

### The Interaction Between Personalized Wellness Coach and Participant in An Online Commercial Weight Loss Intervention Program: A Retrospective Analysis

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**Introduction:** A weight management program offering personalized wellness coaches to instruct the patient has been practiced widely. This approach appeared to be more effective in weight loss success by strengthening the motivation, supports, along with enhancing the engagement and self-monitoring among participants. Thus, understanding coach-participant interactions and how these communications impact weight loss accomplishment needs to be determined for sharpening the coaching best practices. The present study's aim was to investigate the interaction between wellness coaches and participants during a 3-month online personalized weight loss intervention program.

**Methods:** A retrospective analysis was performed using 199 clients enrolled from December 2020 to December 2021 in the LMS weight loss program. Eligible participants were aged  $\geq 20$  years old, having a baseline body mass index of  $\geq 23.0$  kg/m<sup>2</sup>, and providing at least one weight measurement beyond the baseline survey. Participants were categorized into non-completed, intent-to-treat, and completed groups evaluating by their participation and adherence. Various measures were obtained to quantify coach-participant interactions involving electronic messages, food diaries, and exercise logs. A stepwise multiple regression analysis was conducted by entering all measures associated with coach-participant interactions. Three significant predictors (p-value < 0.001) were finally determined and further analyzed to reveal their impacts on the weight loss outcome.

**Results:** Generally, participants attending the personalized online health coach weight loss program lost an average of 7.99% (SE=0.57), and those who successfully completed the program lost on average of 11.19% (SE=0.37) during the 3-month period. Respectively, 25% and 58% of these participants lost 10% or more of their baseline weight. The stepwise multiple regression model revealed the top 3 measures as significant predictors of weight loss at 3 months: reported weekly food log days, weekly exercise log days, and fortnight self-weighing (all p-value < 0.001). In association with weight loss success, self-weighing every 14 days, providing at least 4 reports on dietary and exercise logs every 7 days were shown to be significant predictors of weight change at 3 months.

**Conclusions:** Participants with obesity attending online weight loss program report for self-weighing once per fortnight and submit at least 4 days per week of food diary and exercise log increased participants' weight loss success. This provides insight on real-world weight loss interaction patterns that can raise questions for future research on the relationship between health coaches and participants in the commercial weight-loss intervention program.

### Characteristics and weight loss practices from a cohort of 20,000 patients using direct-to-consumer telehealth

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**Introduction:** Plenity is a non-systemic oral superabsorbent hydrogel (OSH) for the treatment of pre-obesity or obesity (BMI 25-40kg/m<sup>2</sup>) available by prescription and direct-to-consumer telehealth (Ro). This analysis describes the OSH telehealth population and differences

in weight loss (WL) practices between patients with obesity (PwO) and patients with pre-obesity (PwPO).

**Methods:** This is a cross-sectional assessment of a random sample of 20,000 patients who completed a structured, online telehealth visit. In the visit, patients provided baseline health information, including whether they had one or more of the following weight-related comorbidities: diabetes, osteoarthritis, high cholesterol, high triglycerides, hypertension, obstructive sleep apnea, gallstones, gallbladder disease, NAFLD/NASH, heart disease, stroke, peripheral vascular disease. Patients were eligible to receive care via telehealth and included in the analysis if they were adults, not pregnant, had a minimum BMI of 25kg/m<sup>2</sup>, and had received at least one prescription of OSH. Patients were grouped as PwPO (BMI 25-29.9 kg/m<sup>2</sup>, n=6,426) or PwO (BMI 30-40 kg/m<sup>2</sup>, n=13,574), based on self-reported height and weight. Descriptive statistical analysis and tests of differences ( $\chi^2$ , t-tests) were performed.

