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STUDY PROTOCOL

Availability and labelling of milk substitutes in online supermarkets in the UK: an observational study

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Introduction

Milk substitutes (e.g., plant-based milks) are products that replicate the taste, texture and function of animal-based dairy products, but contain no animal-based ingredients. Due to concerns over health, animal welfare, and the environment, it is now estimated that almost a quarter (23%) of the British public drink milk substitutes [1].

In the Europe Union [2] and the UK [3], existing regulation states that terms like 'milk', 'cheese' and 'yogurt' on packaging can only be used to describe products that originate from animals. This means that combining words like 'oat' and 'soya' with 'milk' on product packaging is not allowed. In contrast, in some other countries (e.g., Australia) terms such as 'soy milk' are legally permitted.

A proposal by the Europe Union (draft legislation amendment 171) in October 2020 sought to go one step further, and prohibit the use of certain words in relation to milk, such as 'style', 'type', 'imitation', 'alternative to', 'to be used as', 'flavour', 'substitute', 'like', or any other similar word that helps the manufacturer explain to the consumer what type of replacement product the food item in question is. This amendment was rejected by the European parliament in May 2021. In countries like Australia and the USA, courts have also largely rejected such proposals, as long as product names include a qualifier like 'plant-based'.

Supporters of existing and proposed regulations argue that people have traditionally associated terms like 'milk' with animal products and therefore, when appearing on plant-based products, could mislead and confuse consumers about the products' ingredients. In contrast, opponents of existing and proposed regulations insist that using terms like 'milk' on product labels do not confuse consumers about the ingredients. They maintain that, on the contrary, these terms are necessary to prevent confusion by accurately conveying the taste and uses of products.

Although the popularity of milk substitutes is growing rapidly in the UK, little is known about the availability and labelling of such items in UK supermarkets. This study aims to address these gaps and describe the availability and labelling of milk substitutes.

Definitions

Dairy milk: milk from an animal source (including lactose free milk from an animal source)

Milk substitute: milk not from an animal source.

Study Aims

The primary aim of this study is to describe the absolute (the total number of products) and relative (the proportion compared to dairy milk) availability of plant-based milk substitutes in online supermarkets in the UK.

The secondary aims are:
  i) to describe the labelling on the front of milk substitutes.
  ii) to describe the description given by the supermarket of milk substitutes.
  iii) to explore where dairy milk and milk substitutes appear in the returned list of items when searching the term 'milk' on the supermarket website.
  iv) to explore the price of dairy milk and milk substitutes

Study Design

This is an observational study of four online supermarkets in the UK.

Study Site

The top four online supermarket chains, based on size of customer base and sales, in the UK (Tesco, Sainsbury's, Asda, Morrisons).

Outcomes

The primary outcomes will be:

  i) Absolute availability (the total number of products) of milk substitutes.

  ii) Relative availability (the proportion compared to dairy milk) of milk substitutes.

The secondary outcomes will be:
  i) the labelling of milk substitutes, on the front of the item, as listed in Table 1.
  ii) where dairy milk and milk substitutes are listed (the page number) when the term 'milk' is searched on the supermarket website (if it is listed at all).
  iii) the price of dairy milk and milk substitutes

Procedures

For an overview of the study procedure, see Figure 1.

Researchers will visit the online website of the top four supermarket chains, based on size of customer base and sales, in the UK (Tesco, Sainsbury's, Asda, Morrisons). Several pre-defined terms will be searched on each of the supermarket websites: 'milk', 'plant-based milk', 'milk substitute', 'oat milk', 'soya milk', 'pea milk', 'nut milk', 'cashew milk'

Upon entering the search term, each dairy milk and milk substitute listed, will be entered into a datasheet alongside the category in which it belongs (i.e., whether it is a dairy milk or a milk substitute). The description given by the supermarket will be copied into the datasheet to identify the item. At the end of data collection, duplicate checks will be made using this description. Any items deemed to be duplicates (i.e., they have exactly the same product description as another item from the same supermarket, including the same size), within each supermarket chain, will be removed.

The labelling on the front of any milk substitutes will also be copied into the datasheet (minus any dietary claims such as 'high in calcium' or 'contains vitB12', volume information and sweetening claims). This labelling will also be recorded categorially for each dairy milk and milk substitute (as appropriate) as per Table 1. The labelling in Table 1 is based on a small pilot of 10 searches on each of the supermarket websites. A string 'other category' will be used to collect any labelling information not captured in Table 1. A screen shot of each milk substitute will also be taken and stored in a word document with a screenshot ID number linking it back to the database.

