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T-P-3001 to T-P-3162

T-P-3001

Patients With Clinically Metabolically Healthy Obesity Are Not Necessarily Healthy Subclinically

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Background:

The risk of nonalcoholic fatty liver disease (NAFLD) among obese individuals who are otherwise metabolically healthy is not well characterized. Not only does NAFLD increase the risk of liver cirrhosis and hepatocellular carcinoma, it is also a major risk factor for extrahepatic diseases, such as cardiovascular disease and type 2 diabetes mellitus. We therefore seek to determine the incidence and characteristics of NAFLD in individuals with metabolically healthy obesity (MHO).

Methods:

All patients who underwent bariatric surgery with an intraoperative liver biopsy at an academic center from 2008-2015 were identified. Patients with preoperative hypertension, dyslipidemia, or pre-diabetes as defined by BP \geq 140/90 mmHg, HDL $<$ 40 mg/dL, TG $>$ 150 mg/dL, LDL \geq 130 mg/dL, HgA1c \geq 5.7%, fasting blood glucose \geq 100 mg/dL, or on medication for hypertension, dyslipidemia, or diabetes were excluded in order to identify a cohort of MHO patients. Liver biopsy reports were reviewed to determine the incidence of NAFLD as graded by the NAFLD activity score (NAS).

Results:

A total of 270 patients (10% of patients at our institution) met the strict inclusion criteria of MHO. The average age was 38 \pm 10 years and the average BMI was 47 \pm 7 kg/m². Abnormal ALT and AST levels ($>$ 40 U/L) were observed in 35 (13%) and 18 (7%) patients, respectively. A total of 96 (36%) patients had NAFLD with NAS scores 1-2 (n=61), 3-4 (n=25), and 5-8 (n=10). A total of 62 (23%) patients had lobular inflammation, 23 (9%) had hepatocyte ballooning, 22 (8%) had steatohepatitis, and 12 (4%) had liver fibrosis.

Conclusions:

Even with the use of strict criteria to eliminate all patients with any metabolic problems, a significant proportion of metabolically healthy patients are not healthy on a cellular level. Medical and surgical weight loss may help to reverse NAFLD in patients with MHO. Additional studies are needed to further delineate the association of NAFLD with future cardiometabolic disorders in individuals with MHO.

T-P-3002

Low Cardiorespiratory Fitness Is Associated With Metabolic Dysfunction in Lean Asians

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Background:

Identification of phenotypic characteristics of metabolic dysfunction among those with normal body weight is essential in designing prophylactic and rehabilitative interventions against cardiometabolic disease.

Methods:

We measured total body fat (DXA), visceral adipose tissue (MRI), intramyocellular and intrahepatic lipids (MRS), maximal oxygen uptake (VO₂max; cycle ergometry), average physical activity (self-administered IPAQ), insulin sensitivity, insulin secretion and glucose tolerance (4h hyperinsulinemic-euglycemic clamp and 3h meal tolerance test with mathematical modeling) in 48 lean Asians (BMI=22.1 \pm 1.7 kg/m²; age=42.3 \pm 12.9 years).

Results:

VO₂max correlated negatively with percent body fat (r= -0.654, p $<$ 0.001), hepatic fat (r= -0.444, p=0.03), and visceral fat (r= -0.581, p=0.004). Fasting glucose, insulin, triglycerides and HOMA-IR scores were also negatively associated with VO₂max (all p $<$ 0.05). Insulin secretion rate and postprandial insulin area-under-the-curve correlated negatively with VO₂max (r= -0.461, p=0.014; r= -0.376, p=0.02; respectively), whereas insulin sensitivity (M value) and insulin clearance rate (clamp and meal tolerance test) correlated positively with VO₂max (r= 0.642, p $<$ 0.001; r= 0.457, p=0.19; r= 0.438, p=0.02; respectively). VO₂max correlated positively with the number of weekly days spent in vigorous physical activity (r= 0.437, p=0.002), as well as vigorous MET-min/week (r= 0.510, p $<$ 0.001).

Conclusions:

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Our results suggest that low cardiorespiratory fitness, likely due to inadequate participation in vigorous physical activity, is associated with most features of metabolic dysfunction in lean subjects. Interventions that target increased participation in vigorous physical activity may thus be important in improving cardiometabolic health among those with normal body weight.

T-P-3003

Hepatic Steatosis and Insulin Sensitivity in Patients With Severe Obesity and Type 2 Diabetes

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Background:

Liver steatosis is considered the hepatic component of the metabolic syndrome, and insulin resistance represents its pathophysiological hallmark. However, it is not clear whether hepatic steatosis is associated with whole body insulin resistance in subjects with morbid obesity and type 2 diabetes.

Methods:

Preliminary analysis of baseline data from an ongoing randomised controlled clinical trial including subjects with morbid obesity and type 2 diabetes seeking bariatric surgery. Hepatic insulin sensitivity was calculated from fasting glucose and insulin levels in serum (HOMA-S2), whereas whole body insulin sensitivity was calculated using fasting and postprandial serum glucose and insulin levels 0, 15, 30, 60, 90, 120, 180 minutes after a 25 g oral glucose load (Matsuda index). Fat fraction of the liver was estimated with the modified Dixon method calculating the percentage of liver-fat by measuring hepatic and splenic signal intensity in in- and out-phase T1-weighted magnetic resonance imaging (MRI) images.

Results:

A total of 49 patients (65 % female) with mean (SD) age 47.1 (7.8) years, BMI 43.8 (5.5) kg/m², duration of diabetes 6.1 (5.3) years, HbA1c 8.3 (1.6) % and percentage of liver fat 21.4 (11.7) %, were included. The majority (86 %) used antidiabetic drugs. The fraction of liver fat correlated inversely with both the HOMA-S index ($r = -0.401$, $p = 0.004$) and the Matsuda index ($r = -0.322$, $p = 0.024$).

Conclusions:

In subjects with morbid obesity and type 2 diabetes, hepatic steatosis is significantly correlated with both whole body and hepatic insulin resistance.

T-P-3004

Impact of Gender on the Relationship Between Early Life Stress and Proinflammatory Markers

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Background:

Recent research has identified a positive association between levels of TNF- α and early life stress (ELS), however, effects of ELS on TNF- α levels between genders remains controversial. The current study was designed to examine the effect of gender on the relationship between TNF- α levels and ELS.

Methods:

One hundred fifteen healthy participants were enrolled and completed the study. History of ELS was measured by the Childhood Trauma Questionnaire (CTQ). Based on the subscales and total scores of ELS and gender, participants were divided into 4 groups, i.e. male-ELS, female-ELS, male non-ELS, and female non-ELS. Blood samples were collected for the measurement of TNF- α levels.

Results:

Significant differences were observed in levels of TNF- α across ELS-Gender groups ($p=0.009$). Compared with the female non-ELS group, TNF- α levels were significantly elevated in the female ELS group ($p = 0.007$). However, TNF- α levels in female non-ELS group were much lower than in male non-ELS ($p=0.032$). No differences were observed in other comparisons, including male-ELS vs. male non-ELS.

Conclusions:

Our results suggest that the association between ELS and elevated TNF- α levels is gender-specific, i.e. elevation in females but not in males. Further research is called upon to further explore potential mechanisms and the impact of gender on the relationship between ELS and other proinflammatory cytokines, including IL-1 β and IL-6.

T-P-3005

Macrophage Responsiveness to Lipopolysaccharide Is Reprogrammed by Diet-Induced Obesity

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Background:

Being a risk factor for sepsis, obesity has a strong influence on the inflammatory response to pathogens and their products. However, it is

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still unclear whether reprogramming of intrinsic macrophage properties can contribute to such an influence.

Methods:

Male Wistar rats were kept on a high-fat (60%) diet (HFD) or on a low-fat (10%) diet (LFD). The HFD rats had a higher caloric intake from day 1 of the experiment, and started to gain more body mass than their LFD counterparts on day 25. Obesity (with confirmed adiposity) was fully established by day 180. At this point in time, resident macrophages were harvested and isolated from the peritoneum, the lungs and the epididymal white adipose tissue (eWAT).

Results:

The peritoneal macrophages responded to lipopolysaccharide (LPS, 500 ng/ml) with secretion of pro-inflammatory and anti-inflammatory cytokines. Whereas the IL-1b response was unchanged by obesity, the TNF-a and IL-10 responses were enhanced in peritoneal macrophages from the HFD group, as compared to those from the LFD group. However, the enhancement of IL-10 exceeded that of TNF-a, and, consequently, the TNF-a/IL-10 ratio was lowered by obesity in this population of macrophages. The eWAT macrophages also responded to LPS with secretion of TNF-alpha, IL-1 b and IL-10, but they were affected by obesity in a completely different manner. Whereas eWAT macrophages from the HFD group displayed an enhanced TNF-a response, their IL-1 b and IL-10 responses were attenuated and their TNF-a/IL-10 ratio was increased. With regard to lung macrophages, only TNF-a had its secretion induced by LPS in this population, but this response did not differ between the HFD and LFD groups.

