Unleashing the power of digital to tackle obesity

Foreword

Europe faces an obesity crisis and does not have the healthcare resources to deal with it. More than half the adult population is overweight or obese, undermining the physical and mental wellbeing of hundreds of millions of people. It reduces their quality of life and life expectancy, puts immense pressure on the continent's healthcare and has greatly increased the risk of serious illness from Covid-19. The problem far outstrips the ability of healthcare systems to provide people with the support and care they need to lose weight and maintain that loss.

The shift towards remote and online treatments during the pandemic has shown the way forward. Digital weight management therapies can help vastly more people to avoid weight gain, reduce their weight and maintain their weight loss. They offer an effective way to address the obesity pandemic at scale by enabling each health professional to support far greater numbers of patients while increasing access, increasing uptake and retention rates and reducing costs. Crucially, digital treatments have been shown to greatly increase access for groups that do not traditionally engage in face-to-face care.

Remote and digital treatments should now be integral to therapy design. The aim should be to ensure that each person has the care and support which works best for them, provided at the right time in the right way. Payors have a key role – providing reimbursement, encouraging innovation and ensuring health systems are not overwhelmed by obesity.

This white paper develops ideas presented in a symposium hosted by Oviva at EcoOnline 2021, the 28th European Congress on Obesity, and aims to share evidence for and promote debate about the role of digital care in weight management. It outlines specific examples of clinical evidence and experiences from the UK, where publicly funding digital therapies for weight management have been in place since 2017, and from Germany in terms of reimbursement with its newly implemented Digital Care Act. It discusses the challenges of designing treatments which are accessible to everyone, examines ideas for promoting their development and adoption and highlights areas where more research is needed.

We hope it will stimulate action by payors, providers and researchers so that digital treatments can be used to their full potential in meeting the needs of the millions of Europeans suffering from obesity.

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Vice President Clinical
Oviva

We would like to thank the following for participating in the symposium hosted by Oviva at EcoOnline 2021, the 28th European Congress on Obesity, on the topic 'Should obesity services across Europe be remote and digital-first in a post-Covid world?'

- Dr Anne Geier, Managing Director, Spitzenverband Digitale Gesundheitsversorgung (Digital Health Industry Association), Germany
- Dr Christina Holzapfel, Research Fellow, School of Medicine, Technical University of Munich
- Professor Simon Nienhuijs, Professor of bariatric surgery, Catharina Hospital, Eindhoven, Netherlands
- Ro Huntriss, Global Clinical Research Lead, Oviva.

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About Oviva

Oviva empowers people to change their habits, improving their long-term health through personalised support and technology. Oviva partners with healthcare systems, health insurers and doctors across the UK, Switzerland, Germany and France to provide people with reimbursed and easy access to the care they need.

Executive Summary – the case for digital

Around 350 million European adults are overweight or obese. The obesity crisis is driving serious illnesses including Type 2 diabetes, cancer and cardiovascular disease.The costs of obesity are high and rising rapidly, totalling around €70 billion annually across Europe in healthcare and lost productivity.[1]

Despite this, obesity treatment continues to not be part of standard healthcare in some European countries, including Germany; with a lack of recognition and potential to exacerbate the personal and economic burden of excess weight. Current political initiatives are set to overcome this however, including Germany's planned implementation of a structured disease management programme for obesity[2] and the potential for France's publicly funded prevention programs "Dites non au diabète" and "Mission : retrouve ton cap", (prevention of obesity in children) to include digital provision soon.

Where they are available, face-to-face weight management programmes are inadequate to the challenge, falling short on capacity, access, uptake and retention.

There is compelling evidence that digital and remote weight management treatments are at least as effective as face-to-face support.

The addition of digital care to excess weight prevention and management, disease management programmes and diabetes prevention therapies (which focus on weight loss as a primary outcome), will enable the obesity crisis to be addressed at scale because:

- It has unlimited reach
- More people start and complete therapy than with purely face-to-face care
- It is highly cost-effective, with economies of scale and saving healthcare systems money long term
- It is preferred by two thirds of patients, being more convenient and accessible, such as by reducing clinic visits.

100% digital therapies are currently only effective with a small number of highly motivated patients; the optimum solution today is a mix of digital and human support.

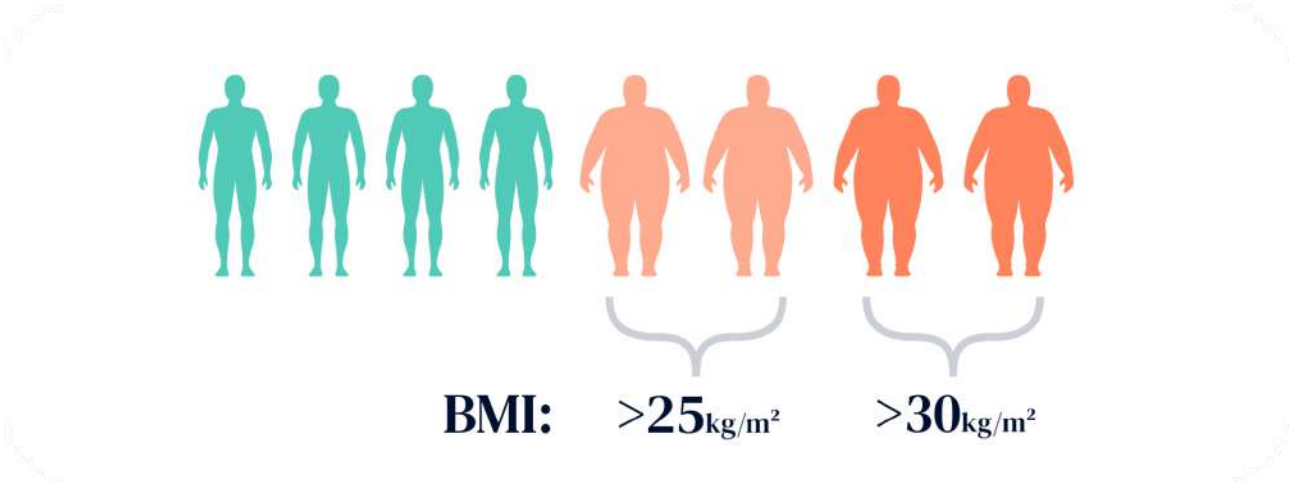
Achieving consistent prioritisation of managing obesity as a healthcare focus and improving reimbursement for blended digital and human weight management care is essential in addressing the obesity crisis.

