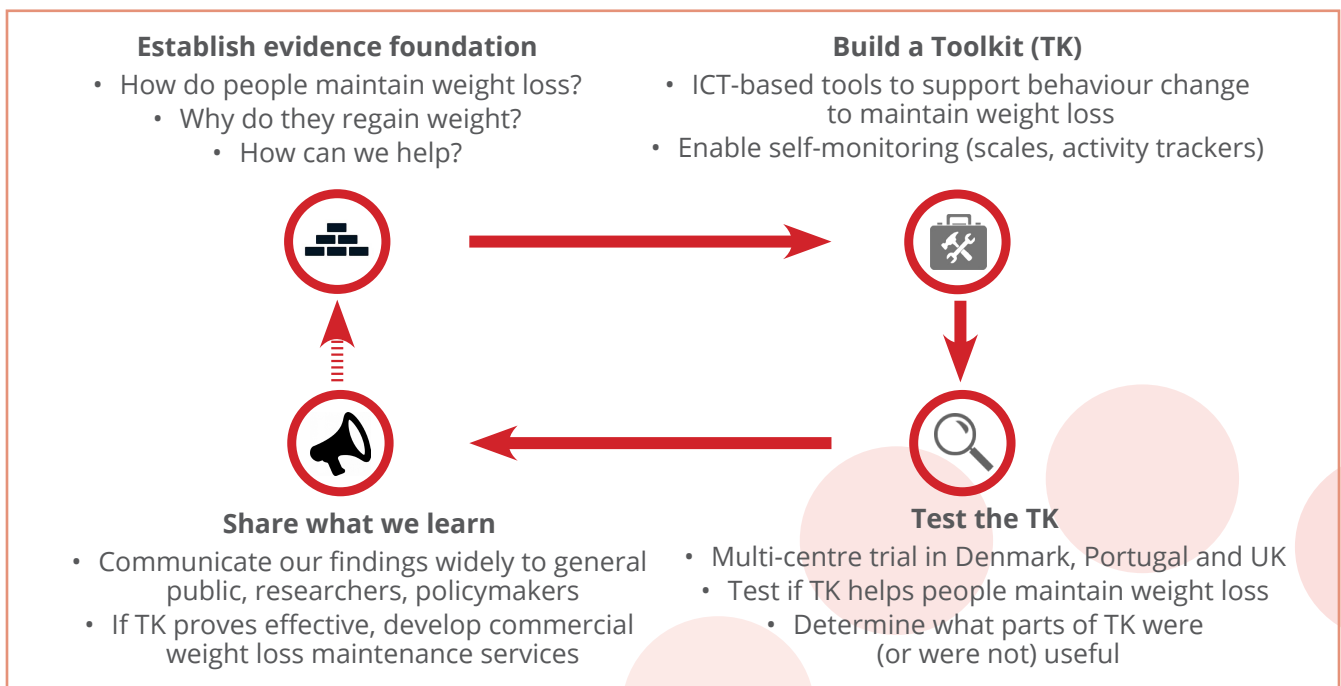


Overview from the Coordinator - Year 3

Overweight, obesity and associated diseases are major societal challenges for the health of European citizens. Most individuals can manage to lose weight, but few manage to maintain their weight loss in the long term. The key challenge in managing obesity in Europe and beyond is therefore not weight loss *per se*, but weight loss maintenance. The NoHoW project has developed a kit of IT-based tools (NoHoW Toolkit (TK)), based on a robust evidence foundation about long-term weight management and the most promising behavioural science techniques for weight loss maintenance (WLM). We are currently conducting a randomised controlled trial (RCT) in the UK (University of Leeds (UNIVLEEDS)), Denmark (RegionH (RH)) and Portugal (University of Lisbon (FMH)) to investigate the effectiveness of the TK to support long-term behaviour change related to weight loss maintenance. We are also exploring commercial avenues for the NoHoW TK, including integration of NoHoW elements into the existing online service of our commercial partner, Slimming World™, developing products and services to provide much needed support for long-term WLM.