Conclusions:

These results show that resident macrophages are reprogrammed in diet-induced obesity to the extent that their responsiveness to LPS is intrinsically altered. These alterations are tissue-specific, with obesity lowering the TNF-alpha/IL-10 ratio in peritoneal macrophages and increasing it in eWAT macrophages.

T-P-3006

Obesity-associated Systemic Factors Promote an Invasive Liver Cancer Phenotype

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Background: Obesity is associated with liver disease and chronic inflammation, which can lead to the development and progression of liver cancer. Liver cancer is the sixth most common cancer worldwide. In the U.S., it is estimated that only 17.5% of patients diagnosed with liver cancer survive 5 years or more. The aim of this study was to investigate the impact obesity on the invasive liver cancer phenotype using a hybrid translational research model to recapitulate obesity and liver cancer.

Methods:

Methods: Sera from 5 males were pooled from 3 different BMI categories: obese, overweight, normal and used for in vitro studies. HepG2 liver cancer cells were exposed to serum from obese (OB), overweight (OW) or normal weight (NW) men. Serum was characterized by an adipokine array. Immunofluorescence was used to visualize e-cadherin localization. Cell viability, invasion, ROS, MMP-9, gene and protein expression, and lipogenesis, were measured.

Results:

Results: Serum from OB and OW men contained higher levels of leptin, IL-6, resistin, visfatin, CXCL8, and VEGF compared to NW. Obesity-related systemic factors increased viability, invasion, MMP-9, ROS, and lipogenesis in HepG2 liver cancer cells. This phenotype was accompanied with increased changes in E-cadherin. OB and OW serum increased IL-6, FASN, phosphorylated Erk and Akt protein levels.

Conclusions:

Conclusion: The results from this study identify a new method to investigate the adverse effects of obesity on aggressive liver cancer. Our findings suggest that obesity promotes an invasive liver cancer phenotype evidenced by increased physiological and molecular changes related to viability, invasion, ROS, and MMP-9 secretion.

T-P-3007

Severe Hypertriglyceridemia in Spontaneously Obese, Non-diabetic Nonhuman Primates

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Background:

Adult humans and nonhuman primates (NHPs) naturally and spontaneously develop obesity-associated hypertriglyceridemia (HTG) with serum levels ranging from 100 to 500 mg/dl and less frequently severe HTG (sHTG) with levels ranging from 500 to >3000.

Methods:

NHPs (N=128, 89 males; ages 4-32; weights 5-28 kg) were longitudinally studied and separately compared to 78 naturally Type 2 diabetic monkeys, all continuously maintained on a low fat diet; fasting blood samples with glycemic and lipid profiles were followed prospectively, together with % body fat, glucose tolerance, HbA1c, serum amylase and lipase, and insulin sensitivity by euglycemic clamps.

Results:

Of the 128 spontaneously obese NHPs, 55 had borderline high (100-199 mg/dl), 21 had high (200-500) HTG, while 6 had severe HTG

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(>500) (sHTG) with only one >1000. By contrast all except 1 of the 78 T2DM monkeys had sHTG ranging from 449 to 3688, with the majority over 1000 mg/dl. The progression of hypertriglyceridemia was significantly associated with age ($r = 0.28$, $p < 0.0001$), body weight ($r = 0.28$, $p < 0.0001$), abdominal circumference ($r = 0.16$, $p < 0.005$), body fat % ($r = 0.36$, $p < 0.0001$), HbA1c % ($r = 0.16$, $p < 0.0001$), impaired fasting glucose ($r = 0.18$, $p < 0.0001$) and hyperinsulinemia ($r = 0.22$, $p < 0.0001$). The progression of HTG was inversely associated with insulin sensitivity ($r = -0.53$, $p < 0.0001$), serum amylase ($r = -0.12$, $p < 0.0001$) and HDL ($r = -0.25$, $p < 0.0001$).

Conclusions:

In these genetically unrelated obese NHPs, obesity was highly prevalent and hypertriglyceridemia both moderate and severe were common, and greatly exacerbated in the overtly diabetic monkeys. Diet composition played no role in the presence or wide ranging degree of hypertriglyceridemia nor in sHTG. A low fat diet appears to be unwarranted. This is the first spontaneously obese and spontaneously hypertriglyceridemic animal model that reflects both the moderate and the severe hypertriglyceridemia of humans and provides insight into likely causes (genetic).

T-P-3008 - WITHDRAWN

T-P-3009

Searching for a Hypercortisolism Model in Rats

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Background:

Experimental hypercortisolism (HC) is a lacking model in the scientific literature. The aim of this study was to establish a model of HC in rats.

Methods:

Male Wistar SPF rats (12 weeks old) were used in experiments (CEUA-ICB/USP 89/2016). The glucocorticoid (GC) dexamethasone sodium phosphate 0.6 mg/kg/day was continuously administered during 4 weeks, by an osmotic pump surgically implanted in the interscapular region. Control (CT) rats were submitted to same procedure, but with NaCl 0.9% administration.

Results:

GC treatment reduced adrenal mass (CT=0.015±0.0009; GC=0.0008±0.0003 g/100 g; $p = 0.001$), suggesting inhibition of HPA axis. The GC rats did not present significant hyperglycemia (CT=112.2±3.0; GC=145.8±16.3 mg/dl; $p = 0.08$), but evidences of glucose intolerance were observed in the third week of treatment (oGTT-AUC CT=189.8±49.3; oGTT-AUC GC=467.0±115.0). No differences were observed in food (CT=21.55±1.0; GC=21.51±5.1 g/100g) and in water intake (CT=33.05±3.9; GC=35.47±5.7 ml/100g) during the treatment. GC administration promoted intense loss of body mass (CT=37.33±6.4; GC=-98.00±14.0 g; $p < 0.05$), accompanied by loss of gastrocnemius muscle mass (CT=1.15±0.03; GC=0.96±0.04 g/100g; $p = 0.01$). Therefore, we observed an increase in adipose mass, although not significant, in the inguinal subcutaneous (CT=1.45±0.1; GC=1.70±0.2 g/100g), mesenteric (CT=1.06±0.2; GC=1.40±0.1 g/100g) and perirenal (CT=0.45±0.1; GC=0.63±0.1 g/100g) depots, even without alteration in the corporal percentage of these fats (CT=4.96±0.7; GC=5.83±0.3 %). However, the interscapular brown adipose tissue mass was 2.8 fold increased in GC group (CT=0.12±0.01; GC=0.35±0.04 g/100g; $p = 0.01$).

Conclusions:

This model support the establishment of a HC model in rats, since it presents classical metabolic alterations of this pathology such as glucose intolerance, central fat accumulation and adrenal atrophy. The next step will be to investigate the mechanisms underlying the adipose tissue distribution in this pathological condition.

T-P-3010

Spexin Has No Cardiovascular Side Effects at Doses That Treat Obesity, Diabetes and NAFLD in Mice

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Background:

Spexin, a 14 aminoacid adipokine (MW 1620), is encoded by Chr12/Orf29, the most widely regulated gene, relative to BMI, in human fat. Serum spexin parallels gene-expression, being reduced in obesity. In C57BL6/J mice with diet-induced obesity (DIO), type 2 diabetes mellitus (T2DM), & NAFLD, low dose peripheral spexin (25 µg/kg/day IP; mean: 0.75 µg/day) led to significant weight loss in several studies (e.g. Walewski et al, *Obesity* 22:1643-1652, 2014), & improved glucose handling & hepatic histology & biochemistry (Ge F et al, *Semin Liv Dis* 36:360-372, 2016). Similar results occurred at 35 µg/kg/day in DIO rats. While we saw no toxicity with these regimens, Toll et al (FASEB J 26:947-954, 2012) reported that spexin, given to rats at 5–14 fold higher doses (100-300 nmol/kg=163-488 µg/kg) by IV bolus injection, caused transient bradycardia & increased mean arterial pressure, and that intracerebroventricular injection of lower doses reduced urine flow & altered nociceptive activity.

Methods:

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As these data could cloud spexin's potential clinical use, we repeated our mouse peripheral spexin injection study (Ge et al, above), focusing on heart rate (HR), blood pressure (BP), other aspects of cardiac function, & quantitation of locomotor activity.

Results:

Spexin 25 ug/kg/day IP improved glucose tolerance, reducing HgbA1C (p=0.024), HOMA IR (p=0.042), stainable hepatic lipids (p=0.0028) and serum ALT (p=0.0456) vs. similar DIO mice injected with PBS for \leq 29 days. Changes in HR, BP, cardiac ejection fraction, & locomotor activity (recorded electronically in the X, Y, & Z planes during spexin administration) were minimal, and similar to those following IP injections of PBS alone.

Conclusions:

While IP injections of PBS alone may cause small, transient changes in activity, pulse and BP in DIO mice, at doses effective in treating obesity, T2DM & NAFLD, IP spexin has no significant, cardiovascular side effects in these animals.