**Results:** Patients were 78% female, aged  $43 \pm$  SD 10.7 years, with a mean BMI of 32.4 kg/m<sup>2</sup>  $\pm$  SE 0.03. One-third of patients (32.1%) had pre-obesity and 40.2% of all patients had at least one weight-related comorbidity. Almost all patients (98.7%) attempted one WL method prior to OSH, and half (50.3%) had tried at least four different methods. Exercise and low-calorie diet were the most commonly attempted WL methods, and nearly 30% of patients reported prior prescription WL medication use. Most patients (62.2%) reported not following a specific diet at the time of OSH initiation. PwO were more likely than PwPO to have previously tried commercial WL plans (53.7 vs 43.4%; p<0.001), specialized diets (62.6 vs 59.1%; p<0.001), OTC supplements (50.2 vs 44.8%; p<0.001) and prescription WL medications (32.5 vs 20.9%; p<0.001). Female patients were more likely to seek treatment for pre-obesity (34.2 vs. 24.7% male; p<0.001) and reported fewer comorbidities (38.5 vs. 46.2% male; p<0.001), despite over 90% of both sex groups reporting the belief that excess weight negatively affected their health.

**Conclusion:** Data from this large patient cohort supports the potential for telehealth to provide prescriptive weight management treatment to a population seeking care. PwPO are an undertreated population and are actively seeking new weight management options. Interestingly, women sought weight management treatment earlier in the disease continuum than men, despite reporting few comorbidities. Future studies are needed to determine whether these trends continue once OSH is more broadly available.

### Sensibility and specificity analysis for waist-to-height ratio, body mass index and waist circumference as a screening criterion for metabolic syndrome in an adult North-East Portuguese population

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**Introduction:** Obesity is a central component of Metabolic Syndrome (MetS) and a major public health concern. A harmonizing MetS definition was developed to aggregate the different criteria used by the umbrella organizations, however there is still controversy over the most sensitive and specific parameter to characterize each MetS component. The aim of this study was to compare the sensibility and specificity for waist-to-height ratio (WHtR), body mass index (BMI) and waist circumference (WC) to discriminate subjects with and without MetS in an adult North-East Portuguese population.

**Methods:** A cross-sectional retrospective analysis was conducted between January 2019 and December 2020 from patients' clinical records of two primary health care centers in a North-East Portuguese region. A total of 6570 individuals aged 18–102 years were included for analysis, among which 3865 women ( $57.37 \pm 18.67$  years) and 2705 men ( $59.97 \pm 16.76$  years). MetS was defined according to HARM2009 statement set by

Alberti et al. (2009). Standardized cut-off points were used to measure WHtR ( $\geq 0.5$ ), BMI ( $\geq 30$  kg/m<sup>2</sup>) and WC ( $>88$  cm in women and  $>102$  cm in men). A binary logistic regression was performed for the areas under receiver operating characteristic curves (AUC) and adjusted odd ratios (OR) with a 95% confidence interval (CI).

**Results:** MetS was present in 3,581 (54.51%) subjects, where 1,914 (49.52%) were women and 1,667 (61.63%) men. AUC demonstrated that WHtR was significantly more powerful than WC and BMI ( $p < 0.05$ ) for screening MetS (AUCWHtR = 0.785, 95% CI: 0.774–0.796; AUCWC = 0.768, 95% CI: 0.757–0.779; AUCBMI = 0.751, 95% CI: 0.703–0.796). Men are 1.53 (95% CI: 1.37–1.72,  $p < 0.001$ ) times more likely of having MetS compared to women. Also, the discriminative power of the three criteria for predicting MetS is higher in men (AUCWHtR = 0.795, 95% CI: 0.778–0.812; AUCWC = 0.783, 95% CI: 0.766–0.801; AUCBMI = 0.740, 95% CI: 0.722–0.759) than women (AUCWHtR = 0.782, 95% CI: 0.768–0.797; AUCWC = 0.760, 95% CI: 0.744–0.775; AUCBMI = 0.699, 95% CI: 0.683–0.716). However, WHtR is still the most powerful screening criterion for MetS in both sexes.

**Conclusion:** Adjusting individual's waist circumference to height revealed a greater sensitivity and specificity for MetS screening than isolated WC and BMI. Current research suggests that WHtR is as a better predictor for MetS, specifically in its obesity component.

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### Food addiction, eating habits and food choices in a sample of college students

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**Introduction:** The concept of food addiction, characterized by a strong urge to overeat high palatable foods, has gained increased research attention during the last decade. College students are recognized as a risk group to manifest eating pathology due to the changes in eating habits and the increasing in food choices autonomy experienced during this period. Thus, the present study aims to characterize food addiction in a sample of college students and enlighten the relationship between food addiction, eating habits, and food choices in this population.

