E., Doucet, S., & Luke, A. (2021). Registered dietitians' perceptions and use of the plant-based recommendations in the 2019 Canada's Food Guide. *Journal of Human Nutrition and Dietetics*, *34*(4), 715–723. https://doi.org/10.1111/jhn.12845

Clark, B. E., Pope, L., & Belarmino, E. H. (2022a). Perspectives from healthcare professionals on the nutritional adequacy of plant-based dairy alternatives: results of a mixed methods inquiry. *BMC Nutrition*, *8*(1). https://doi.org/10.1186/s40795-022-00542-7

Clark, B. E., Pope, L., & Belarmino, E. H. (2022b). Personal bias in nutrition advice: A survey of health professionals' recommendations regarding dairy and plant-based dairy alternatives. *PEC Innovation*, *1*. https://doi.org/10.1016/j.pecinn.2021.100005

Clegg, M. E., Tarrado Ribes, A., Reynolds, R., Kliem, K., & Stergiadis, S. (2021). A comparative assessment of the nutritional composition of dairy and plant-based dairy alternatives available for sale in the UK and the implications for consumers' dietary intakes. *Food Research International*, *148*, 110586. https://doi.org/10.1016/j.foodres.2021.110586

Deutsche Gesellschaft für Ernährung. (2024). *Gut essen und trinken – die DGE-Empfehlungen*. Retrieved June 24, 2025 from https://www.dge.de/gesunde-ernaehrung/gut-essen-und-trinken/dge-empfehlungen/#c6415

Goff S. A., O'Neill, J. L., O'Grady, A., Redmond, M., & Hovey, J. (2023). An investigation into dietitians' awareness and recommendations surrounding plant-based diets and plant-based dairy alternatives in Ireland. *Proceedings of the Nutrition Society*, *82*(OCE5). https://doi.org/10.1017/s0029665123004378

Helsedirektoratet. (2023). *Kostråd for god helse og gode liv. Kostråd for befolkningen*. Retrieved June 24, 2025 from https://www.helsedirektoratet.no/faglige-rad/kostradene-og-naeringsstoffer/kostrad-for-befolkningen

Livsmedelsverket. (2025). *Kostråd för vuxna*. Retrieved June 24, 2025 from https://www.livsmedelsverket.se/matvanor-halsa--miljo/kostrad/kostrad-vuxna/

MarketsandMarkets. (2023). Dairy Alternatives Market by Source (Soy, Almond, Coconut, Oats, Hemp), Application (Milk, Yogurt, Ice Creams, Cheese, Creamers), Distribution Channel (Retail, Online Stores, Foodservice), Formulation and Region - Global Forecast to 2028. Accessed on June 13, 2025 from https://www.marketsandmarkets.com/Market-Reports/dairy-alternatives-market-677.html

Molina, G. E., Wätjen, A. P., Barone, G., Ahrné, L., Hansen, E. B., & Bang-Berthelsen, C. H. (2023). Hybrid Cheeses—Supplementation of Cheese with Plant-Based Ingredients for a Tasty, Nutritious and Sustainable Food Transition. *Fermentation*. https://doi.org/10.3390/fermentation9070667

National Health Service. (2016). *The Eatwell Guide*. Retrieved June 24, 2025 from https://www.nhs.uk/live-well/eat-well/food-guidelines-and-food-labels/the-eatwell-guide/

Pimenta Martins, A., Correia, D., Carvalho, C., Lopes, C., Gomes, A. M., & Torres, D. (2022). Analysis of the supply of micronutrient-fortified foods in Portugal. *Acta Portuguesa de Nutrição*, *29*, 10–19. https://doi.org/10.21011/apn.2022.2903

U.S. Department of Agriculture and U.S. Department of Health and Human Services. (2020). *Dietary Guidelines for Americans, 2020-2025*. Retrieved June 24, 2025 from https://www.dietaryguidelines.gov/

Voedingscentrum. (2016). *Gezond en duurzaam eten met de Schijf van Vijf*. Retrieved June 24, 2025 from https://www.voedingscentrum.nl/nl/gezond-eten-met-de-schijf-van-vijf.aspx

Appendix – Qualitative responses

Why do you think PBDAs should be fortified? Choose all that apply. Other, please explain:
To help ensure the nutritional adequacy of plant-based diets
To address nutritional deficiencies
To replace dairy products in individuals who are, for example, lactose intolerant
Which vitamins and/or minerals do you think PBDAs in Portugal are most frequently fortified with? Choose all that apply. Other, please specify:
Iron
For what purpose(s) would you recommend PBDAs? Other, please specify:
Kidney disease
Irritable bowel syndrome
To whom would you recommend PBDAs? Other, please specify:
Customers who want to try these products
Preference for taste or texture, people with an interest, provided that nutritional needs are met.
If fortified PBDAs were to be included in the Portuguese dietary guidelines, who do you think should be recommended to consume these products? Choose all that apply. Other, please explain:
Everyone, except rice drinks for babies or children up to 3 years old
If, due to individual preference, no dairy products are consumed in any form
Kidney disease without additives Phosphorus and Potassium
Anyone looking for alternatives to animal-based products.
Do you have any dietary restrictions or preferences? Choose all that apply. Other (please specify):
Mediterranean diet
Intolerance to oats, carob and whole wheat
None
I prefer plant-based drinks to milk
Do you have any remaining comments?
Yes, thank you in advance for the questionnaire, but some questions are incomplete and may lead to biased answers. For example, when asking whether AVLs have more sugar, it depends on whether or not sugar has been added. Regarding protein, it also depends, because if it is a soy drink, it has a similar equivalent per 100ml.
Plant-based drinks can be a good alternative to dairy products, but it is important to educate the population about certain things, such as choosing plant-based drinks with less sugar and fat (the most prevalent on the market) and also with a lower protein content compared to milk and dairy products. What I see in the Portuguese market is that there are some interesting plant-based drinks, but there are still many plant-based yoghurts with a lot of sugar and little protein; plant-based cheeses also do not have a very interesting nutritional profile (based on starch, coconut fat).
Add protein to plant-based drinks and reduce the amount of carbohydrates/sugar in non-light versions. They would be recommended much more often by nutritionists...
I consider the fortification of plant-based milk alternatives to be very important.
It is important to make more non-genetically modified soy drinks available on the market.
The comparison table did not make sense because we do not know which dairy products we are comparing (whether G, MG or M) and we also do not know if they are drinks with no added sugar.

Qualitative responses that do not pertain to participant views on PBDAs (e.g., 'I look forward to seeing the results of the study' or 'Question 20 does not allow multiple choices') are omitted.

DO YOU HAVE QUESTIONS?
CONTACT US!

Dr Katerina Palascha
Research Senior Manager
katerina.palascha@eufic.org

eufic