

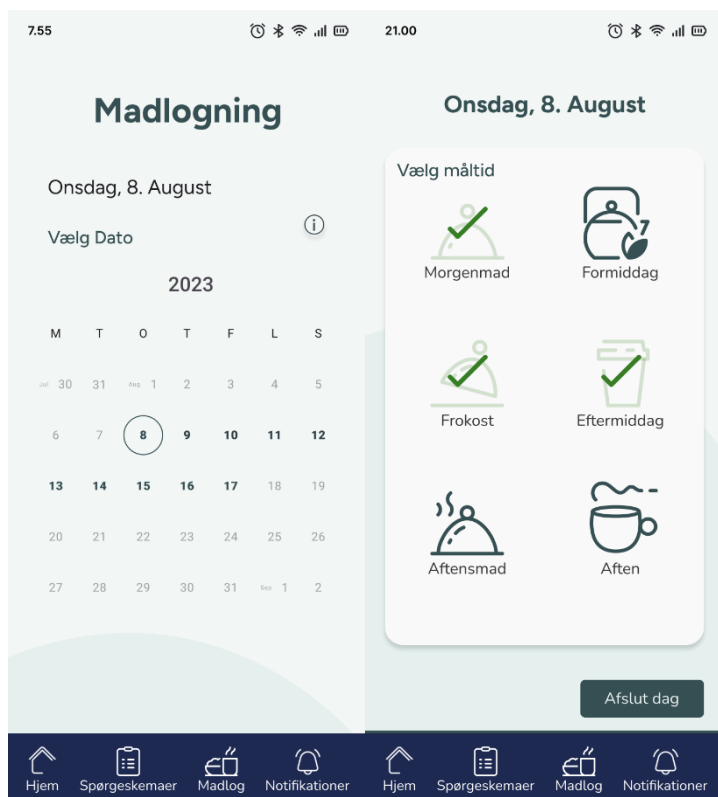
unikk.me Meal Logger

Introduction

unikk.me's Meal Logger is a mobile application for dietary assessment in nutritional research. It can provide valuable insights into individual eating habits and nutrient intake. Mobile applications for dietary assessment such as Meal Logger can reduce some of the limitations associated with self-reported dietary registration, and they can enhance the accuracy and efficiency of data collection¹. One major advantage of Meal Logger is real-time data capture. With proper instructions for research project participants, their dietary data can be collected immediately after food and beverage consumption. This reduces the reliance on memory recall which is prone to error and bias. Furthermore, Meal Logger allows participants to record their dietary intake quickly and conveniently, with the help of notifications reminding them to register throughout the day. The ease of use and accessibility of a mobile app can improve participant compliance and engagement, leading to more complete and reliable data collection.

Meal registration

Meal Logger displays a calendar to guide food registrations. For each day, six meal slots are available. Three of the meal slots are considered main meals: breakfast, lunch, and dinner. The other three meal slots are considered in-between mealtimes. The in-between mealtimes consist of morning, afternoon, and evening. This reflects the meal structure used in the Danish National Survey of Diet and Physical Activity (DANSDA)² conducted by the National Food Institute at DTU. The study is designed such that the results can be inferred to the entire Danish population, and therefore this meal structure is assumed to reflect the general pattern observed in this population.



For each meal slot, contextual information is also registered. This includes the time, duration, and location of the meal, as well as who the meal was consumed with and where the food was sourced

from. This data can provide important insights into the social patterns around food and meals, and how these may influence food choices³.

10.35 Onsdag, 8. August
Formiddag

Jeg har ikke spist noget.