[1] European Centre for International Political Economy, Europe's obesity challenge (2016), euagenda.eu/upload/publications/untitled-74063-ea.pdf

[2] German Obesity Society (2020) https://adipositas-gesellschaft.de/g-ba-mit-dmp-adipositas-beauftragt/

Introduction – the obesity challenge

Obesity in Europe has risen significantly over the last four decades, with its prevalence tripling in many countries.[3] More than half of the adult population is overweight – which means around 350 million people have a body mass index (BMI) of more than 25kg/m^2 – and around a quarter are obese, with a BMI of more than 30kg/m.[4]



Obesity is a chronic, relapsing condition which affects a person's physical and mental health. It is associated with conditions such as Type 2 diabetes, cardiovascular disease, depression, fatty liver disease, hypertension, gallstones, gastro-oesophageal reflux disease and obstructive sleep apnoea. For example, the World Health Organization estimates a one- to two-fold increase in risk for secondary complications , such as back pain, infertility and cancer.[5]
Moreover, the UK National Audit Office estimated that women who are obese are around 13 times more likely to develop Type 2 diabetes and four times more likely to develop hypertension.[6] This means that obesity has a major impact on quality of life, healthy life expectancy and overall life expectancy of a large proportion of the European population.
The costs of obesity are high and rising rapidly. The OECD estimates that healthcare spending for an obese person is typically 25% higher than for someone of normal weight. In the UK it is estimated that obesity will represent around 13% of total healthcare costs by 2050 whilst iln Germany, the cost of obesity-related comorbidities is estimated at €11.3 billion.[7] The cost across Europe is estimated at €70 billion annually in healthcare and lost productivity.[8]

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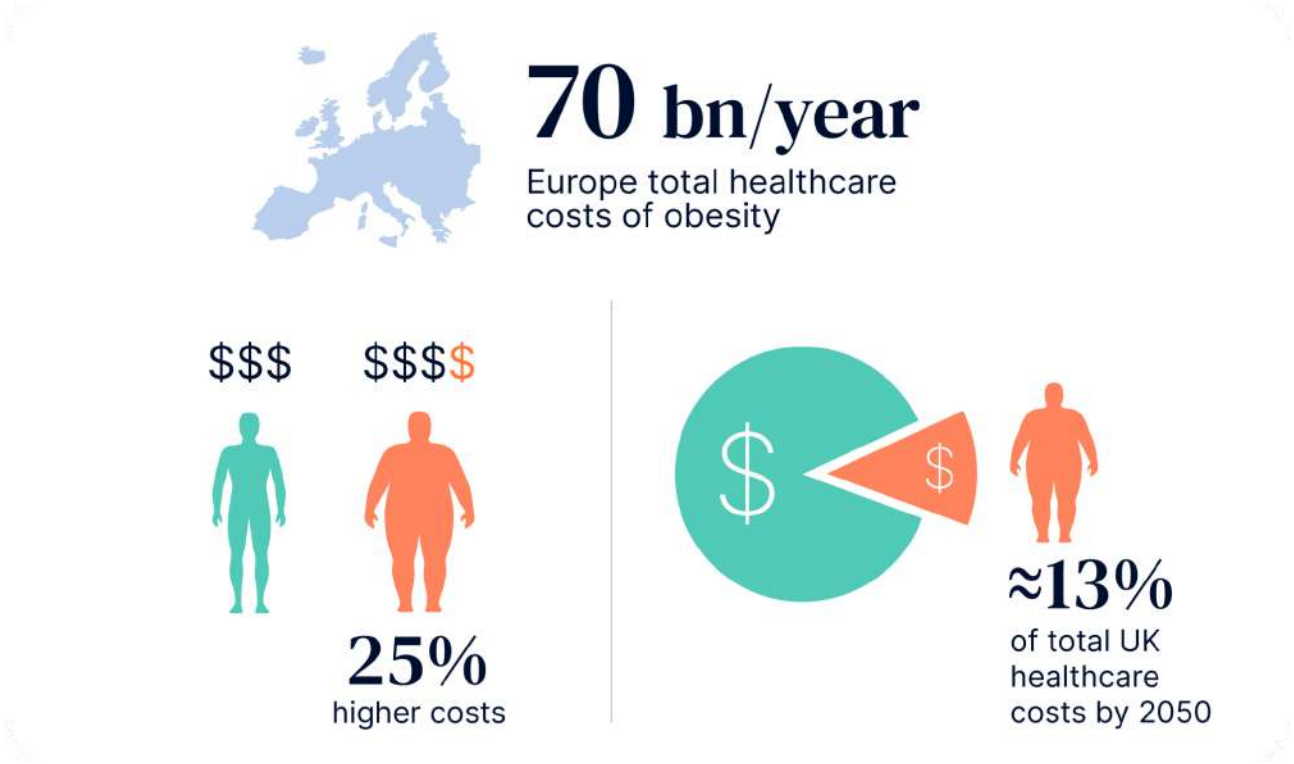
[3] World Health Organization Regional Office for Europe
www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity
Robert-Koch-Institut (2021) [obesity in Germany]
https://www.rki.de/DE/Content/Gesundheitsmonitoring/Themen/Uebergewicht_Adipositas/Uebergewicht_Adipositas_node.html
[4] World Health Organization Regional Office for Europe
www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity/data-and-statistics

[5] World Health Organization (2000), Obesity: preventing and managing the global epidemic. Report of a WHO consultation, https://pubmed.ncbi.nlm.nih.gov/11234459/
[6] National Audit Office, Tackling obesity in England (2001), www.nao.org.uk/report/tackling-obesity-in-england/
[7] Knoll K.-P., Hauner H. Kosten der Adipositas in der Bundesrepublik Deutschland – Eine aktuelle Krankheitskostenstudie Adipositas 2008;4(2):204-210. http://mediatum.ub.tum.de/doc/824712/824712.pdf
[8] European Centre for International Political Economy, Europe's obesity challenge (2016), euagenda.eu/upload/publications/untitled-74063-ea.pdf



As draft guidance from UK health regulator the National Institute for Health and Care Excellence (NICE) on weight management points out, losing weight and then maintaining that loss requires immense motivation and commitment,[9] with success dependent on making gradual, long-term changes to eating habits and physical activity. The required behavioral changes are underscored in Germany's patient guidelines for the treatment of obesity, explaining to patients the need for self-monitoring, self-management, cognitive restructuring, and the overall adaptation of new healthy habits.[10] But even losing just 3% of weight can be beneficial, and there are often substantial benefits from losing 5-10% if that loss is sustained.[11]

