ISRCTN16569242 https://doi.org/10.1186/ISRCTN16569242

Nudging plant-based protein purchases in a real-life online supermarket

Submission date
02/02/2022

Recruitment status
No longer recruiting

Registration date
14/03/2022

Overall study status
Completed

Last Edited
21/02/2024

Condition category
Other

[X] Prospectively registered
[_] Protocol
[X] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol
Background and study aims
For challenges of environmental sustainability and health perspective, a shift from consumption of animal-based to plant-based proteins is widely acknowledged to be necessary. Food consumption is heavily influenced by our social and physical environments, for example in terms of availability, price, and social acceptance. One of our food environments is supermarkets, where people buy protein products on a daily or weekly basis. Previous research has shown that adjustments in supermarket environments can affect purchasing behavior towards healthier choices. In addition, experiments in virtual supermarkets and canteens have shown that certain choice architecture (i.e., nudging) strategies can promote plant-based protein choices in terms of products or meals. However, the impacts of nudging strategies on plant-based protein purchases have rarely been studied in real-life settings. Moreover, while previous research found that a combination of nudges can be more effective in changing behavior than a single nudge, most nudges have been studied separately. Therefore, this study will expand existing knowledge by investigating the real-life effect of a combined nudging strategy on plant-based protein purchases relative to animal-based purchases in an online supermarket.

Who can participate?
All customers of the participating online supermarket chain.

What does the study involve?
Customers visiting the online supermarket are randomly allocated to:
1. No intervention (regular online supermarket)
2. Addition of three types of nudges (placement, social norm and properties)
During an 8-week study period sales data are collected from all customers placing a delivery order in the online supermarket. Including a 16-week follow-up measurement.

What are the possible benefits and risks of participating?
The study does not involve direct benefits or risks for the participants.

Where is the study run from?
National Institute for Public Health and the Environment (RIVM) (the Netherlands)

When is the study starting and how long is it expected to run for?
September 2021 to September 2022

Who is funding the study?
National Institute for Public Health and the Environment (RIVM) (the Netherlands)

Who is the main contact?
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Contact information

Type(s)
Scientific

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
2021.0703

Study information

Scientific Title
Nudging plant-based protein purchases in a real-life online supermarket: a randomized controlled trial

Acronym

SHIFT-diets

Study objectives
We will primarily evaluate whether the implementation of nudges will result in a between group mean-difference in the number of plant-based protein purchases in an online supermarket. As secondary outcome, we will evaluate between groups the mean-differences in the number of purchased plant-based meat replacements, animal-based meat products, plant-based dairy purchases, and animal-based dairy purchases. As a tertiary outcome we will investigate the mean-differences in retailer revenue as a relevant business related outcome. In addition, we will explore if potential effects are sustained after the intervention period has ceased and investigate potential interactions with the primary outcome for neighborhood socio-economic position (SEP), age and sex.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 26/01/2022, The Medical Ethics Review Committee of VU University Medical Center (De Boelelaan 1109, kamer 08A-08, Postbus 7057, 1081 HV Amsterdam, the Nteherlands; +31 20 444 5585; metc@vumc.nl), ref: 2021.0703

Study design
A two-arm parallel-group individually randomized controlled trial

Primary study design
Interventional

Secondary study design
Randomised parallel trial

Study setting(s)
Internet/virtual

Study type(s)
Prevention

Participant information sheet
Not available in web format, please use contact details to request a participant information sheet.

Health condition(s) or problem(s) studied
Promoting plant-based protein products among the general population

Interventions
Current interventions:

Arm 1: Regular online supermarket (control).
Arm 2: Online supermarket with the addition of nudges on plant based protein products.
Randomization and allocation is performed by supermarket e-commerce employees, using a software tool names Blueconic. Randomization is based on participants' browser cookies.

In the control group, shoppers encounter the unadjusted online shopping environment as it currently is.
Participants that are randomized to the intervention group will shop in an adjusted online supermarket website, in which a combination of three nudging strategies are present. The different nudging strategies focus on prominence, dynamic social norms and properties.

Prominence nudge
First, we will install a prominence nudge, meaning that at two points on the supermarket website, the product categories of plant-based protein products (plant-based meat alternatives and plant-based dairy alternatives) are placed more prominently when navigating the main category called ‘ Meat, chicken, fish and vegetarian” and when navigating the main category called ‘Dairy, butter and eggs’.