Hvornår spiste du måltidet?
9:30

Hvor lang tid spiste du måltidet?
10
minutter

Hvor spiste du måltidet?
Arbejde

Hvem spiste du måltidet med?
Alene

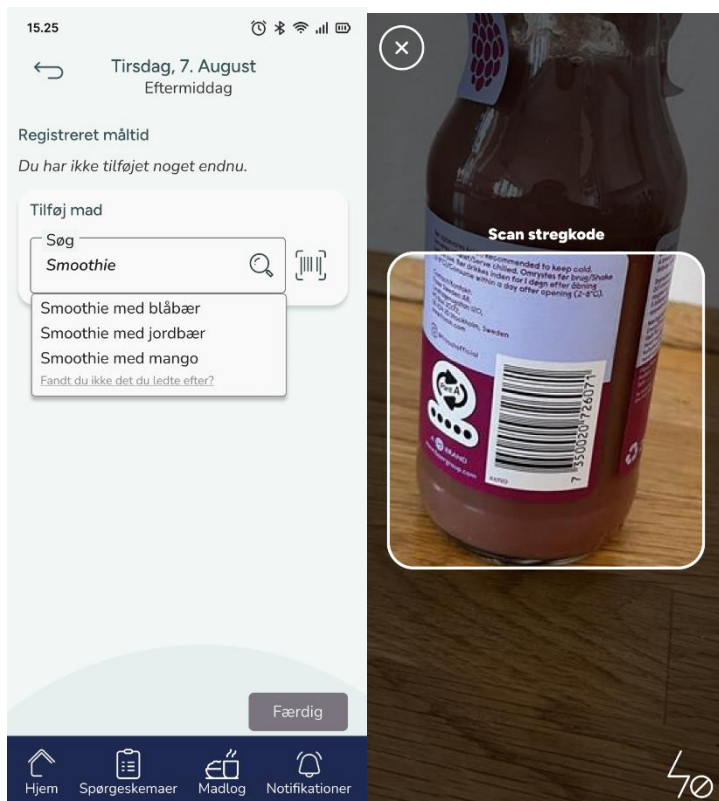
Hvor fik du maden fra?

Fortsæt

Hjem Spørgeskemaer Madlog Notifikationer

Meal items

Meal Logger allows for entry of food and beverage items (meal items) via search and selection from a database, which is a well-established method for dietary recording⁴. Meal Logger also has a barcode scanning feature which can provide very specific product-level details. This method is less commonly used in research but very widely used in commercial food tracking apps⁵.



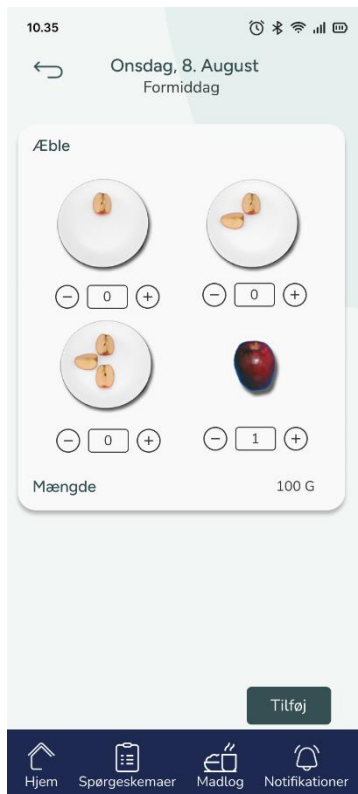
The meal item database was developed based on the dietary registration form used for DANSDA². The items included there are part of typical Danish cuisine. For generic items found in the form such as “Stew,” more specific variants have been included instead such as “Chili con carne,” “Dahl” and “Thai curry with chicken.” The meal item database was expanded beyond items in the form, as the DANSDA study was conducted in 2011-13 and new food items have become relevant since then.

Meal items have aliases to account for the fact that the same food can be called different names, and this makes it easier for users to find the correct items. Meal Logger also allows for free text entry in case an appropriate meal item cannot be found by a user. A workflow for interpretation of these entries with matching to database items is also offered by unikk.me. Thereby new food trends can be monitored, and popular new items added to the database.

The nutritional data underlying the meal item database is derived from Frida, Denmark’s national food composition database. This database includes over 200 nutritional parameters. Each meal item is either linked to a single Frida item, or in the case of composite meal items, a recipe is created with multiple Frida items as ingredients.

Portion size estimation

The Meal Logger uses image-based portion size estimation, providing users with a visual reference to estimate quantities consumed. The images were developed by the National Food Institute at DTU⁶ and by Baylor College of Medicine, Westat, and the National Cancer Institute⁷. Presentation of such visual aids simultaneously side by side has been shown to facilitate more accurate portion size reporting⁸.



Food purchasing data

Unikk.me's Meal Logger is distinct in that it offers the possibility to collect supermarket purchasing data from users in addition to self-reported dietary data. Some scientific studies have employed purchasing data to validate self-reported data⁹ and to investigate patterns within the home food environment¹⁰.

References

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