Many European countries lack a structured and fully reimbursed nationwide treatment approach for obesity. Germany for example, has partially reimbursed prevention and treatment measures in place, allowing for bariatric surgery in severe cases.[12] The UK approaches tackling obesity using a stepped approach however, aimed at supporting people to access different levels of care depending on their needs. Tier 1 is population level public health campaigns aimed at encouraging people both to avoid and address obesity. Tier 2 is built around community weight management care, including individual

[9] NICE, Managing overweight and obesity in adults – lifestyle weight management services (2014), www.nice.org.uk/guidance/ph53/documents/overweight-and-obese-adults-lifestyle-weight-management-draft-guidance2

[10] Patient guideline for the diagnosis and treatment of obesity (Patientenleitlinie zur Diagnose und Behandlung der Adipositas) (2019) https://www.awmf.org/uploads/tx_szleitlinien/050-001p_S3_Adipositas_Pr%C3%A4vention_Therapie_2019-01.pdf

[11] NICE, Managing overweight and obesity in adults – lifestyle weight management services (2014), www.nice.org.uk/guidance/ph53/documents/overweight-and-obese-adults-lifestyle-weight-management-draft-guidance2

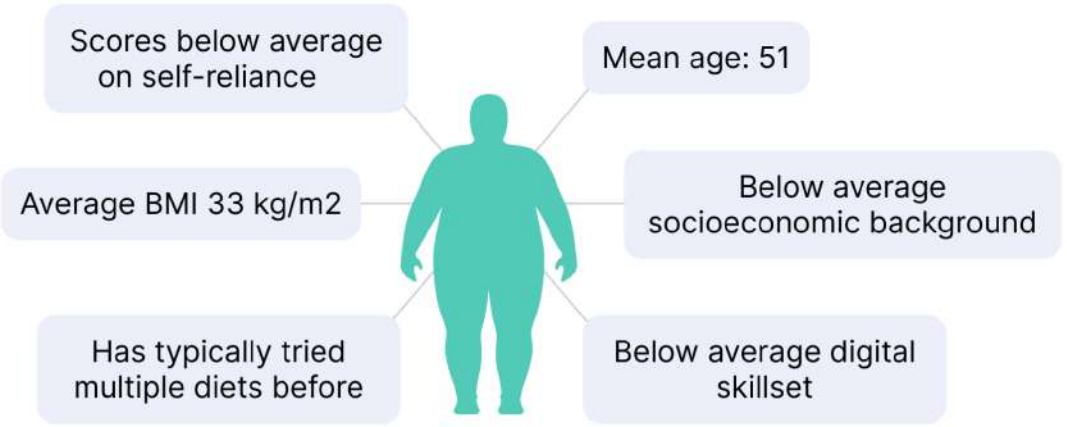
[12] S. Klein, S. Krupka, S. Behrendt, A. Pulst, H.-H. Bleß (2016) Weißbuch Adipositas ISBN 978-3-95466-274-6. MWV Medizinisch Wissenschaftliche Verlagsgesellschaft 2016 https://adipositas-gesellschaft.de/ueber-adipositas/versorgungssituation-in-deutschland/

and group support for diet and physical activity. Tier 3 is specialist multidisciplinary care including pharmacotherapy, while Tier 4 includes bariatric surgery.[13]

Demand for treatments far outstrips supply, particularly for people with severe and complex obesity, so there is a need for novel and effective methods of providing care, especially for people who are not currently accessing them. Digital health interventions such as smartphone applications have the potential to support large numbers of people in a cost effective and time efficient way.
Weight management treatments either ceased or adapted to remote delivery during the Covid-19 pandemic. This shift to digital has substantially increased the digital literacy and confidence of clinical staff and many patients, providing an ideal time to assess the effectiveness of digital treatments and understand the factors that contribute to successful deployment and uptake. Digitally-led treatments could reach millions of people who are not engaged with traditional care, as well as providing additional support to those that are already in the system.

Who accesses obesity care?

Oviva's patients have an average age of 51 and an average BMI of 33kg/m^2. They tend to come from lower socio-economic backgrounds, score below average on self-reliance and digital skills and have tried numerous diets.



[13] UK All-Party Parliamentary Group on Obesity, The future of obesity services (November 2020), static1.squarespace.com/static/5975e650be6594496c79e2fb/t/5fbe2a92e18c5c478ec569a0/1606298265632/Obesity+APPG+-+The+Future+of+Obesity+Services.pdf

The post-pandemic opportunity to reform obesity care

Experiences of using digital obesity management tools during the pandemic provide an opportunity to substantially improve access to treatments and care through digital channels, while offering people more flexible and tailored ways to meet their needs.[14] In Germany, recent regulatory changes now enable fully digital prevention[15] and treatment, for example in the form of digital health applications (DiGA)[16]. As an inquiry in the UK Parliament makes clear, a post-pandemic expansion of digital treatments should augment face-to-face obesity care, not replace them. Each person should be able to access the support they need through the channel that works best for them.[17]

Evidence for the effectiveness and value of digital obesity treatments

Digital is at least as good as face-to-face

The baseline for digital weight management treatment is whether they are as effective as face-to-face support. Bearing in mind the benefits of scale, if treatments reach this baseline then far more people will be able to receive care at least as good as face-to-face at considerably lower cost per person.

Outcomes might be measured in terms of weight loss, BMI, waist circumference, body fat percentage and physical activity, as well as patient reported outcome measures (PROMs) such as mental wellbeing.

So far at least 482 publications assess weight management health apps and remote support such as telephone or video, including 51 systematic reviews and meta-analyses. Broadly they demonstrate that digital support complements traditional care and tends to improve outcomes.