T-P-3011

Vitamin D3 Inhibits Epithelial-Mesenchymal Transition, Stemness and Cell Migration in Breast Cancer

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Background:

Breast cancer is the most prevalent tumor and a major cause of morbidity and mortality among women worldwide as well as in the USA. Epithelial-Mesenchymal Transition (EMT) is a biological process that contributes to tumor invasion and metastasis. Accumulating evidence suggests that cancer stem cells (CSCs) are a subpopulation of tumors that are critical for tumor initiation, chemoresistance, and metastasis. EMT is intimately linked with CSC generation and maintenance. Thus, regulation of EMT and CSC may have therapeutic benefits. Vitamin D is essential for bone metabolism. The active form of vitamin D (VD3) has shown anti-cancer properties though the molecular details remain unknown. We have recently found that VD3 reduces glucose utilization in breast cancer cells. Here, we assessed the role of VD3 on EMT and stemness.

Methods:

We treated lowly (MCF7) and highly (MDA-MB231) metastatic breast cancer cells without (control) and with VD3 (0.5 uM and 1.0 uM) for 24 hours. Cells were harvested and processed for Western blotting, quantitative-PCR, cell viability assay (MTT assay) and monolayer wound scratch assay.

Results:

VD3 decreased cancer cell viability, migration, and induced apoptosis. Additionally, VD3 reversed epithelial- mesenchymal transition by increasing E-cadherin and decreasing vimentin expression. VD3 also reduced the expressions of tumor growth factor beta (TGF-beta), and Twist which regulate EMT. VD3 also decreased the expression of stem cell markers- CD44 and NANOG. Interestingly, VD3 lowered P65-NFkB expression which is critical for maintaining stem cell population.

Conclusions:

Our results indicate a preventive and therapeutic potential of VD3 for breast cancer.

T-P-3012

Association Between Mild Hyperthyrotropinemia and Lipids in Children with Severe Obesity

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Background:

Severe obesity affects 4-6% of children and 80-90% of these children have dyslipidemia. Serum lipids track from childhood into adulthood and correlate with early changes of atherosclerosis in children and young adults. Thyroid stimulating hormone (TSH) levels are often at the upper limit of the normal range or slightly increased in children with obesity. The clinical significance of the mild elevation of TSH in children with severe obesity is unclear. Objective of this study was to examine the association between TSH and lipids in children with severe obesity.

Methods:

We reviewed medical records of children 2-18 years of age, with severe obesity (BMI > 120th percentile), who had simultaneous measurements of TSH and lipids between 1/1/2007 and 12/31/2015. Children with TSH <0.3 mIU/L and > 10 mIU/L were excluded. The relationship between TSH and lipids were evaluated using univariate/multiple variable linear and logistic regression.

Results:

The study included 834 children (age 13.8 \pm 4.1 yrs, male 46%, BMI: 36.9 \pm 7.6 kg/m²; BMI z score 2.6 \pm 0.4). 8.9% of children had TSH between 5-<10 mIU/L. TSH was positively associated with non-HDL cholesterol (β -1.74; p=0.02) after adjusting for age, sex and BMI z-score. Total cholesterol and non-HDL cholesterol were significantly higher in males with TSH 5-<10 mIU/L compared to those with TSH 0.3-<5 mIU/L (p=0.02 and p=0.02). Odds of elevated non HDL cholesterol (> 145 mg/dL) was higher in boys with TSH 5-<10 mIU/L relative to those with TSH 0.3-<5 mIU/L (OR:2.76, p=0.007). There was no association between lipids and free T4 levels.

Conclusions:

Mild hyperthyrotropinemia was found in 8.9% of children with severe obesity. Boys with severe obesity and slightly elevated TSH had

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higher total cholesterol and non-HDL cholesterol compared to those with normal TSH levels. Further studies are warranted to determine if lowering of slightly elevated TSH in children with severe obesity is associated with improvement in lipids

T-P-3013

Fasting Plasma Lactate Is a Biomarker of Metabolic Health

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Background:

Elevated resting/fasting lactate can be a useful predictor of metabolic diseases such as type 2 diabetes, the metabolic syndrome, and hypertension.

Methods:

We have extended these studies by investigating resting/fasting plasma lactate in subjects with the metabolic syndrome and in investigating whether interventions which are known to improve metabolic health change fasting lactate.

Results:

Severely obese subjects who were on an 800 kcal/day diet for a week prior to Roux-en-Y gastric bypass (RYGB) surgery, had lactate concentrations that were lower than the ad lib fed severely obese subjects. This finding suggests that even short-term calorie restriction reduces resting/fasting plasma lactate. As early as a week after RYGB, plasma lactate was reduced and 3 - 9 months post-surgery, resting/fasting lactate decreased even further. Fasting lactate was elevated in subjects with metabolic syndrome but was reduced after a 9 month exercise training intervention. In a subset of young, insulin-sensitive, non-obese subjects a lipid panel was also performed to investigate a possible relationship between fasting lactate and the ratio of total to HDL cholesterol. This subset had a ~3-fold range of fasting lactate concentrations and there was a significant positive correlation between fasting lactate and cholesterol/HDL ratio.

Conclusions:

These data confirm that lactate is elevated in patients with impaired metabolic health and that interventions that improve metabolic health reduce plasma lactate.

T-P-3014

Effect of Capsicum Chinense Extract on Body Weight and Metabolic Parameters in Obese Wistar Rats

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Background:

Capsaicin and capsiate has been shown to prevent weight gain and to improve parameters such as insulin resistance; plasma glucose, triglycerides and cholesterol. Capsicum chinense is the commercial variety of chili peppers which contains the highest concentration of capsaicin and capsinoids. It is not known whether an extract containing a combination of these compounds can have better efficacy than capsaicin and capsiate.

Methods:

48 Male Wistar rats were randomized into 6 experimental groups. Obese groups were given 30% sucrose in drinking water for 16 weeks; Control groups were given water; all groups were fed with standard chow. Pharmacological treatment was performed as follows: Capsaicin and capsiate groups were treated with 0.5 mL of 0.075% topical capsaicin or capsiate for 28 days; Capsicum chinense extract was given topically in a cream formulation at 0.1% for 28 days. Water, food consumption and body weight were measured daily. Oral glucose tolerance tests were performed prior and after treatment. After treatment the animals were killed by decapitation, trunk blood was taken to determine plasma glucose, triglycerides and total cholesterol by colorimetric assays. Insulin assaying was performed by ELISA and Matsuda index for insulin sensitivity was calculated for each group. Blood, and organs were excised for oxidative stress assays and histological analysis

Results:

Glucose, triglycerides and total cholesterol levels were significantly improved by capsaicin, capsiate and capsicum in obese animals. Controls did not show significant changes. Oral glucose tolerance curves were significantly improved by all pharmacological treatments and capsicum extract showed the highest improvement. Matsuda index was lower for capsicum and capsaicin.

Conclusions:

Capsicum chinense extract showed better improvement in insulin sensitivity than capsaicin and capsiate. Further characterization of the components in the extract is needed to determine the optimal combination of capsacinoids and capsinoids.

T-P-3015

FGFR1 Signaling Links Obesity to ER-Positive Breast Cancer Progression in a Murine Xenograft Model

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Background:

The prevalence of obesity in US adult women has increased to 40%. Although it is clearly linked to both an increased risk and a poorer prognosis for breast cancer, obesity is not routinely included as a biological variable in preclinical breast cancer studies.

Methods:

We created a murine model of obesity and breast cancer using the immune-compromised Rag1-null strain, thermoneutral housing, and a diet high in fat and sucrose to study progression of estrogen receptor (ER) positive patient-derived xenograft (PDX) tumors, which represents the most common breast cancer subtype. Our studies focused on the postmenopausal environment, which is tumor promotional in the context of obesity.

Results:

We found that obese mice do not produce detectable aromatase or estradiol in adipose tissue after ovariectomy (OVX), creating an environment similar to a postmenopausal woman on aromatase inhibitors. Despite this, obesity supported ER positive tumor progression after OVX and estrogen withdrawal (EWD). Compared to lean mice, tumors from obese, OVX mice had significantly higher levels of activated FGFR1, which is a driver of acquired resistance to breast cancer endocrine therapy. During EWD-induced weight gain, obese mice produced elevated levels of the FGFR1 ligand FGF1 in mammary adipose tissue, and FGF1 levels correlated with both the rate of weight gain ($r=0.67$, $p=0.02$) as well as the mammary adipose tissue mass ($r=0.88$, $p=0.0003$). Tumors with activated FGFR1 also had 2-fold lower expression of the PTPN18 phosphatase. In human studies, low PTPN18 expression predicts a poor prognosis for ER-positive breast cancer patients, and our in vitro studies showed that loss of PTPN18 in breast cancer cells resulted in prolonged signaling through the MAPK pathway following a single treatment with FGF1.

Conclusions:

Together, these data suggest that both tumor intrinsic and extrinsic factors, unique to obesity, converge to support ER-positive breast cancer progression even in the absence of estradiol.