This report summarises progress in the third year of the project, including:

- a population-based survey in the UK, Denmark and Portugal to examine seasonal patterns of weight loss,
- a longitudinal study of successful weight maintainers to better understand WLM predictors,
- initiation of the NoHoW trial in the UK, Denmark and Portugal, including the successful recruitment of 1,600 participants and collection of baseline and 6-month measures,
- implementation of prediction models for individualised feedback to participants in the trial,
- conduct of a Business Plan Workshop, including development of a lean canvas for the TK, and
- continued engagement with key stakeholders (including a NoHoW workshop at the European Congress on Obesity (ECO 2017)), media coverage, social media, patient councils and an e-newsletter).

WP1 - Evidence Foundation

AIMS

WP1 aims to understand the demographic, socio-economic, seasonal and psychological predictors, experiences, practices and support needs for WLM amongst Europeans, as well as understand the role of self-management of stress and emotions alongside self-management of energy balance behaviours in WLM. We also seek to identify predictors of successful WLM in successful weight maintainers.

ACHIEVEMENTS & ON-GOING WORK

We have added to our rigorous evidence-base of how weight is lost and maintained in Europe. We collected a second wave of our online survey in representative adult samples (1,500 respondents) in the UK, Denmark and Portugal to gather information on seasonal patterns of weight loss. This data complemented the first wave of the survey, which collected data on socio-demographic and psychological predictors, experiences, practices and support needs for weight management. Data analysis of the survey results is on-going and will soon be published.

We have recently published our first publication on results from qualitative interviews with weight maintainers in the UK: *Attribution of weight regain to emotional reasons amongst European adults with overweight and obesity who regained weight following a weight loss attempt* (Sainsbury, K., et al. *Eat Weight Disord* (2018)). The key finding was that weight-related emotion regulation difficulties are common amongst those who regain weight and are associated with regaining more weight - to support WLM, these individuals likely need to be taught emotion regulation alongside other WLM strategies.

Data collection for our longitudinal survey to identify predictors of successful WLM in successful weight maintainers from SlimmingWorld™ (SW), was completed in December 2017. Baseline data from a total of 3,218 SW members was collected in Oct 2016, with a follow-up data from 2,227 at 6-months and 2,234 at 12-months. The datasets have been cleaned and analyses are on-going.

TEAM

WP1 is led by Prof. Falko Sniehotta at the University of Newcastle (UNEW), with active participation by Dr. Elizabeth Evans (UNEW), Dr. Kirby Sainsbury (UNEW), Prof. Liisa Lähteenmäki (University of Aarhus, AU), Dr. Susanne Pedersen (AU), Prof. Pedro Teixeira (Faculdade de Motricidade Humana, FMH), Dr. António Palmeira (FMH), Dr. Marta Marques (FMH), Prof. James Stubbs (UNIVLEEDS), Dr. Paul Sacher (SW) and Mr. Euan Woodward (European Association for the Study of Obesity, EASO).



WP2 - NoHoW Toolkit (TK)

Development of the TK was completed in the second year of the project. The TK is now being tested in the NoHoW trial. More details are available in the Year 1 - 2 Report (<https://bit.ly/2vxVsds>).

WP3/4 - Design, Set-up and Intervention Delivery

AIMS

WP3 wrapped up in year 2 with completion of the trial pilot study. WP4 is now conducting the NoHoW RCT (recruitment, baseline and follow-up measures). The NoHoW trial is a three-centre four-arm, 2 x

2 factorial RCT. The trial tests three hypotheses: (i) the impact of self regulation and motivation, (ii) the impact of emotion regulation/stress management on WLM, and (iii) possible interactions between self regulation/motivation and emotion regulation/stress management.

The trial population is overweight/obese adults (> 18 years) who have lost $\geq 5\%$ of their weight in the last 12 months and had a BMI $\geq 25 \text{ kg/m}^2$ prior to weight loss. Health, biomarker, psychosocial and user experience measures will be taken at four time points (baseline, 6, 12 and 18 months). Primary outcomes are body weight and biomarkers (blood pressure, blood lipids, HbA1c and long-term cortisol levels from hair samples), assessed at 12 months. Secondary outcomes include physical activity, dietary intake, self-regulation, autonomous motivation, stress, well-being, quality of life, health economics analysis and process evaluation.