For example, Hurkmans et al (2018) compared the effectiveness of face-to-face, mobile only and blended weight loss programmes, and concluded that a conventional weight loss program could partially be completed with an ehealth programme without reducing effectiveness.[18]

Ryan et al (2019) carried out a systematic review of tailored ehealth interventions for weight loss, analysing eight papers relating to six interventions.[19] They concluded that ehealth interventions are

[14] UK All-Party Parliamentary Group on Obesity, The future of obesity services (November 2020), static1.squarespace.com/static/5975e650be6594496c79e2fb/t/5fbe2a92e18c5c478ec569a0/1606298265632/Obesity+APPG+-+The+Future+of+Obesity+Services.pdf

[15] German Prevention Guideline (Leitfaden Prävention) (2021) https://www.gkv-spitzenverband.de/krankenversicherung/praevention_selbsthilfe_beratung/praevention_und_bgf/leitfaden_praevention/leitfaden_praevention.jsp

[16] The Fast-Track Process for Digital Health Applications (DiGA) https://www.bfarm.de/SharedDocs/Downloads/EN/MedicalDevices/DiGA_Guide.pdf?__blob=publicationFile&v=2

[17] UK All-Party Parliamentary Group on Obesity, The future of obesity services (November 2020), static1.squarespace.com/static/5975e650be6594496c79e2fb/t/5fbe2a92e18c5c478ec569a0/1606298265632/Obesity+APPG+-+The+Future+of+Obesity+Services.pdf

[18] Hurkmans, E, et all, Face-to-face versus blended weight loss program: randomised clinical trial. Journal of Medical Internet Research (January 2018), pubmed.ncbi.nlm.nih.gov/29326093/

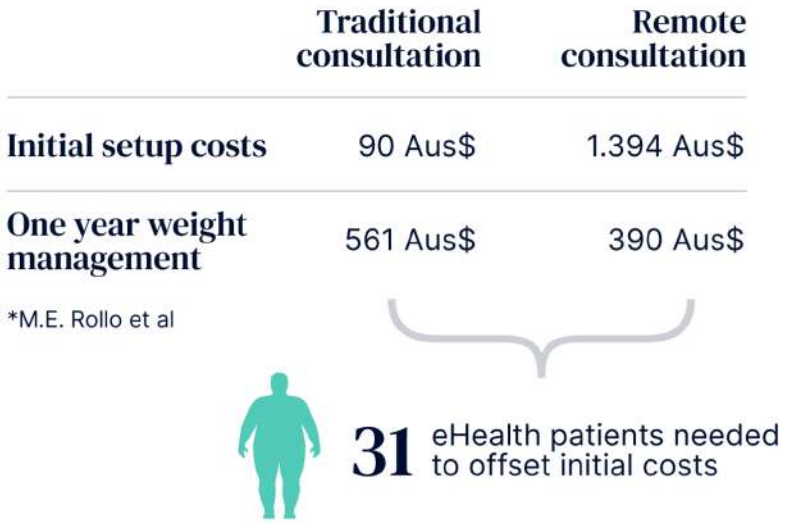
[19] Ryan et al, A systematic review of tailored eHealth interventions for weight loss (SAGE Journals, 2019), journals.sagepub.com/doi/full/10.1177/2055207619826685

promising in terms of being scalable and effective, but it is necessary to find strategies that help these interventions channel the effectiveness of traditional in-person behavioural counselling.
Silver's 2017 systematic review of randomised, controlled trials of technology-enabled weight management interventions concluded that technology-enabled care was superior for weight loss at 12 months compared with non-digital, but stressed the importance of the intensity of support in successful intervention, independent of delivery method. [20]
A review for the UK health regulator the National Institute for Health and Care Excellence (NICE) of how components of behavioural weight management programs affected weight change detected no statistically significant difference in the impact of in-person versus remote contact.[21]
A review by Santarossa at al (2018) of evidence published between 2004 and 2017 exploring the role of in-person components of online health behaviour change interventions concluded that human support is the most important component in the effectiveness of both face-to-face and online behaviour change interventions: "Introducing a digital person-to-person component to replace face-to-face interactions can provide the needed human support while diminishing the barriers of in-person meetings."[22]

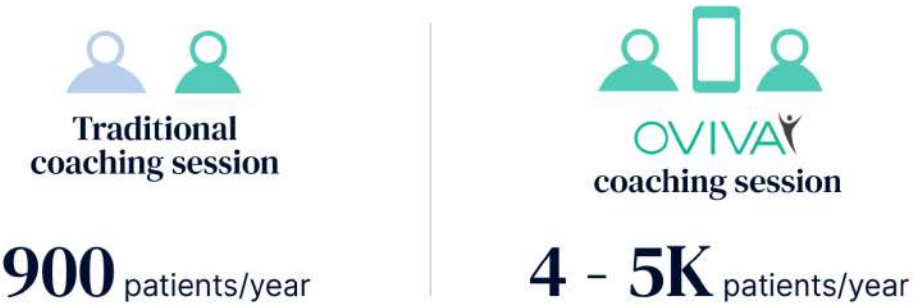
Digital expands access and cuts unit cost

Rollo et al (2018) compared the costs of weight management delivered by dietitians in a traditional, in-person setting with remote consultations using mobile phones in Australia. They calculated that just 31 eHealth patients would be needed to offset the initial modest set-up costs of digital delivery, adding, "Our results demonstrate that as more patients receive weight management treatment, the more cost-efficient, and therefore feasible, eHealth delivery may become. Therefore, the use of eHealth technologies by dietitians to deliver best-practice weight management may help overcome one of the primary barriers to delivering best practice among dietitians, which is cost." They found that the cost for each patient receiving weight management for a year was Aus$561 for in-person compared with Aus$390 for ehealth delivery.[23]

[20] Silver, J, A systematic review of long-term technology-enabled weight management interventions for an obese population, King's College London (thesis) (June 2017)
[21] Hartmann-Boyce, J, et al, How components of behavioural weight management programs affect weight change (University of Oxford review for NICE, March 2013, www.nice.org.uk/guidance/ph53/evidence/evidence-review-1b-431707934
[22] Santarossa, S, et al, Exploring the role of in-person components for online health behaviour change interventions: Canon digital person-to-person component suffice?, Journal of Medical Internet Research (April 2018), pubmed.ncbi.nlm.nih.gov/29643048/
[23] Rollo, M, et al, Cost evaluation of providing evidence-based dietetic services for weight management in adults: in-person versus ehealth delivery, Nutrition & Dietetics (January 2017), onlinelibrary.wiley.com/doi/abs/10.1111/1747-0080.12335



The British Dietetic Association has calculated that the safe number of patient contacts per week for a community dietitian is around 22. Allowing for holidays this equates to around 900 patient contacts per year. This contrasts with internal Oviva analysis of its staff delivering care digitally, which shows that a coach typically achieves 4000 to 5000 patient sessions each year. This indicates that even staff with less digital experience could realistically expand their patient numbers threefold.