T-P-3016

NMR Metabolomics of Non-Alcoholic Fatty Liver Disease (NAFLD)

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Background:

Metabolite biomarkers for type 2 diabetes (T2D) have been studied extensively, whereas small molecule metabolite markers of non-alcoholic fatty liver disease (NAFLD), which has some shared risk factors with T2D, have not been as widely characterized. Since both T2D and NAFLD are closely associated with Metabolic Syndrome, systematic changes in metabolite levels may correlate with the progression of NAFLD.

Methods:

Methods: An NMR metabolomics study (1H, 600 MHz) was conducted on human serum from 63 patients exhibiting varying degrees of progression of liver damage. Aqueous metabolites were obtained by acetonitrile inactivation and extraction. The subjects are all middle-aged females of similar age and ethnicity. Targeted profiling of NMR spectra was conducted by a single, blinded rater.

Results:

Multivariate analyses have been performed on untargeted and targeted data. For the latter, 45 aqueous metabolites were profiled. Work to date suggest some metabolites of interest, such as 3-hydroxybutyrate, that vary across the cohort and the groupings.

Conclusions:

The data are complex, as patients with NAFLD at different stages also present other diagnoses which may introduce confounding variation in metabolite levels. Still, a small number of aqueous metabolites show variation across groups, suggesting that metabolomics of NAFLD warrants further investigation.

T-P-3017

Walnut Oil Has Potential Antitumor and Antimetastatic Effects on Esophageal Cancer Cells in Vitro

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Background:

Esophageal cancer (EC) has a poor prognosis, although different treatment approaches are performed. Walnut contains many components such as fatty acids to fight against cancer. Eventhough anticarcinogenic effects of some individual fatty acids in walnut were showed, the effects of walnut oil (WO) on EC have not been studied before. We aimed to investigate antitumor and antimetastatic potential of walnut oil (WO)

Methods:

The fatty acid composition of extracted WO was determined using GS-MS. OE19 human EC cells were treated with different concentrations of WO and then cell viability of the cells were measured with WST-1 proliferation assay. Apoptotic/necrotic cell death and cell cycle distribution were evaluated with flow cytometry analysis. Antimetastatic effects of WO were measured with adhesion,

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colony formation and wound healing assays.

Results:

WO decreased the viability of the cells in a dose dependent manner. 20 mg/ml WO reduced cell viability by ~ 50% when compared to control ($p < 0.05$). It induced cell cycle arrest in G0/G1 phase while stimulated necrosis in the cells. Adhesion, migration and colony formation abilities of the cells are suppressed after WO treatment.

Conclusions:

We demonstrated that high-dose and short-term treatment with WO caused anticarcinogenic and antimetastatic effects in an esophageal cancer cell line. These data make WO a potential therapeutic agent and provide a strong basis for in vivo studies for esophageal cancer.

T-P-3018

Adropin Modulates Hepatic Gluconeogenesis Through Inhibition of Glucagon Action

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Background:

Adropin is a secreted peptide linked to dietary macronutrient intake and the control of glucose and fatty acid metabolism. Liver adropin expression is sensitive to diet and obesity, however the role of adropin in liver is not known.

Methods:

The physiological functions of adropin expressed by hepatocytes were assessed using liver specific adropin knock out mice (LAdrKO). Direct effects on hepatic glucose metabolism were assessed using primary cultured hepatocytes from wild type C57BL/6J (WT) and LAdrKO mice.

Results:

While hepatic expression was suppressed by 80% in LAdrKO, plasma adropin concentrations were normal. Higher blood glucose excursions following intraperitoneal pyruvate injections in male and female LAdrKO suggests enhanced glucose production. Liver expression of phosphoenolpyruvate carboxykinase (PCK1), the primary control point of gluconeogenesis, is increased in LAdrKO of both sexes. In hepatocytes from male WT treated with 100ng/ml glucagon and 5mM pyruvate to induce gluconeogenesis, adropin (100 nM) suppressed gluconeogenesis. Under similar treatment conditions, hepatocytes derived from LAdrKO exhibit increased gluconeogenesis compared to floxed controls. Preliminary data suggests the adropin receptor (AdropR) belongs to the family of seven transmembrane (TM) receptors that activate trimeric G protein complexes containing the inhibitory alpha subunit (Gi), reducing cAMP accumulation by suppressing adenylyl cyclase (AC).

Conclusions:

The liver is not an essential source of circulating adropin. We propose a model whereby adropin acting locally influences hepatic glucose metabolism through an interaction between a putative Gi-coupled AdropR and glucagon receptors, which are 7 TM receptors that activate AC through G proteins containing the stimulatory subunit (Gs).

T-P-3019

Sleep Restriction Alters Glucose Regulatory Hormones Following 8-week Calorie Restriction

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Background:

BACKGROUND Insufficient sleep has been shown to adversely affect glucose metabolism. Most previous studies have restricted sleep to a very short duration or examined only a few nights of sleep restriction. It is less well known whether moderate sleep restriction over an extended period affects glucose metabolism. This study examined how glucose and its regulatory hormones change with moderate sleep restriction during a caloric restriction (CR) program.

Methods:

METHODS Sedentary, obese adults (BMI=32±3 kg/m²; age=43±5 years) were randomized into an 8-week CR group (n=11) or CR plus sleep restriction group (CR+SR, n=9). All participants were instructed to restrict daily caloric intake to 95% of each individual's measured resting metabolic rate. SR for the CR+SR group was up to 90 minutes reduction from their regular sleep duration for 5 days each week, and ad libitum sleep on the other 2 days of the week. Fasting blood concentrations of glucose, insulin, glucagon, gastric inhibitory polypeptide (GIP), glucagon-like peptide-1 (GLP-1), and visfatin were determined both pre- and post-intervention.

Results:

RESULTS There were similar reductions between CR and CR+SR in body weight (CR: 3.1±3.1%, $p=0.012$; CR+SR: 3.7±2.1%, $p=0.001$), fasting glucose, GIP, and GLP-1. However, significantly different changes in the concentrations of glucagon, insulin, and visfatin between the two groups were found. In CR, glucagon reduced (1823±332 to 1539±255 $\mu\text{g/mL}$, $p=0.016$), and insulin and visfatin were unchanged ($p > 0.05$ for both). In CR+SR group, none of glucagon, insulin, and visfatin significantly changed ($p > 0.05$ for all).

Conclusions:

CONCLUSION A small amount of weight loss induced changes in glucose and its regulatory hormones suggesting improved glucose

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metabolism in individuals going through CR. However, some of these changes were different with addition of moderate sleep restriction on 5 nights each week, despite similar amount of weight loss.

T-P-3020-DT

Ziprasidone's Direct Effect on Glucose Dysregulation in a Genetically Susceptible Patient

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Background:

Among atypical antipsychotics, Ziprasidone is reported to have a more favorable metabolic side effect profile. Switching to ziprasidone in patients with metabolic side effects from other antipsychotics is reported to reduce the metabolic burden (Takeuchi et al., 2010, Chen et al., 2012.). The latter has been attributed to decreased body weight, mostly observed in a select genetically predisposed patient population. The present case report is significant for the development of a hyperosmolar hyperglycemic state associated with marked weight loss, after switching from risperidone to ziprasidone.

Methods:

42-year-old male with history of HTN, PTSD, Bipolar disorder, and pre-diabetes not requiring medication was admitted with circulating glucose concentrations greater than 1000 mg/dL, and Hemoglobin A1c of 16.2%. Laboratory findings were diagnostic of hyperosmolar hyperglycemic state, rather than diabetic ketoacidosis. Complete medical work up, and review of concomitant medications (including psychotropic treatment) did not identify an alternative etiology for the acute glucose decompensation.

Results:

Acutely, patient was managed with intravenous hydration, and insulin infusion, and then started on long acting insulin (Lantus). Medical work up did not show any reason for an unintentional weight loss of over 70 lbs., with decrease in body weight (lb.) from 252 to 178, and BMI (kg/m²) from 29 to 24 over a 5-month period, after treatment switch to ziprasidone from risperidone due to weight gain. Work-up included genetic testing, which proved to be positive for homozygous MTHFR C67TT.

Conclusions:

This case highlights the association of MTHFR polymorphisms with weight loss and marked hyperglycemia, after switching to Ziprasidone. Discordant hyperglycemic state and weight loss in this patient could suggest a primary role of ziprasidone in glucose dysregulation of a genetically predisposed population.

T-P-3021

De Novo Synthesis of Muscle Ceramides and Insulin Signaling/Glucose Utilization

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Background:

High plasma FFA negatively impact muscle glucose disposal; however, the mechanisms behind this are still not fully understood, especially in humans. Previous reports have indicated that elevated intramyocellular ceramides may interfere with AKT activation (phosphorylation)—a major regulatory step in the insulin-signaling cascade.