		Emotion/stress regulation	
		YES	NO
Self-regulation + motivation	YES	SELF WEIGHING SELF REGULATE + MOTIVATE STRESS/EMOTION 4	SELF WEIGHING SELF REGULATE + MOTIVATE 2
	NO	SELF WEIGHING STRESS/EMOTION 3	SELF WEIGHT ONLY 1

ACHIEVEMENTS & ON-GOING WORK

The trial opened on 20 March 2017, with the recruitment and collection of baseline measures from more than 1,600 participants from the UK, Denmark and Portugal by March 2018. The collection of six- and 12-month measures are currently on-going. Retention to the trial is excellent - by March 2018, only 93 (6%) of participants had withdrawn, lower than the expected 308 participants based on previous studies.

TEAM

WPs 3/4 are led by Prof. James Stubbs and Dr. Sarah Scott (UNIVLEEDS). Trial sites in Lisbon are overseen by Prof. Pedro Teixeira and Dr. António Palmeira (FMH) and in Copenhagen by Prof. Berit Heitmann and Dr. Sofus Larsen (RH). Dr. David Nutter and Dr. Graham Horgan (JHI) developed and maintain the datahub and provide statistical expertise. Dr. Emma Foster and her team (UNEW) implemented INTAKE24 (online dietary measure) and Prof. Falko Sniehotta and Dr. Elizabeth Evans (UNEW) contributed expertise from the NuLevel trial.



WP5 - Data Management and Analysis

AIMS

WP5 is dedicated to providing a central data storage facility for all RCT data and ensuring secure storage for the project duration and a further 20 years, receiving and depositing data during the trial and making it available to researchers for analysis, developing individualised prediction models to provide feedback to RCT participants about their weight management, and conducting statistical analyses of the RCT data, including health economics analysis.

ACHIEVEMENTS & ON-GOING WORK

The secure central data storage facility (data hub) established at JHI in years 1 and 2 is now being used to store data from the NoHoW trial. The data hub also continues to host the software associated with providing data to the TK and to trial staff, as well as hosting the TK and managing automated feedback emails to participants.

Prediction models for individualised feedback to participants in the trial have also been implemented. The aim of this feedback is to help participants manage their weight better. This feedback depends on TK and activity tracker use, on participants weighing themselves frequently and on individual level associations being detected over time between behaviour and weight change. If these conditions are met, a message is shown on the TK dashboard, such as ‘Your weight management seems better at weekends.’

In addition to storing the trial data and supporting operation of the TK, WP5 is also collaborating with WP4 to conduct data cleaning activities of the baseline measures. Planned baseline analyses will explore behavioural characteristics among participants related to initial weight loss that allowed them entry into the NoHoW trial. A full statistical analysis of the trial results will begin when the trial is completed in Oct 2019.

TEAM

WP5 is led by Dr. Graham Horgan and Dr. David Nutter (JHI). Prof. Berit Heitmann (RH), Dr. António Palmeira (FMH) and Prof. James Stubbs (UNIVLEEDS) provide links to the trial sites in Copenhagen, Lisbon and Leeds. As the technology developers of the TK, Dr. Johan Plomp and his team (VTT) provide essential inputs and expertise to WP5.



WP6 - Exploitation and Impact

AIMS

WP6 is dedicated to ensuring that NoHoW outputs are used to develop commercial weight loss maintenance products and services to address the obesity epidemic. This will be achieved by:

- integrating successful elements/strategies from NoHoW into the existing online weight management programme of our commercial partner, Slimming World™ (SW),
- exploring potential mechanisms to make TK v2.0 available to other commercial entities and stakeholders after the RCT is complete, and
- creating international networks of communication and practice to link and promote a new generation of WLM services.

ACHIEVEMENTS & ON-GOING WORK

Exploitation and impact have been a focus throughout the project to date, with SW and EASO having input into the design of the TK (WP2) and contributing to evidence building (WP1). In WP6, we have established processes for identifying and managing intellectual property (IP) arising from the project, including the establishment of an IP sub-committee and IP register. Planning for the integration of successful elements/strategies from NoHoW into SW's online weight management service has been initiated via workshops and mapping exercises.

A Business Plan Workshop was held in Edinburgh (Feb 2018), organised with support from the Common Exploitation Booster programme. Joint owners of the TK discussed potential commercial pathways, created lean canvas models and explored costs and revenues. This workshop laid the foundation for our final Business Plan for the TK.