Dynamic social norms nudge
Secondly, we will install a dynamic social norms nudge by means of a label on products. Based on sales data of all plant-based dairy and meat alternatives in the period before starting the experiment, we will select the 50% most sold products in several product categories. Categories included for example vegetarian minced meat, vegetarian schnitzel or burgers, plant-based drink and vegetarian snacks. These products will be provided with a label in Dutch that translates to ‘Increasingly chosen’ (in Dutch: ‘Steeds vaker gekozen’).
In addition to the label, on 11 product category overview pages (for example, potatoes, pasta, rice, coffee), a purple-colored frame, from now on called a ‘ toaster’ will be shown on the top right side of the page. When clicked on by the shopper, this toaster will direct shoppers to plant-based alternative category pages, that are relevant for the product page. The different toasters each will show two images of relevant plant-based meat- or dairy replacement products.

Properties nudge
Regarding properties, a nudging strategy will be used in the form of a tastiness product label on the frame. Besides the text ‘Increasingly chosen’ / ‘Steeds vaker gekozen’, an additional text is shown saying: ‘Have a look at these tasty products’/ ‘Bekijk ook deze lekkere producten’. This so-called frame will be installed on the top left side of three main category pages (Meat, chicken, fish and vegetarian products; freezer products; dairy products).

Previous interventions:

Arm 1: Regular online supermarket (control).
Arm 2: Online supermarket with the addition of nudges on plant based protein products.
Randomization and allocation is performed by supermarket e-commerce employees, using a software tool names Blueconic. Randomization is based on participants’ browser cookies.

In the control group, shoppers encounter the unadjusted online shopping environment as it currently is.
Participants that are randomized to the intervention group will shop in an adjusted online supermarket website, in which a combination of three nudging strategies are present. The different nudging strategies focus on placement (increasing availability and prominence), social norms, and properties.

Placement nudges
Firstly, we will use a prominence (position) nudge, entailing that plant-based protein products are placed more prominently when searching for (animal-based) protein products groceries or navigating towards animal-based protein products (for example, plant-based chicken-like pieces are presented when searching for chicken).

Secondly, we will also use an availability nudge in combination with the prominence nudge, entailing multiple plant-based protein product alternatives are suggested when navigating or searching animal-based protein products, thereby increasing the availability of these products.

Social norm nudge
We will install a dynamic social norms nudge. When navigating or searching for animal-based products, plant-based alternatives will be suggested between the results with a label ‘Increasingly chosen' (Dutch translation: 'Steeds vaker gekozen’). In addition, there will be a frame linking to two plant-based products with the label ‘Increasingly chosen’.

Properties nudge
We will install a tastiness product label. On the previously described frame linking to plant-based products with the label ‘Increasingly chosen’, an additional text is installed saying: ‘Also have a look at these tasty products’ (Dutch translation: ‘Bekijk ook deze lekkere producten’). Furthermore, within other categories (e.g. pasta, rice, potatoes, vegetables, coffee), a frame will be installed that suggests plant-based products and contains the label ‘Have a look at these tasty products’

Intervention Type
Behavioural

Primary outcome measure
The number of plant-based protein products purchased measured using the online shopping website at a single time point

Secondary outcome measures
Measured using the online shopping website at a single time point:
1. The number of purchases from (a) meat, (b) plant-based meat substitutes, (c) dairy products, and (d) plant-based dairy products.
2. Total revenue in Euros.

Overall study start date
01/09/2021

Completion date
22/09/2022

Eligibility

Key inclusion criteria
Current inclusion criteria as of 13/06/2022:

All customers placing a delivery order (i.e., shops) in a real-life online supermarket between mid May 2022 until mid September 2022.

Previous inclusion criteria:

All customers placing a delivery order (i.e., shops) in a real-life online supermarket between mid February 2022 until mid June 2022.

Participant type(s)

All

Age group
Adult

Sex
Both

Target number of participants
With 80% power and a two-sided type 1 error rate of 0.05, the trial would require 768 participants in each trial arm, resulting in 1,537 participants in total. All participants will be invited to fill out a survey. Based on an expected response rate of 10%, we expect to collect data from circa 540 up to 870 questionnaires.

Total final enrolment
3502

Key exclusion criteria
Does not meet inclusion criteria

Date of first enrolment
18/05/2022

Date of final enrolment
22/09/2022

Locations

Countries of recruitment
Netherlands

Study participating centre
National Institute for Public Health and the Environment (RIVM)
Antonie van Leeuwenhoeklaan 9
Bilthoven
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Study participating centre
Amsterdam UMC, VU University
De Boelelaan 1089a
Amsterdam
Netherlands
1081 HV

Study participating centre
Wageningen University & Research
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Sponsor information

Organisation
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Sponsor type
Research organisation

Website
http://www.rivm.nl/en/

ROR
https://ror.org/01cesdt21

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Publication and dissemination plan
One or two planned publications in high-impact, preferably open access, peer-reviewed journal

Intention to publish date
15/02/2023

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are not expected to be made available due to confidentiality agreements with the collaboration supermarket chain

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Statistical Analysis Plan			07/02/2022	No	No
Results article		17/02/2024	21/02/2024	Yes	No