Methods:

10 Lean and 10 obese men and women underwent muscle biopsies before and at the end of a single step hyperinsulemic-euglycemic clamp. A [U-13C]palmitate infusion was started 5-h prior to the clamp and replaced with a 5-h infusion of [2H9]palmitate during the clamp to assess the contribution of plasma FFA to de novo C16-ceramide synthesis under basal and hyperinsulinemic conditions, respectively. We measured phospho- and total Akt in total, subsarcolemmal (SS), and intramyofibrillar (IMF) portions of muscle using a capillary western blot Western approach. Ceramide species concentration and isotopic enrichment were measured with LC/MS/MS. Insulin sensitivity was calculated using glucose infusion rate adjusted for fat free mass and plasma insulin over final hour of the insulin clamp.

Results:

AKT phosphorylation in obese subjects appeared normal while failing to initiate glucose uptake in comparison to lean individuals. We found that greater contribution of plasma palmitate to de novo synthesized C16:0-ceramides within the IMF fraction was negatively correlated with Akt activation ($P < 0.05$, $r^2 = 0.42$) and that fractional de novo ceramides from FFA in total muscle was negatively correlated with glucose uptake ($P < 0.01$, $r^2 = 0.47$). There was no correlation with a specific ceramide species concentration with either Akt phosphorylation or glucose uptake.

Conclusions:

These finding suggest that newly synthesized ceramides from plasma FFA are more likely to negatively regulate activation of AKT and downstream effectors of glucose uptake than pre-formed ceramides.

T-P-3022

Effect of Omega-3 Fatty Acids on IL1 and TNF Mediated CD36 Protein Expression and Function

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Background:

Obesity has become one of the most significant public health problems facing the world today. Obese persons face increased risks of mortality and morbidity due to obesity-associated diseases such as Type II diabetes mellitus, hypertension and hyperlipidemia. CD36 is a multi-specific membrane glycoprotein that has been identified to play an important role in membrane transport of long-chain fatty acids (LCFAs). Defects in Fatty acid translocase (FAT/CD36) have been identified as a major factor in insulin resistance and defective fatty acid and glucose metabolism. In this study, we examine the roles of IL-1 and TNF on FAT/CD36 expression by utilizing the differentiated 3T3-L1 adipocytes. We also examine the effect of omega-3 fatty acids on IL-1 and TNF mediated CD36 expression.

Methods:

3T3-L1 preadipocytes were induced to the differentiated adipocyte. Western blot analysis was used for CD36 protein expression. Signaling pathways, PPAR-gamma and ERK1/2, were examined for mechanism analysis. Data are expressed as mean \pm SEM. Significant difference was assessed by student t test with $p < 0.05$ considered to be statistically significant.

Results:

FAT/CD36 mRNA expression was not detected at preadipocyte but was significantly increased at matured adipocyte; 2). In fully differentiated 3T3-L1 adipocytes, omega-3 fatty acid, eicosapentaenoic acid (EPA), significantly increased FAT/CD36 protein expression in a dose dependent manner; 3). IL-1 and TNF significantly decreased FAT/CD36 protein expression but EPA significantly prevents IL-1 and TNF-a mediated FAT/CD36 protein decrease; 4). IL-1 and TNF significantly decrease PPAR-gamma expression but EPA could not prevent this decrease; 5). IL-1 and TNF significantly increase phosphate ERK1/2 activity and EPA could prevent IL-1 and TNF mediated ERK1/2 activity increase.

Conclusions:

EPA could prevent IL-1 and TNF mediated CD36 protein expression decrease. Mechanism analysis indicates that ERK1/2 is involved in EPA mediated CD36 protein expression.

T-P-3023

Effects of Diet and Exercise vs Pioglitazone on Fatty Acid Uptake Into Intramuscular Triglycerides

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Background:

Intramyocellular triglycerides (imTG) are increased in insulin resistance, but it is unknown whether insulin sensitization via diet/exercise (DEX) or pioglitazone (Pio) affects FFA storage in imTG.

Methods:

Obese adults (BMI 28-36 kg/m²) were studied before and after 11.7 \pm 3.2 kg weight loss (n=19) or 30 mg Pio/day (n=20) for ~19 weeks. Blood and muscle samples were taken before and after a 6 hour [U-13C]oleate infusion combined with either a 1.0 mU/kgFFM/min hyperinsulinemic, euglycemic clamp (n=20) or saline infusion (n=19). [U-13C]oleate accretion rates in imTG (imTG \times Δ imTG-[U-13C]oleate MPE over 6 hr) \div plasma [U-13C]oleate MPE) were calculated as nmol FFA/g muscle/hr.

Results:

Baseline characteristics and the statistically significant improvements in muscle glucose uptake were similar in DEX and Pio. Baseline oleate storage in imTG was 45 \pm 12 vs. 42 \pm 12 (\dagger) in saline and clamp groups. ImTG concentrations (μ mol/g wet weight) did not change significantly with DEX (2.4 \pm 0.5 to 2.1 \pm 0.4) or Pio (2.0 \pm 0.3 to 2.1 \pm 0.4). The insulin suppression of oleate flux (*) and imTG oleate uptake (43 \pm 16 to 18 \pm 8 nmol/g/hr, $p=0.05$) was greater after DEX, but not by Pio (41 \pm 17 to 40 \pm 8 nmol/g/hr; \dagger). No differences were seen in the saline studies. We estimated that the percent of oleate flux stored in total body imTG (PctFx) at baseline was greater during the insulin clamp (37 \pm 7%) than saline studies (12 \pm 5%*). During the post-intervention insulin clamp, PctFx tended to decrease in DEX (40 \pm 13% to 29 \pm 6%) and increase in Pio (37 \pm 5% to 46 \pm 8%) (repeated measures ANOVA, $p=0.15$); there were no changes in PctFx in saline studies.

Conclusions:

Despite improving muscle insulin sensitivity, neither DEX nor Pio change imTG concentrations. The modest changes in intramyocellular FA trafficking do not appear to explain improved insulin action.* $p<0.05$; \dagger $p=NS$.

T-P-3024

Altered Insulin-Dependent Brain Glucose Metabolism During Obesity Depends on Specific Brain Areas

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Background:

There is a general agreement supporting altered brain metabolism in insulin resistant individuals. However, such association with obesity alone is unclear. Using quantitative PET, the extent of these metabolic changes involves either the entire brain (Hirvonen, 2011) or brain specific regions - some with increased and others with decreased metabolism (Anthony et al, 2006). Finally, the mechanisms of these modifications are unknown. We aimed to evaluate these modifications before and after diet induced obesity either in fasting or during hyperinsulinemic clamp condition.

Methods:

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Ten adults mini pigs were scanned using ¹⁸F-FDG before and after 5 months of obesogenic diet. Fat deposition was evaluated by CT scan and resting energy expenditure was quantified by indirect calorimetry. CMRglu were obtained through model analysis of PET data and continuous arterial radioactivity measurement.

Results:

All animals gained weight (75.3 ± 6.01 vs 32.7 ± 2.90 kg) as a result of equal increases in visceral and subcutaneous fat-mass. The energy expenditure was about doubled and the whole body insulin sensitivity was halved. In fasting state, CMRglu was slightly but significantly less in obese than in lean condition (9.5 ± 0.47 vs 11.8 ± 1.54 $\mu\text{mol}/\text{min}/100\text{g}$) and the same reduction was found brain-wide. During insulin stimulation, CMRglu of lean animals was unchanged compared to fasting irrespective of the brain structure. On the contrary, whole brain CMRglu was significantly increase by insulin in obese compared to lean condition as a result of increased uptake in the insula, prefrontal cortex and striatum (20.6 ± 0.30 vs 12.5 ± 0.30 $\mu\text{mol}/\text{min}/100\text{g}$). This was the consequence of an increased glucose transport only.

Conclusions:

In the fasting state, there is a reduction of the glucose metabolism both in the brain and in the whole body. On the contrary, during insulin clamp in obese condition, several brain structures increase their glucose metabolism as a result of an increased glucose transport.

T-P-3025

Effects of Vagal Nerve Stimulation (VNS) for Glycemic Control

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Background:

More than 90% type 2 diabetics are overweight or obese. VNS has been approved for obesity in humans; however, little has been reported on VNS for diabetes. The aims were to investigate the effects of VNS with various parameters on glycemic control in a rodent model of hyperglycemia.

Methods:

Eight SD rats were implanted with one pair of electrodes on the subdiaphragmatic vagus bilaterally; three electrodes were implanted subcutaneously around the chest area for recording electrocardiogram (ECG). The oral glucose tolerance test (OGTT) was performed in a number of sessions with VNS of various parameters in a randomized order by gavage feeding of 20% glucose (1g/kg); glucagon (0.5mg/kg, i.p.) was administrated right before the OGTT to induce acute hyperglycemia. The parameters tested included: A) Sham VNS; B) VNS with 2s on, 3s off, 0.2ms, 40Hz, 4mA; C) VNS with 0.6s on, 0.9s off, 40Hz, 3ms, 3mA; D) VNS with 10s on, 90s off, 0.5ms, 5Hz, 2mA.

