Tracking of Nutritional Intake using Artificial Intelligence (TONI-AI)

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Eating disorders and disturbances
Study type	Observational non invasive

Summary

ID

NL-OMON49938

Source
ToetsingOnline

Brief title
TONI-AI

Condition

- Eating disorders and disturbances

Synonym
binge eating disorder

Research involving
Human

Sponsors and support

Primary sponsor: 5M ICT
Source(s) of monetary or material Support: SMART4ALL

Intervention

Keyword: artificial intelligence, binge eating disorder, food recognition, obesity

Outcome measures

Primary outcome

Feasibility/acceptability, including completion rates (% of monitored mealtimes), satisfaction ratings, service user feedback, user requirements and dieting behavior; Calorie intake as tracked via the app;

Weight: Patients are weighed once every month as a standard procedure during treatment.

Secondary outcome

n/a

Study description

Background summary

Binge Eating Disorder (BED) is an eating disorder characterized by recurrent and persistent episodes of binge eating in the absence of inappropriate weight control methods that are applied by other eating disorder subtypes, such as purging. Although the prevalence of BED in the Netherlands is unclear, due to BED being a relatively *new* diagnostic category in the DSM 5, as well as methodological shortcomings of existing research, based on Australian research (Hay, 1998) it is estimated that approximately 160.000 people in the Netherlands suffer from BED.

BED is strongly associated with obesity. Although most people with obesity don*t have BED, most people with BED are obese and can have the medical difficulties associated with this condition. Comorbid problems are not only physical, but also psychiatric. BED itself is often marked by the use of food to handle emotional distress (Goldfield et al., 2008), along with dysregulation of interoceptive awareness, appetite and satiety mechanisms (Sysko et al., 2007). Treatment for BED therefore needs to address the disordered eating and associated psychopathology, as well as the excess weight. Cognitive behavioural therapy (CBT) is the first-choice treatment for BED and has the strongest

empirical support so far (NICE 2004, Wilson et al., 2007), resulting in approximately 50% binge abstinence after treatment. This shows there is much room for improvement. Also, and similar to alternative psychological and behavioural treatments, CBT does not result in meaningful weight loss for most patients (Wilson et al, 2007). Finding ways to improve binge eating and weight loss outcomes therefore represents a major research priority.

Adding a lifestyle intervention to CBT may possibly enhance binge eating and weight loss outcomes. Several existing lifestyle interventions for obesity have targeted portion and eating awareness, as individuals with obesity and BED generally report a sense of inadequacy using nutritional guidelines (Kristeller & Wolever, 2011), as they lack awareness regarding eating. The ability to accurately estimate and measure food portion sizes is important for preventing and treating obesity (Ayala, 2006) and lifestyle interventions have targeted portion control and eating awareness in several ways with successful results. Examples include mindfulness-based eating awareness training (Kristeller & Wolever, 2011), Mandometer training aimed at decreasing speed of eating and total intake (Ford et al. 2011), and the use of portion control plates (Kesman et al, 2011).

In the present study we aim to pilot an innovative tool for a lifestyle intervention. More specifically, we propose to use an app tracking calorie intake via photos taken with a smartphone.

This app could not only be useful as a tool for a lifestyle intervention per se, but also as a reliable method to assess consumption. An accurate assessment of dietary consumption is particularly challenging in patients with BED, because of underreporting that is common among obese and overweight individuals. The use of mobile phones to track and photograph what they eat may be a more convenient and reliable way to collect data (see for example Segovia-Siapco & Sabaté (2016)).

Study objective

This proposed pilot is part of a bigger project led by 5M ICT. In the bigger project, 5M ICT will apply a deep learning (DL) method for food recognition on images taken by the user before and after eating, which enables accurate tracking of nutrition intake. This information will be built into an app with a food recognition module. Finally, to validate the value proposition, two trials with several members of a fitness club (not part of the current proposal) and several patients (N = 3-4) will be performed.

The Centre for Eating Disorder*s contribution to the project is to determine user requirements before developing the app and testing the app in a small number of patients with BED, and exploring its feasibility and acceptability, including dieting behavior.

Primary Objective: testing the food recognition app developed by 5M ICT in a small number of patients with BED, determining user requirements, and explore feasibility and acceptability of the app (from the patients* and clinicians* view), including dieting behavior.
Please note that we do not aim to base any conclusions on the data with regard to effectiveness. The app will only be tested in order to be developed further. The end goal is to develop the app using the patients* feedback.

Study design

Case series.

Study burden and risks

It is possible that the use of the app will increase dieting rules. We will include several questions concerning dieting behavior in the questionnaire. Patients are in treatment while using the app and the therapist will be able to intervene.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)

Inclusion criteria

- A DSM 5 binge eating disorder diagnosis
- Being in treatment for BED at the Centre for Eating Disorders
- Age 18-64

Exclusion criteria

- Having a history of another eating disorder than BED
- Age < 18 & > 64

Study design

Design

Study type: Observational non invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	09-12-2021
Enrollment:	4
Type:	Actual

Ethics review

Approved WMO

Date:	04-10-2021
Application type:	First submission
Review commission:	METC Brabant (Tilburg)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL78315.028.21