Table 1. Data collection for labelling description

From the description given by the supermarket:	Responses	Collected for:	
		Dairy milk	Milk substitute
Does the description given by the supermarket contain the word 'milk'	Yes / No	✓	✓
Brand or supermarket own	Brand / Supermarket	✓	✓
On the front of the product packaging:			
Is 'alternative to milk' present	Yes / No		✓
Is 'drink' present	Yes / No		✓
Is 'plant-based' present	Yes / No		✓
Is 'vegan' present	Yes / No		✓
Is 'dairy-free' present	Yes / No		✓
Is the word 'milk' used in a different format (e.g. M'lk, M!lk, mylk).	Yes / No		✓
No description other than the brand (or supermarket chain) and / or ingredient (e.g., Alpro Soya)	Yes (other description) / No (only ingredient and brand [or supermarket] present)		✓
Please write down all other information not captured already (minus any dietary claims such as 'high in calcium' or 'contains vitB12', volume information and sweetening claims)	String		✓

For each supermarket, the search term 'milk' will be searched first, and the page number of where the item is returned will be recorded. After which, the search terms listed above will be searched in order. Any items listed will be checked against the product description given by the supermarket of existing entries. Any items found to be new entries will be recorded and -777 (not found) will be recorded under the variable 'What page is this item found under when the search term 'milk' is used?' (i.e., that product was not found under the search term 'milk').

Any items that appear in a search term but are deemed to obviously not fit into that search category, will not be recorded by the researcher. For example, if the search term 'milk' is searched and a milk

chocolate bar or hot chocolate item is listed, this product will not be entered by the researcher (i.e., all items in the datasheet must be dairy milk or milk substitutes). Powdered products, flavoured products, products marketed for pets, products marketed for babies or children, tinned products (e.g., coconut milk), milkshakes, protein shakes, probiotic drinks, etc, will be excluded.

Products will only be counted once within each category (i.e., they will be recorded as either dairy milk or milk substitute). Any products that are the same, but are different volumes (i.e., a 100ml semi-skimmed milk and a 400ml semi-skimmed milk) will be recorded separately in the datasheet.

Although we do not anticipate that searching from a different location, or at a different time, would alter the results, for consistency, all data collection will be completed by the same researcher, from the same location, from the same IP address, within a 2-week period for each supermarket.

Figure 1. Project flow chart

Step 1 - go to the Tesco website. Click on 'groceries'. Then click on 'shop groceries'. - do not log in. - in the search bar enter 'milk'.
Step 2 - click on each product returned by this search term in order. - copy and paste the product description given by the supermarket into the datasheet. - complete all other data fields in the datasheet for that product (enter -888 for not applicable and -999 for missing. Do not leave any fields blank).
Step 3 - repeat for all other search terms listed in the protocol. - for each product listed search in the datasheet to see if it has already been recorded (record different sizes as a new entry). - if the product has already been recorded, do not enter a second time. - if the product has not already been recorded, enter as per step 2 (and record 'Milk_page' as -777 [not found under the search term 'milk']).
Step 4. - after ~10% of products have been entered, contact Katie De-loyde (Bristol University) to run a data check.
Step 5 - go to the Sainsburys website. - do not log in. - in the search bar enter 'milk'. - repeats steps 2 to 4.
Step 6 - go to the Morrisons website. - do not log in. - in the search bar enter 'milk'. - repeats steps 2 to 4.
Step 7 - go to the Asda website. Click on 'groceries'. - do not log in. - in the search bar enter 'milk'. - repeats steps 2 to 4.

Statistical Plan

The primary outcomes (relative and absolute availability) will be calculated and reported per supermarket chain. A mean overall absolute and relative availability, will also be calculated and

reported.

The secondary outcomes will be presented descriptively for each supermarket chain.

Ethical Considerations and Informed Consent

Ethics approval will not be required for this project as it does not involve any participants or participant information.

Safety

As this is an observational study of existing online websites, we do not foresee any risks.

Data Management

All aspects of the General Data Protection Regulation (GDPR), Data Protection Act 2018 and Freedom of Information Act 2000 will be adhered to. All data will be entered directly into an Excel datasheet, and on study completion will be stored on an encrypted cloud server. Only study personnel will have access to the datasheet.

Anonymous study data (i.e., supermarkets will be de-identified and coded 1 to 4) will be shared with collaborators for the purposes of analysis and results interpretation under appropriate collaboration agreements. At the end of the study, anonymous electronic study data (including finalised data sheet) will be locked and made open using the University of Bristol Research Data Repository. Study data will be kept for a minimum of 20 years.

Quality Control and Quality Assurance

The investigators will be responsible for data quality. After approximately 10% of data collection has been completed for each supermarket, the study will undergo an in-house quality assessment by a second researcher. This researcher will re-enter the 10% of data and a threshold of 1% will be used for correct responses, whereby error rates greater than 1% will require the data to be re-entered.

Insurance

The University of Bristol holds appropriate liability insurance for research studies. If required, further information can be found at the link below: http://www.bristol.ac.uk/secretary/insurance/liability-insurance/.

Publication Policy

The findings from this research study may be published in an appropriate scientific journal (and made available open access), and/or presented at an appropriate meeting. Study data will be collected and held by the study investigators and may be used to inform future research. The data will be made available for sharing via a University of Bristol online data repository.

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Conflicts of Interest

The study investigators have no known conflicts of interest to declare.

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