Digital supports behaviour change and empowers patients

At the core of weight management treatments are behaviour change techniques (BCTs), such as goal setting, action planning, self-monitoring of behaviour, habit formation and prompts and cues.
A systematic review by Van Rhoon et al (2020) found several technology-driven diabetes prevention interventions achieved clinically significant weight loss in at-risk adults. The most successful ones encouraged participants to: set goals; monitor their diet, activity and weight; seek social support; and develop problem-solving strategies. It found that technology-driven interventions can be optimised by integrating digital-only tools that provide health and lifestyle information and advice, track behaviours and outcomes and facilitate online behavioural support from a health coach.[24]

[24] Van Rhoon, L, et al, A systematic review of the behaviour change techniques and digital features in technology-driven type 2 diabetes prevention interventions, National Library of Medicine, March 2020, pubmed.ncbi.nlm.nih.gov/32269830/

Coach interaction increased patient engagement and was associated with overall weight loss in diabetes prevention programmes[25]. Coaches were also identified as key drivers for weight loss in patients' perception of their Oviva treatment.[26]

Digital Platforms are easy to use

In a qualitative study Weishaupt *et al* interviewed 15 overweight and obese adults from Switzerland to understand their experiences of receiving online nutrition counselling via a weight loss app.[27] They found that the simple operation of the app enabled its online counselling to be integrated easily with daily routines. Users particularly appreciated the regular contact with the dietitian, the timely feedback and the high level of flexibility. Limitations were seen in cases where there was a need for greater discussion or addressing complex topics.

Many patients already prefer digital

Analysis of patients involved in the UK's NHS diabetes prevention programme reveals that face-to-face support is significantly more preferred by people aged 65 and over, while for adults up to 59 years there was a striking preference for digital. This raises the prospect of a significant shift towards digital among older people in coming years as people in their 40s and 50s age. Almost everybody among the relatively small numbers aged 18 to 29 involved in the programme preferred digital.[28]

Since the cost benefits of diabetes prevention generally kick in some years later – when the individual is not calling on diabetes and other treatments – and digital care is preferred by younger people, digital treatments can be expected to have a significant impact on long-term costs.

People's willingness to use digital treatments has been shown across Europe including data on 169 adults in a Tier 3 (specialist and multidisciplinary) weight management programme for 12 to 16 weeks, commissioned jointly from Oviva by the NHS and Wakefield Council in West Yorkshire, UK.[29] When given the choice of how they would receive care, 64.5% of the patients opted for care via the Oviva smartphone app, 28.4% opted for face-to-face and 7.1% received support by phone. Data from a

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[25] Painter SL, et al, Drivers of weight loss in a CDC-recognized digital diabetes prevention program, BMJ Open Diabetes Research and Care, 2020, drc.bmj.com/content/8/1/e001132

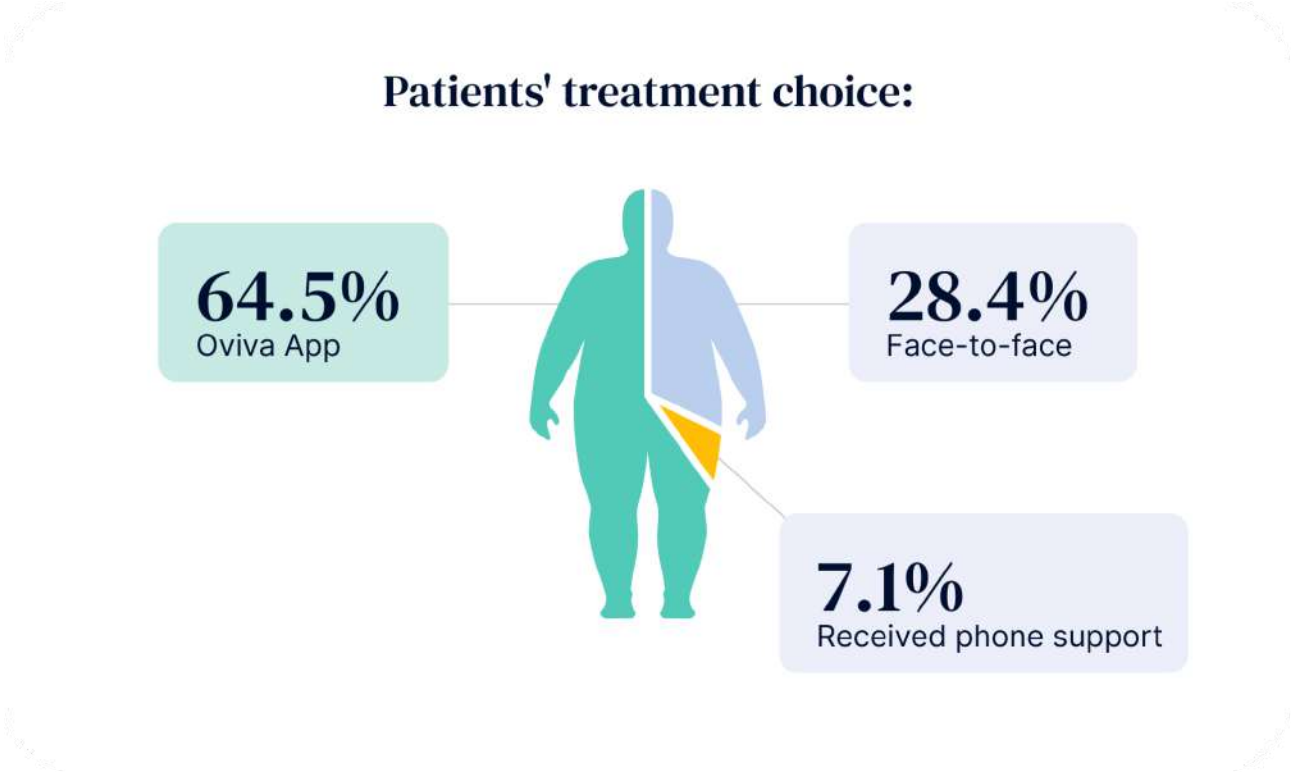
[26] Weishaupt et al, Online nutrition counselling on weight loss; experiences of overweight and obese adults, Ernaehrungs Umschau international (2020) www.ernaehrungs-umschau.de/fileadmin/Ernaehrungs-Umschau/pdfs/pdf_2020/06_20/EU06_2020_PR_Weishaupt_eng.pdf