Through EASO and partner networks, we have continued to build a network of communication and practice in the area of WLM services. For example, NoHoW organised a workshop, ‘Developing and Designing Evidence Based Digital Tools for Weight Loss Maintenance: the H2020 NoHoW Project’, at

the European Congress on Obesity (ECO) 2017 meeting (May 2017).

WP6 will continue to plan and prepare for commercial exploitation of NoHoW outputs, integrating successful NoHoW elements into the SW online weight management service and further developing our Business Plan for making TK v2.0 available after the NoHoW RCT. Activities to grow our WLM network will also continue through a variety of mechanisms (videos, targeted communications, sponsored symposia, etc.).



NoHoW Team at ECO 2017

TEAM

WP6 is led by Dr. Paul Sacher (SW) and involves the participation of TK developers led by Dr. António Palmeira (FMH), Dr. Marcela Matos and Cristiana Duarte (UDC) and Dr. Johan Plomp (VTT), Prof. Berit Heitmann (RH) and Prof. James Stubbs (UNIVLEEDS). Dr. Graham Horgan (JHI) provides expertise in individualised prediction modelling and data management/analysis. The teams of Mr. Euan Woodward (EASO) and Mr. Ciaran Clissmann (PT) bring expertise in stakeholder engagement and exploitation planning, respectively.



WP7 - Dissemination and Communication

AIMS

WP7 focuses on outward-facing communications and dissemination of the project to a broad range of key stakeholders, including the general public, patient groups, scientific community, policy makers, health professionals, industry, consumer organisations and the media. Practical tools and engaging materials tailored to specific groups are developed to communicate the project aims and results, alongside academic publications and conference presentations. WP7 also collaborates with WP6 to develop an audience for the commercial outputs of the project.

ACHIEVEMENTS & ON-GOING WORK

Activities to date have focused primarily on communicating and disseminating the aims of the project through a variety of means:

- The project website (www.nohow.eu) and social media have been actively maintained to grow our following (over 610 likes and 630 followers), building an audience for our emerging results.
- We have launched the project on ResearchGate (<https://www.researchgate.net/project/NoHoW-EVIDENCE-BASED-ICT-TOOLS-FOR-WEIGHT-LOSS-MAINTENANCE>) to widely share our activities and publications with other researchers.
- Danish and Portuguese versions of our 'explainer' video have been produced and shared via the website and social media.
- Coordinator Berit Heitmann has given interviews on key topics in obesity, including how technology

can create change in obesity management and how weight stigma might affect weight management, for the mdBriefCase Knowledge Transfer Series (<http://nohow.eu/media/>).

- NoHoW researchers have presented the project and initial results at a number of academic conferences (ASO Yorkshire Regional Meeting, Obesity Week 2017, University of Derby Psychology External Lecture Series, Yorkshire and Humber Physical Activity Exchange (YOHPAKE) Annual Conference).
- The project has been featured in EU publications, including the Health-EU newsletter and Horizon, the EU Research and Innovation magazine.
- The team has also continued engagement with the mass media, securing print, radio and television coverage in Denmark and Portugal.
- Our second e-newsletter was circulated to over 22,000 subscribers to the EASO mailing list to introduce the project.



Dr. Berit Heitmann - What should be the primary focus of obesity management?
Berit on mdBriefCase

WP7 will continue to communicate and disseminate the project through established channels, working to further expand our audiences and reach. For example, NoHoW will again host a symposium at the ECO meeting (26 May 2018). The symposium 'Self-regulation and emotion regulation in weight loss maintenance – working towards a consensus: The H2020 NoHoW Project' will include presentations on the theoretical basis of NoHoW, self- and emotion-regulation in weight maintainers, baseline results of the NoHoW trial and developing a consensus statement on the next generation of weight loss maintenance interventions.


TEAM

WP7 is led by Mr. Euan Woodward and Ms. Sheree Bryant (EASO) and involves the participation of all partners.



The NoHoW team would like to thank our Scientific Advisory Board (Dr. Heather Patrick, Dr. John Blundell, Dr. Ian Caterson) and Trial Steering Committee (Prof. Sharon Simpson, Prof. Lucy Yardley, Prof. Annette Kjær Ersbøll, Prof. Paul Aveyard) for their contributions to the project!

To learn more, visit us at www.nohow.eu or join the conversation on social media!

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To receive our newsletter via the EASO mailing list, email Sheree (sbryant@easo.org).