**Methods:** This was a two-moment assessment study. In the first assessment, a sample of 194 college students (89.2% females) aged between 18 and 32 years old ( $M = 20.85$ ,  $SD = 2.78$ ) fulfilled a self-reported online questionnaire on GoogleForms that assessed sociodemographic/anthropometric data, eating habits (Eating Habits Scale), and food addiction (Portuguese Yale Food Addiction Scale 2.0; P-YFAS 2.0). Subsequently, from this initial sample, 34 female participants completed the second moment of assessment, an experimental task of observation and assessment of healthy and unhealthy food images.

**Results:** From the 194 students included and based on the P-YFAS 2.0, 30 participants presented food addiction symptoms. Specifically, 13 (6.7%) students presented a food addiction diagnose (i.e., two or more food addiction symptoms, including clinical impairment/distress) and another 17 (8.8%) presented two or more food addiction symptoms but without exhibition of clinical impairment/distress. The presence of food addiction symptoms were associated with higher weight dissatisfaction [ $\chi^2(1) = 5.21$ ,  $p = .022$ ] and higher intake of unhealthy food, namely food high in sugar [ $\chi^2(1) = 18.23$ ,  $p < .001$ ], food high in fat [ $\chi^2(1) = 6.18$ ,  $p = .013$ ], and fast-food [ $\chi^2(1) = 11.43$ ,  $p = .001$ ]. Similarly, the group composed of students with food addiction symptoms reported eating habits marked by less food quality ( $t = -2.23$ ,  $p = .027$ ). About the experimental task of observation and assessment of food images, the results indicated that participants with

food addiction symptoms reported greater difficulty in controlling the intake of both healthy and unhealthy foods [ $F(1,32) = 6.95$ ,  $p = .013$ ].

**Conclusion:** In sum, this finding highlighted a connection between food addiction, eating habits, and food choices in college students, a population at risk for developing and maintaining eating pathology. Further research would be essential to evaluate and implement interventions about food addiction, weight dissatisfaction, eating habits, and food choices, targeting college students.

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### Association Between A Body Shape Index and Incident Type 2 Diabetes: Findings from The UK Biobank Prospective Cohort Study

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**Introduction:** Obesity is a major risk factor for type 2 diabetes (T2D). However, most studies have focused on body mass index (BMI) or central adiposity, with limited evidence on adiposity markers that account for overall body shape. A Body Shape Index (ABSI), defined as waist circumference (WC) divided by  $(BMI^{2/3} \times height^{1/2})$ , has been developed to be a new adiposity definition [1]. Therefore, this study aims to compare the associations of ABSI and other traditionally used adiposity markers with incident T2D.

**Methods:** This prospective cohort study included 123,315 participants from the UK Biobank (mean age: 56.6 years and 54.5% were women). The associations were studied using Cox proportional hazard models. The exposure variables were seven adiposity markers, including ABSI, BMI, WC, waist-hip ratio (WHR), waist-to-height ratio (WHtR), hip circumference (HC) and visceral adiposity index (VAI). All adiposity markers were standardised to a 1-SD increase for each sex. The outcome was incident T2D. Harrell's C-index was also calculated to compare T2D risk discrimination between ABSI and against other adiposity markers.

**Results:** After excluding the first two years of the follow-up period, the median follow-up period was 5.4 (IQR: 4.8 to 6.3) years, during which 2,519 (2.0%) participants were diagnosed with T2D. All adiposity markers were positively associated with T2D risk. In the fully adjusted model, 1-SD increment in ABSI was associated with a higher risk of T2D (HR 1.39, 95% CI, 1.33 to 1.44). Each 1-SD increment of WC and HC were associated with 79% higher risk, and WHR and VAI were associated with a 50% higher risk. The strongest associations were observed for BMI (HR, 2.11; 95% CI, 2.05 to 2.17) and WHtR (HR, 2.32; 95% CI, 2.25 to 2.40). There was no evidence that ABSI had a better risk prediction for T2D compared with other adiposity markers.

**Conclusion:** ABSI was associated with a higher risk of T2D; however, it did not improve T2D risk prediction compared to other commonly used adiposity markers such as BMI and WHtR. Therefore, further study should be conducted to confirm our findings.

#### Reference

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