Results:

1). VNS-C had no hypoglycemic effect during OGTT, instead, it had a trend to increase blood glucose at 60 and 90 min (176.6 ± 10.9 vs. 216.4 ± 24.7 mg/dl at 60min, $P=0.1$; 139.8 ± 5.5 vs. 199.8 ± 26.7 mg/dl at 90min, $P=0.07$). Both VNS with parameters B and D reduced blood glucose; VNS-D showed a more potent hypoglycemic effect than B; it reduced blood glucose by 25.4% at 60min, 18.5% at 90min and 19.5% at 120min compared to sham VNS. 2). VNS-D significantly increased vagal activity assessed from the ECG. The high frequency in the power spectrum of the heart rate variability, representing vagal activity, was significantly increased from 0.61 ± 0.03 at baseline to 0.74 ± 0.02 with VNS-D ($P=0.005$).

Conclusions:

VNS at a low frequency and with a low duty cycle significantly reduces blood glucose; the hypoglycemic effect of VNS may be attributed to the activation of vagal activity. Further investigations are needed to explore hypoglycemic effects and mechanisms of VNS with these specific parameters in a T2DM animal model.

T-P-3026

High-Resolution Plasma Metabolomic Profiling of Adults With Normal Weight Obesity

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Background:

Normal weight obesity (NWO) places seemingly lean persons at risk for metabolic disease. Whether there are specific metabolic derangements driving the prevalence of NWO or its adverse outcomes is unknown. We used high-resolution metabolomics (HRM) to compare the plasma metabolic profiles of adults classified as lean, NWO, or overweight/obese.

Methods:

Subjects were 179 adults with baseline plasma HRM data (via liquid chromatography/ultra-high resolution mass spectrometry). NWO and lean had BMI <25 kg/m² and distinguished by NWO having % body fat (via DEXA) $>30\%$ in women and $>23\%$ in men. Differentiating metabolomic features were determined with linear regression models and likelihood ratio test, adjusting for age, sex, race, and disease, and controlling the false discovery rate. Mummichog was used for pathway enrichment. Principle component analysis (PCA) was used for visualizing global metabolic patterns among the groups.

Results:

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26 subjects were lean (14%), 43 had NWO (24%) and 111 were overweight/obese (62%). Of 10,210 detected features, 222 differed between the groups ($q < 0.20$). These were enriched within the linoleate metabolism pathway and 9 amino acid metabolism pathways. In PCA of the 222 features, 53% of the variance was explained by the first 5 principal components (PC). NWO overlapped with overweight/obese and separated from lean by PC 1, 3 and 4. The top differentiating features within these PC included database matches to fatty acid amides, glycerophospholipids, food additives, and plant compounds. Over half (57%) of differentiating features did not have accurate mass matches to metabolites in the Human Metabolomics Database.

Conclusions:

In this adult population, the metabolomic profile of NWO is distinct from lean individuals and has similarities to overweight/obese adults. Further study is needed to test for correlations among discriminatory features, especially to understand whether differences in amino acid and lipid pathways could be linked to food additives or plant compounds.

T-P-3027

Relationship Between Metabolic Flexibility in Glucose-stimulated Conditions and Glycemic Homeostasis

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Background:

Metabolic flexibility (MetF) is considered as an index of health but the supporting evidence is elusive. Its assessment using the hyperinsulinemic-euglycemic clamp is non-physiological and does not take into account confounders such as glucose disposal rate (GDR). We compared MetF under glucose clamp and OGTT conditions after adjusting for GDR and body size, respectively. Adjusted MetF was then related to glycemic markers.

Methods:

In 30 healthy volunteers (15 males; 35 \pm 12 y; BMI 27 \pm 4 kg/m²), glycemia, insulinemia and respiratory quotient (RQ) were measured before and for 4 h after a 75-g OGTT. Two days later, a 2-h clamp (120 mU/m²/min) was conducted with simultaneous measures of fasting and steady-state RQ. MetF was defined as the increase in RQ (Δ RQ) during the clamp or 1 h after OGTT. Insulin sensitivity was estimated by the OGIS index. In a second study, glycemia, insulinemia and RQ were measured before and for 3 h after a 75-g OGTT in 49 healthy volunteers (22 males; 34 \pm 9 y; BMI 26 \pm 4 kg/m²). MetF was adjusted for GDR (clamp) or body size (OGTT) and expressed as residuals. Correlations between adjusted MetF and glycemic control (fasting and 2-h glucose, and insulin sensitivity) were explored by Spearman test.

Results:

Δ RQ-clamp correlated with GDR ($r=0.50$; $p<0.01$) and Δ RQ-OGTT with glucose dose (in g/kg of weight; $r=0.46$; $p=0.01$). Residuals of MetF (i.e. MetF adjusted for GDR [clamp] or glucose dose in g/kg weight [OGTT]) were directly associated ($r=0.39$; $p=0.04$). However, adjusted MetF did not relate with markers of glycemic control. In the second study, the association between Δ RQ-OGTT and glucose dose (in g/kg of weight) was confirmed ($r=0.46$; $p<0.001$). In turn, adjusted Δ RQ-OGTT was unrelated with glycemic control.

Conclusions:

Assessment of MetF should consider the amount of glucose supplied per unit of body mass. MetF-clamp and MetF-OGTT were marginally related. MetF does not seem to affect glycemic homeostasis.

T-P-3028

Improvement in Glycemic Control In Mice of Different Age Groups

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Background:

Obesity and advanced age are often associated with impaired glucose tolerance. Reduction of obesity to improve glucose intolerance is not pursued aggressively in the elderly. In vitro and in vivo studies show that adenovirus 36 (Ad36) improves glycemic control by increasing cellular glucose uptake, thereby reducing insulin secretion. To test if Ad36 will provide a template to improve age-associated glucose intolerance without weight loss, this pilot study determined the effect of Ad36 on glycemic control in mice of different age groups.

Methods:

C57Bl/6 mice 6, 12 and 20-month old on chow diet were divided into two weight-matched groups (mock infected or Ad36 infected; $n=6$ each). Body weight was recorded weekly post infection (p.i.) and fasting glucose measured (week 0, 4, 8 and 20 p.i.). To determine glucose disposal, blood glucose and serum insulin was measured during glucose tolerance test (week 0, 6 and 16 p.i.). At week 20 p.i., animals were sacrificed, when they were 11, 17 or 25 mo old, respectively.

Results:

Mice from all age groups showed improvement in glucose clearance post Ad36 infection, but most profound effect was observed in 6-month old mice. In 6 mo old mice, Ad36 reduced area under the glucose and insulin curves by 1.2 fold at wk 8 and 16 p.i. At 20 wk, Ad36 reduced serum insulin response to food by 68% ($p=0.03$) in 6 mo old mice and by 19% and 55% in 12 and 20-month old Ad36

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mice respectively, compared with control mice.

Conclusions:

Ad36 improves glycemic control in different age groups of mice by maintaining or clearing glucose levels without increasing insulin secretion. This could be considered as the insulin sparing action of Ad36. The results are very encouraging despite a small number of animals per group in this preliminary study and these beneficial effects provide strong evidence for developing Ad36 as a novel tool to attenuate age-associated glucose intolerance.

T-P-3029

Quadriceps Fat Content Correlates With Cellular and Whole Muscle Function in Older Women

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Background:

Adiposity appears to adversely impact skeletal muscle function in older adults, but a molecular or cellular basis for this observation has not been elucidated. The aim of this study was to examine the relationship between thigh adipose tissue and skeletal muscle function, from the molecular to the whole muscle level, in older adults.

Methods:

Healthy, older (age=68±1 years, BMI=26±1 kg/m²) men (n=19) and women (n=24) had their thigh composition characterized by computed tomography and knee extensor power at 60 and 180 degrees/s determined via isokinetic dynamometry. Isometric tension (force per cross-sectional area) and myosin-actin cross-bridge kinetics were measured using single muscle fibers biopsied from the vastus lateralis.

Results:

Thigh percent fat was negatively associated with isokinetic power output at 60 and 180 degrees/s (r²=0.41). At the molecular level, myosin attachment time was reduced with greater thigh percent fat, which may be a potential mechanism for lower whole muscle power with greater thigh adiposity. In older women, quadriceps muscle density (Hounsfield units) was positively related to isokinetic power output at both contractile velocities (r²=0.18). This finding was likely explained by the relationship between muscle density and isometric tension in myosin heavy chain (MHC) I and IIA single fibers (r² range=0.30-0.43), as well as muscle density and myofibrillar lattice stiffness in MHC IIA fibers (r²=0.25). Notably, the relationships between quadriceps muscle density and molecular/cellular/whole muscle contractile function were not present in men, suggesting that intramuscular fat content has greater importance in older women.

Conclusions:

Greater thigh fat percent is associated with poorer whole muscle function in older men and women. However, in women, but not men, decreased quadriceps muscle density is strongly related to reduced knee extensor power output, and this may be partially explained by lower isometric tension in MHC I and IIA muscle fibers.

T-P-3030 - WITHDRAWN

T-P-3031

The Implantation and Removal of the EndoBarrier Affects Glucose Homeostasis in a Lean Canine Model

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Background:

Placed endoscopically, the EndoBarrier covers the first 60 cm of the small intestine with a nonpermeable liner, mimicking an intestinal bypass. This device has been shown to improve glucose metabolism in obese humans with type 2 diabetes.