[27] Weishaupt et al, Online nutrition counselling on weight loss; experiences of overweight and obese adults, Ernaehrungs Umschau international (2020) www.ernaehrungs-umschau.de/fileadmin/Ernaehrungs-Umschau/pdfs/pdf_2020/06_20/EU06_2020_PR_Weishaupt_eng.pdf

[28] McGough, B, et al, The Healthier You: NHS Diabetes Prevention Programme: digital modes of delivery engage younger people, Diabetic Medicine (letters) (2019), discovery.ucl.ac.uk/id/eprint/10078944/10/The%20Healthier%20You%20NHS%20Diabetes%20Prevention%20Programme%20digital%20modes%20of%20delivery%20engage%20younger%20people.pdf

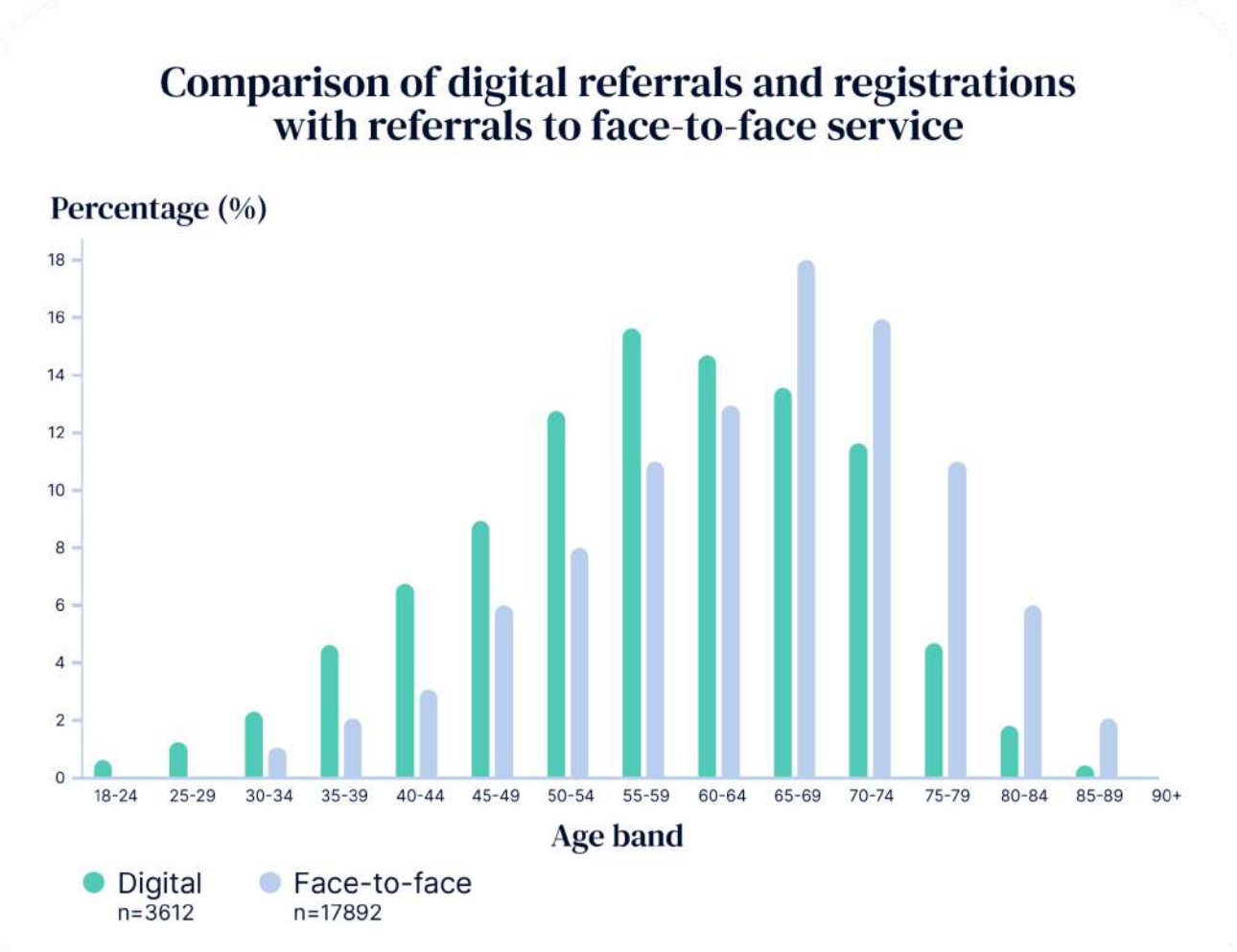
[29] Huntress, R, et al, A service evaluation exploring the effectiveness of a locally commissioned tier 3 weight management programme offering face-to-face, telephone and digital dietetic support, Clinical Obesity (June 2021), onlinelibrary.wiley.com/doi/abs/10.1111/cob.12444

Swiss cohort treated by Oviva echoes these findings: When given the choice, 84% of patients opted for digitally supported care.[30]



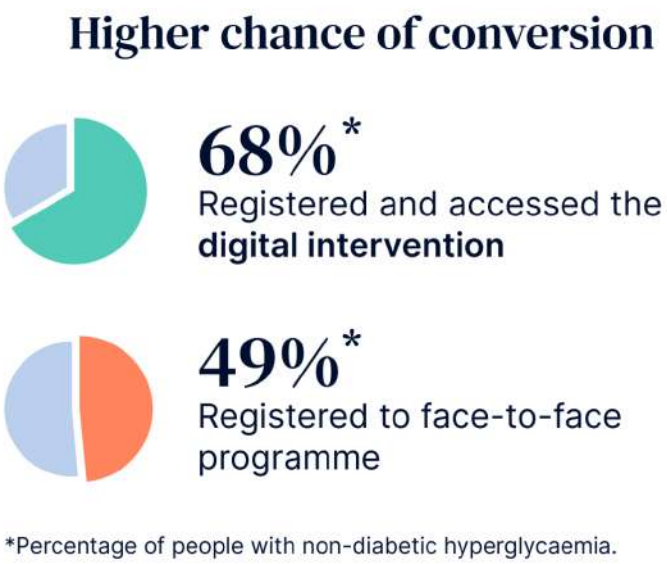
Two years into the programme, Councillor Jacquie Speight, Wakefield's cabinet member for culture, leisure and sport, said, "We wanted to incorporate the digital healthcare element into our weight management service as we felt it would improve accessibility and provide a tailored approach for our service users. From our experiences we found not only does it do this, it can also improve adherence and offer a level of flexibility that can only be beneficial for all involved."

[30] A Sutter, R Huntriss, P Kanehl, F Schirmann. Smarte Ernährungstherapie bei Adipositas: Akzeptanz & Effektivität eines digital-unterstützten Gewichtsreduktions-Behandlungspfades. Nutrition 2021. Accepted for poster and oral presentation at Nutrition 2021.



It reaches people who are not engaged with traditional models of care

A striking outcome of the NHS programme was that 68% of the people with non-diabetic hyperglycaemia referred into the digital programme registered and accessed the digital intervention, a significantly higher proportion than the 49% conversion of referral to initial assessment observed in the face-to-face programme.



This large-scale study suggests that a digital diabetes prevention programme has the potential to reach working age people who are less likely to engage with group-based face-to-face interventions. People who struggle to use transport for health or cost reasons may also be benefiting from easy access.

Conclusion

Weight management programmes with a significant digital element can achieve and sustain weight loss at least comparable with face-to-face programmes, and can achieve higher uptake and completion rates with a significant proportion of the population who are currently not accessing care.

Alongside the low per capita cost and the scalability of digital interventions, clinical evidence to date builds a powerful case for the use of digital weight management programmes.
In contrast, evidence supporting fully digitalised treatments with little or no human support remains scarce, making conclusions difficult. More data is needed to understand the optimum mix of digital and human support.

The UK authorities and regulators have synthesized conclusive evidence statements on the effectiveness of remote and digital weight management treatments; summarised below. This is likely to be followed by similar evidence statements across European countries like Germany following the evidence generation afforded by their Digital Care Act.

Assessments of the effectiveness of remote and digital weight management treatments

NICE draft guidelines (UK)
There is no difference in weight loss at 12 to 18 months between programmes delivered in-person versus remote contact only.[31]

ORCHA with the British Dietetic Association (UK)
ORCHA (Organisation for the Review of Care and Health Apps) describes itself as the world's leading independent digital health evaluation organisation. When comparing mobile apps with non-mobile weight loss interventions, results favoured mobile devices. ORCHA and the British Dietetic Association are calling for health professionals to educate themselves on digital health, embed apps in their clinical practice and consider routinely discussing appropriate smartphone apps with service users.[32]

Obesity APPG (UK)
The UK All-Party Parliamentary Group on Obesity concluded that weight management therapies would benefit greatly from an increased digital offer.[33] They believed the benefits would include improved patient understanding of their health.

Public Health England (UK)
Following research during 2020, Public Health England concluded there is a role for remote support as part of a range of support methods, in order to serve the widest possible population and eliminate inequalities in access. Around 69% of providers and commissioners who responded to a survey said their service would continue to use digital and remote delivery methods after the pandemic lockdown.[34]

[31] NICE, Managing overweight and obesity in adults – lifestyle weight management services (2014), www.nice.org.uk/guidance/ph53/documents/overweight-and-obese-adults-lifestyle-weight-management-draft-guidance2
[32] ORCHA and British Dietetic Association, Mobile health approaches to weight management: food for thought (January 2021), www.orcha.co.uk/media/1750/orcha_bda-report_jan_2021.pdf
[33] UK All-Party Parliamentary Group on Obesity, The future of obesity services (November 2020), static1.squarespace.com/static/5975e650be6594496c79e2fb/t/5fbe2a92e18c5c478ec569a0/1606298265632/Obesity+APPG+-+The+Future+of+Obesity+Services.pdf
[34] Public Health England, Supporting weight management services during the COVID-19 pandemic, Phase I insights (September 2020), assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915274/WMS_Report.pdf

Designing inclusive Care

For digital treatments to become an integral part of weight management they need to be accessible to everyone. As Oviva's analysis of its patients demonstrates, many people needing support come from a deprived background and may have limited digital skills.

The impact of deprivation and ethnicity

The NHS Diabetes Prevention Programme, launched in 2016, sheds light on how deprivation and ethnicity can affect the outcomes of weight management programmes. Analysis of the first two and a half years, when almost 325,000 people were referred to it, reveals that people from more deprived areas were less likely to complete the programme, lost less weight and had a smaller reduction in the HbA1c blood glucose measure.[35]

Analysis by ethnicity showed that people in Asian ethnic groups were 25% less likely than White groups to complete the programme. Asian and Black groups lost less weight and Black groups had small reductions in HbA1c. The effect of ethnicity was independent of socioeconomic status.[36]

In the second round of procurement for the programme, the payment schedule was adjusted to provide greater incentives to retain participants of Black, Asian, Mixed and other ethnicities and those from more deprived backgrounds. Digital support was offered to those who declined or failed to attend face-to-face meetings.[37]

Analysis of attendance for Oviva diabetes support programmes among people who are generally regarded as harder to reach for digital weight management care gives cause for optimism. Over 19 months, 5606 eligible referrals were received and 4079 (73%) attended the programme. This included 70% of males who were referred, 72% of people older than 65, 79% of people who did not have English as their first language and 83% of people from ethnic minorities.

[35] Valabhji, J, et al, Early outcomes from the English National Health Service Diabetes Prevention Programme, Diabetes Care (January 2020), care.diabetesjournals.org/content/43/1/152

[36] Valabhji, J, et al, Early outcomes from the English National Health Service Diabetes Prevention Programme, Diabetes Care (January 2020), care.diabetesjournals.org/content/43/1/152

[37] Valabhji, J, et al, Early outcomes from the English National Health Service Diabetes Prevention Programme, Diabetes Care (January 2020), care.diabetesjournals.org/content/43/1/152

Europe's digital divide

Around 18% of Europeans do not use the internet, around half of whom are living with disabilities.[38] There are significant pockets of low access in southern Europe, including Portugal, Greece, Bulgaria and parts of southern Italy. Regular internet use is significantly lower among households with low education and among older people. Smartphone ownership in European countries is typically around 80%.

Making digital tools accessible

Digital delivery methods can help overcome barriers in accessing face-to-face care, such as physical or financial difficulties in travelling and competing work or care responsibilities.[39] But people who are motivated to engage with weight management treatments need much more than access to a smartphone and the internet to use digital tools.