Methods:

Seven lean, male mongrel hounds with normal glucose homeostasis underwent an intravenous glucose tolerance test (IVGTT) at baseline (BL), week 1 and week 6 after the EndoBarrier implant (I1 and I6, respectively), and week 1 and week 6 after removal (R1 and R6, respectively).

Results:

All dogs lost weight post-implant with an average weight loss of 8% at I1 that was maintained through I6. By R6, the dogs returned to BL weight. Following implant, there was a decrease from BL in glucose tolerance as reflected in the 10-19 min Kg value (BL: 3.18, I1: 2.12, I6: 2.23 %/min) that was reversed following removal (R1: 4.37, R6: 4.02 %/min). This accompanied a trend to decrease in glucose effectiveness (BL: 0.052, I1: 0.028, I6: 0.043 1/min), which also reversed following removal (R1: 0.065, R6: 0.042 1/min). Trends to increase above baseline for insulin sensitivity (BL: 4.15, R1: 6.82, R6: 4.45 1/10⁴ μU/mL/min) and pancreatic responsiveness (BL: 501, R1: 524, R6: 518 μU/mL) occurred following removal, despite no changes during implant. Interestingly, EndoBarrier placement impacted the rate at which glucose levels returned to basal (40-70 min) following the nadir after the insulin bolus. This rate of return was retarded after implant (BL: 1.22, I1: 0.16, I6: 0.30 mg/dL/min) but returned to BL following removal (R1: 1.09, R6: 0.51

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mg/dL/min).

Conclusions:

Placement of the EndoBarrier in a lean canine model disrupted normal glucose homeostasis. Removal of the device returned the values back to BL and trended towards an increase in the unchanged parameters, suggesting that the EndoBarrier affected counterregulation but that implant duration of 6 weeks did not create lasting effects. Further studies to elucidate the mechanism are ongoing.

T-P-3032

Pilot Trial of a Remotely-delivered Health Coaching Program to Limit Gestational Weight Gain

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Background:

Excessive gestational weight gain (GWG) occurs in up to 50% of American women of all pre-pregnancy weight categories and is associated with perinatal complications, as well as postpartum weight retention (PPWR), a risk factor for future obesity. Remotely-delivered, behavioral weight loss interventions, shown to lower weight in the general population, are an appealing approach for weight control in pregnant women but have not been formally tested. This pilot study tests the feasibility and acceptability of a remotely-delivered, behavioral health coaching program to limit GWG.

Methods:

To date, healthy pregnant women (< 14 wks gestational age) have been randomized to either a health coaching (N=9) or health education intervention (N=8). The health coaching program has a 12-wk intensive, weekly phone call phase (14-25 wks gestational age), followed by biweekly calls up through delivery. We developed Learning Materials pertaining to diet, exercise, and overall wellness in pregnancy. Participants receive individualized IOM calorie and exercise recommendations and are counseled to self-monitor weight, calories and exercise using a free, accessible mobile phone application.

Results:

Participants were 17 pregnant women (Mean age = 32 yrs; Mean BMI = 29) recruited from two prenatal clinics at a single academic institution. Intervention participants completed 80% of coaching calls and 71% of Learning Materials and met self-monitoring goals of weekly weights and daily calories and exercise minutes 81%, 71%, and 24% of the time, respectively.

Conclusions:

Preliminary findings support the feasibility and acceptability of a remotely-delivered, behavioral weight control intervention in pregnancy. Next steps include scaling the program into a community-based setting, translating intervention materials into Spanish to broaden applicability, and formally testing the effects of the intervention on GWG.

T-P-3033

Overweight Pregnant Women's Low Psychological Health and Control: Possible Barriers to Self-Regulation

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Background:

Depression, anxiety, and perceived stress negatively affect appetite and motivation. During pregnancy, these psychobehavioral factors may make it difficult to self-regulate weight and sustain healthy eating and exercise behaviors. This study examined the extent to which maternal depressive/anxiety symptoms/perceived stress were related to self-regulatory control.

Methods:

Overweight/obese pregnant women from the Healthy Mom Zone Study completed a 6-week intervention. Data were collected at pre/post intervention for depression (CESD), anxiety (STAI), and maternal temperament (Rothbart Adult Temperament Questionnaire; RATQ), and weekly for perceived stress (PSS). RATQ subscales used were: Attentional Control (focus/shift attention), Activation Control (perform action when tendency to avoid) and Inhibitory Control (suppress inappropriate behaviors).

Results:

At pre-intervention, 17% reported depressive symptoms, 27% reported anxiety symptoms and 11% reported stress. Rates sustained for depression (17%), increased for anxiety (40%) and decreased for stress (0%) at post-intervention. Women with higher pre-intervention depression and perceived stress had lower self-regulatory attention and activation control ($R=-0.51$, $p=0.03$; $R=-0.58$, $p<.01$ and $R=-0.62$, $p<.01$; $R=-0.46$, $p<.05$). Higher anxiety was associated with lower self-regulatory attention ($R=-0.45$, $p<.05$).

Conclusions:

These findings suggest that poor psychological well-being is related to lower personal control which could be a barrier to women's ability to self-regulate. That is, avoid or focus on tasks they perceive as more enjoyable than engaging in behaviors such as exercise/healthy eating. Further research is warranted to determine if prenatal interventions should target these factors to maximize intervention effectiveness, and increase the likelihood of impacting pregnancy outcomes such as weight gain.

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T-P-3034

Body Morph Assessment as a Tool for Assessing Body Image Dissatisfaction in Pregnancy

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Background:

Maternal obesity and excessive gestational weight gain (GWG) may be related psychological constructs associated with body image perception. We conducted a cross-study in a healthy, pregnant population to investigate whether body dissatisfaction is related to maternal obesity and excessive GWG and to test whether a computer-based assessment of body dissatisfaction would be a more accurate predictor of obesity-associated body dissatisfaction than questionnaires.

Methods:

Body dissatisfaction was assessed in 111 normal-weight (n=18), overweight (n=21) and obese (n=72) pregnant women in late pregnancy (35-37 weeks). Body dissatisfaction was determined using the Body Morph Assessment 2.0 (BMA) by subtracting the self-identified ideal body size scores from the self-identified current body size scores. The body shape questionnaire (BSQ) and body area satisfaction (BASS) questionnaire were also administered to assess body image. GWG was also tracked to determine appropriate or excess GWG according to the IOM 2009 GWG guidelines.

Results:

The participants (28.5±4.5 years) consisted of 68% Non-Hispanic White and 24% Non-Hispanic Black. Forty-five percent were nulliparous, 40% primiparous, and 15% multiparous. Body dissatisfaction scores by BMA 2.0 was positively correlated to maternal BMI (r=0.267, p=0.005) and was not discordant between ethnic groups or parity. Over 65% of the overweight and obese pregnant women exhibited excessive GWG, but body dissatisfaction score was not significantly different as a function of excess GWG (p=0.77). No correlations were observed for body dissatisfaction and body image assessed by BSQ and BASS questionnaires.

Conclusions:

Pregnancy is a vulnerable period in which maternal BMI at conception and GWG are important to the health of mother and infant. Computer-based programs are more sensitive than self-reported questionnaires in evaluating perceived body image. Improved assessment of at-risk populations using the BMA 2.0 may identify attitudes and behaviors towards GWG.

T-P-3035

Eating Behavior Changes of Youth With Obesity on Carbohydrate-modified and Portion-controlled Diets

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Background:

This study's objective was to determine whether two distinct carbohydrate-modified diets and a standard portion-controlled (PC) diet differentially impacted children's eating behaviors, and whether eating behavior scores predicted lower body mass index (BMI) among children with obesity.

Methods:

Children (n=102) aged 7-12 years with obesity were randomly assigned to a 12-month intervention of a low-carbohydrate (LC), reduced glycemic load (RGL) or standard PC diet. The Three-Factor Eating Questionnaire (TFEQ) was completed at baseline, 3, 6 and 12 months by parents to characterize their child's hunger (H), disinhibition (D) and cognitive restraint (CR). Baseline and follow-up TFEQ scores by diet were evaluated relative to BMI status over time.

Results:

All diet groups showed increased CR and decreased H and D from baseline to 3 months, with differences from baseline remaining at 12 months for CR and H. Lower BMI status during study follow-up was associated with different TFEQ scores by diet group (LC and RGL: higher CR; PC: lower H), adjusting for sex, age, and race. Higher CR at follow-up was predicted by race and higher baseline CR; only lower H at baseline predicted lower H at follow-up.

Conclusions:

Eating behaviors improved significantly with all diets during the initial 3 months; higher CR and lower H were sustained at treatment's end. BMI outcomes were associated with different eating behaviors in carbohydrate-modified diet groups compared with portion-controlled diets. Targeting diets to children with obesity with specific baseline characteristics may lead to improved outcomes.