They need the will and confidence to use them. Just as with in-person care, they may need adaptations for visual or hearing impairments. They may need to cope with diminished dexterity, such as through arthritis. Care needs to be available in multiple languages and provide materials and support that is culturally appropriate. People may have additional learning needs to understand and interpret the information. They may need equipment such as scales and coaching on how to use them. Any digital devices need to be plug and play. Accordingly, Germany stipulated accessibility and patient-centricity as essential for its new digital health applications (DiGA). [40]

Payors, commissioners and providers of weight management treatments need evidence that using apps will not exclude significant sections of the community. In the Public Health England survey of weight management care during the pandemic, several local authorities asked for evidence on the accessibility and effectiveness of online weight management treatments among the most deprived communities .[41]

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[38] European Parliament Briefing, Bridging the digital divide in the EU (December 2015), www.europarl.europa.eu/RegData/etudes/BRIE/2015/573884/EPRS_BRI(2015)573884_EN.pdf

[39] Horigan, G, et al, Reasons why patients referred to diabetes education programmes choose not to attend: a systematic review, National Library of Medicine, January 2017, pubmed.ncbi.nlm.nih.gov/26996982/

[40] The Fast-Track Process for Digital Health Applications (DiGA) https://www.bfarm.de/SharedDocs/Downloads/EN/MedicalDevices/DiGA_Guide.pdf?__blob=publicationFile&v=2

[41] Public Health England, Supporting weight management services during the COVID-19 pandemic, Phase I insights (September 2020), assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915274/WMS_Report.pdf

Safeguarding

Apps and the human care behind them need safeguarding procedures for managing adverse or complex events, such as a mental health crisis. Especially since psychological disorders, e.g. depression, are well known to co-occur with obesity.[42] The need for mental health support to be more fully integrated with weight management treatments was another issue highlighted in the Public Health England survey.[43]

Driving innovation through reimbursement

The way digital treatments are regulated and paid for will be a key determinant of their adoption and development. This could be seen during the pandemic, with healthcare systems introducing emergency payment codes to ensure care such as remote doctor and therapy consultations were reimbursed in the same way as face-to-face appointments.

Germany has reformed its regulation and payment system to stimulate the digitisation of healthcare with a model that has lessons for other countries. Its Digital Health Care Act 2019 (Digitale-Versorgung-Gesetz, or DVG) addresses three related issues – ensuring quality, ensuring payment and supporting innovation.

It introduces a list of digital health applications that doctors can prescribe and be reimbursed for by health insurance funds.[44] The Federal Institute for Drugs and Medical Devices (BfArM) takes just three months to assess whether a product will be added to the register.

Companies able to generate sufficient clinical data upfront are eligible for a permanent registration, while start-ups and others with a promising idea but limited resources can be granted temporary registration. This gives them another year to generate evidence, while benefiting from reimbursement. By June 2021, 15 apps had been approved, of which eight had temporary registration.

Among the challenges facing reimbursement systems is how to support the costs of treatments which are a blend of digital and face-to-face support. Reimbursement should avoid driving patients down a single pathway, allowing them to move freely between different interventions depending on their needs.

Regulatory approval is an important step in building the credibility and evidence base of effective weight management tools and other digital applications among clinicians, payers and the public. Typing 'diet' into the Google Play app store delivers more than 1.6 million results, but health apps do not need regulatory approval. To encourage take-up of apps which will benefit users, regulators and professional bodies need to highlight digital tools which have been developed to the appropriate standards and which are supported by robust evidence.

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[42] Patient guideline for the diagnosis and treatment of obesity (Patientenleitlinie zur Diagnose und Behandlung der Adipositas) (2019) https://www.awmf.org/uploads/tx_szleitlinien/050-001p_S3_Adipositas_Pr%C3%A4vention_Therapie_2019-01.pdf

[43] Public Health England, Supporting weight management services during the COVID-19 pandemic, Phase I insights (September 2020), assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915274/WMS_Report.pdf

[44] Stern, A, et al, Want to see the future of digital health tools? Look to Germany, Harvard Business Review, 2 December 2020, hbr.org/2020/12/want-to-see-the-future-of-digital-health-tools-look-to-germany

Future research

Long-term impact

The key to overcoming obesity is maintaining weight loss over many years. A lot of studies assess evidence over periods such as 18 months, but there has been little research into the impact of digital interventions over longer timeframes. A longer-term study in Germany is expected to deliver data around 2023, but more research is needed.

Integration with human support

There are many variables to consider when researching how best to integrate digital and human support in weight management programmes. For example, does the optimum mix of the two approaches change at different times in the programme? What is the best approach if the patient has a crisis in their adherence to their programme? What are the relative merits of support from different disciplines such as psychologists, dietitians or non-clinical support staff? How does someone's level of motivation or self-belief influence the way they respond to a particular intervention? All these aspects deserve further investigation.

There is some indication that, when comparing digital with personal coaching in terms of maintaining a healthy weight, what matters is the frequency of interaction rather than the method. A trial comparing methods for delivering a lifestyle modification programme for obese patients found high-frequency telephone contact with a dietitian produced similar outcomes to high-frequency face-to-face contact.[45] Similarly, a trial in England and Wales found that intensive intervention may facilitate longer term weight maintenance.[46]

In a similar vein, could technologies monitoring people's home activities such as cooking alongside AI-generated behavioural prompts deliver an outcome which is substantially better than a human-based system?

The way forward

There is now compelling evidence that digital and remote weight management treatments are at least as effective as face-to-face support, with all the advantages of greater uptake, unlimited reach, great convenience and accessibility and lower cost.

Payors, commissioners and providers need to roll out examples of care demonstrating patient safety, inclusivity and effectiveness at scale and pace to address the obesity crisis that is shortening lives and overwhelming healthcare systems.

An important next step in the development of digital weight management treatments will be to run longer and more ambitious clinical trials. However, since weight management is ultimately dependent on the psychology of the patient, gathering and analysing far more real-world data may prove more insightful in understanding what works and why, and how technological and human support can be brought together to greatest effect.

[45] Digenio, A, et al, Comparison of methods for delivering a lifestyle modification program for obese patients, Annals of Internal Medicine (2009) pubmed.ncbi.nlm.nih.gov/19221377/

[46] Simpson, S, et al, A feasibility randomised controlled trial of a motivational interviewing-based intervention for weight loss maintenance in adults, National Library of Medicine (July 2015), pubmed.ncbi.nlm.nih.gov/26168409/