T-P-3036

Providers' Involvement of Parents, Families, and Family Dynamics in Youth Weight Management Programs

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Background:

Family-based interventions are the gold standard for the treatment of pediatric obesity, yet it is largely unknown how providers are involving family members in treatment. Our objective is to describe how providers in pediatric weight management programs involve family members, experience barriers, and address challenging family dynamics.

Methods:

A survey was administered to providers at comprehensive weight management clinics in the US and Canada. Analyses included descriptive statistics and chi-square tests at provider (N=71) and clinic (N=47) levels.

Results:

The majority of clinics had medical (n=44) and allied health providers (n=45) on their treatment teams; less frequently behavioral health (n=39) and specialty providers (n=24). Stage of care at clinics included: stage 1 (n=2), stage 2 (n=9), stage 3 (n=18), and stage 4 (n=18). Providers reported using family-centered (n=53) care more than family-based (n=45) and family-focused (n=32) care. Providers assessed patients and parents' perspectives, but not siblings or other family members' motivation, weight/medical history, dietary and activity behaviors, goals, and barriers. Providers asked patients' perspectives about parents' aforementioned behaviors, and siblings' dietary, activity, and sedentary/screen time behaviors, and weight/medical history. The most frequent barriers reported by providers about involving family members included the family's challenging dynamics (n=66), resistance to change (n=64), and lack of resources (n=61). The most challenging family dynamics included divorce/separation (n=63), parent-child conflicts (n=60), parenting skills (n=59), and expectations of child's responsibility (n=59).

Conclusions:

Given the importance of involving family members beyond parent-child dyads in treatment, more research is need to develop and test methods to address barriers, challenging family dynamics, and training for treatment teams.

T-P-3037

Evaluating the Fit for Life Program in Altering Knowledge, Behaviors and Health of 4th and 5th Graders

Ariana Munger, BA *Omaha NE*, Frances Hindt, BS *Omaha NE*, Cristina Fernandez, MD *Omaha NE*

Background:

Fit for Life (FFL) is an educational program focused on counteracting the growing epidemic of childhood obesity. It is committed to promoting awareness of proper nutrition and exercise practices and to the development of healthy lifestyles in elementary school-aged children. This study's purpose is to assess its effectiveness in altering perceptions and knowledge of healthy lifestyles as well as behaviors and physical health of the program participants.

Methods:

This program was conducted in February and March of 2017 and consisted of daily lessons led by the classroom teachers in addition to five interactive sessions led by medical students. The participants were surveyed using multiple-choice-style questions both prior to and after completing the program about their perceptions and knowledge of a healthy lifestyle and daily behaviors. BMI scores were calculated based on height and weight measurements taken before and after the program and were converted into corresponding z-scores for statistical analysis.

Results:

Paired T-tests yielded significant changes in height (+0.65in, $p<0.001$) and weight (+2.2lbs, $p<0.001$) over the course of the month-long program. Neither changes in BMI (+0.05, $p=0.59$) over the month nor changes in BMI z-score (-0.002, $p=0.95$) were found to be significant. Year-long BMI differences for participants taking part in the program last year showed a statistically significant increase (+0.98, $p<0.001$), but BMI z-scores (+0.03, $p=0.62$) for the same time period showed no difference. Post-program: 20% reported talking to their parents more about healthy food 50% decreased their sweets intake 32% increased fruit and vegetable intake 32% decreased screen time 87% felt knowledgeable about healthy lifestyle choices 95% cared about staying healthy 95% reported knowing what constitutes a healthy meal 98% reported confidence in having things to do to stay active Of the students who participated last year: 93% continued their goals from last year to some degree

Conclusions:

T-P-3038

Health Behavior Outcomes in a Pediatric Weight Management Program

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Background:

Weight management success is typically based on improvements in patient weight, BMI, or co-morbidities. Families may experience positive changes in other areas that improve quality of life, such as family relationships, home routines, and health behaviors. Our objective was to pilot test clinically-useful health behavior measures to capture improvements in these non-traditional outcomes.

Methods:

A brief 37-item survey was constructed, pulling items from validated instruments, which addressed family routines and functioning,

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cohesiveness, attitudes about nutrition and activity, sleep, and sedentary activity, as well as patient self-efficacy and resilience. Families were surveyed at intake and every 6 months; any patient with at least 2 completed surveys was included in the analysis. Changes in survey responses from initial to follow-up visit were analyzed using the Wilcoxon signed-rank test. Weight status changes were analyzed with paired t-test.

Results:

34 patients met inclusion criteria from 1/1/16-3/31/17. 44% were male; 38% white, 44% African-American. 47% received Medicaid; only 4 (12%) were food insecure; mean age at initial survey was 11.7 years; initial BMI z-score was 2.36. 13 of the 37 survey items showed improvement over the 6 month period, including families ($p < 0.001$) and patients ($p = 0.008$) choosing to be active; parents trusting their children to eat the right amount ($p = 0.001$) and to make do with what is offered at a meal ($p = 0.034$); and families coping with stress better ($p = 0.025$), having the right amount of family time ($p = 0.041$), and being satisfied with the way problems are discussed ($p = 0.002$). There were no statistically significant changes in BMIz.

Conclusions:

Families enrolled in a pediatric weight management program showed significant improvement in weight-related family functioning over a 6 month period, despite no changes in BMIz. This survey may be able to show families concrete improvements as they progress through the program.

T-P-3039

Novel Model of the Child Eating Behavior Questionnaire for Children With Severe Early Onset Obesity

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Background:

Child Eating Behavior Questionnaire (CEBQ) is a validated instrument for measuring eating patterns in young children. However, little is known about the validity of this instrument in children with severe obesity. We sought to study the subscales of CEBQ and use the established 7-factor model in children with severe early onset obesity.

Methods:

Children with severe obesity were recruited from the Genetics of early childhood obesity (GECO) study and Obesity registries at 2 tertiary care hospitals ($n = 289$). Parents of children < 13 years of age completed the CEBQ. We compared this data to a simulated cohort of normal weight children ($n = 1000$) based on the original study. We performed a confirmatory factor analysis (CFA) of the validated 7-factor construct of CEBQ. Due to inadequate model fit, we performed an exploratory factor analysis (EFA) to identify the model for our cohort.

Results:

There was internal consistency in the responses, Cronbach's $\alpha = 0.9$. The parallel analysis and the scree plot identified 7 principal components with eigenvalue > 1.0 . In the children with obesity, the constructs of Food Responsiveness, Enjoyment of Food, Emotional overeating and Desire to drink were significantly higher, and lower for Satiety Responsiveness, Slowness in Eating, Emotional under eating and the Fussiness scale. The scales were similar across gender, race and ethnicity. In the CFA, the established 7-factor model showed a sub-optimal fit for the data (RMSEA = 0.089, CFI/TLI = 0.887/0.875). The EFA identified a novel 7-factor model with constructs of Food Fascination (avidity) and Food Capacity (volume). Eating with happiness changed from Emotional undereating to Emotional overeating. These constructs were significantly related to the obesity class and older age ($p < 0.01$).

Conclusions:

CEBQ is valid for assessment of appetitive traits in children with severe obesity. The factor analysis of CEBQ revealed novel latent constructs of eating behavior for personalized care and assessment of hyperphagia.

T-P-3040

Predictors of Attrition in an Urban Pediatric Obesity Program

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Background:

High rates of attrition plague many weight management programs. Sociodemographic differences were examined from an urban interdisciplinary pediatric weight management program. It was hypothesized that socioeconomic (SES) disparities would account for higher attrition outcomes above and beyond demographic factors.

Methods:

Data were collected from 1588 youth ages 2 to 20 ($M = 11.91$, $SD = 3.14$). Information on demographics (sex, race, age, mother's BMI) and SES (health insurance, number parents in home) were collected at baseline and 12-months post intervention. Participants were 60.8% female, 70.0% African American, and 55.9% had medical assistance insurance.

Results:

After one year, overall attrition was 84.2%. A hierarchical logistic regression analysis assessed if SES factors would predict return for

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12-month appointment above and beyond demographic factors. Demographics were entered in step one, and SES factors in step two. The final model, which included all predictors, significantly explained only 2.3% of attrition ($p = .026$). When examining predictor variable blocks separately, SES variables only accounted for an additional 0.3% of variance in attrition, a non-significant increase. Age was the only significant unique predictor within the final model, such that those under 8 years and 13 years or older, had higher odds of not returning for 12-month appointment than those 8-12 years ($OR = 1.88, p = .039$; $OR = 1.66, p = .003$, respectively).

Conclusions:

The weight loss management program has high attrition rates overall; however, sociodemographic variables are not a strong predictor of attrition. SES factors do not affect attrition outcomes above and beyond demographic factors, with age being the only significant unique predictor. Future research is needed to explore factors related to these outcomes, and examine other predictors for attrition. Changes should be made in the program to ensure its focus on developmentally sensitive treatments.

T-P-3041

Dissemination and Implementation of a Family-Centered, Community-Based Childhood Obesity Intervention

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Background:

Dissemination of community-based behavior change interventions has met with limited success in various health outcomes as fidelity and dose of efficacious interventions are often diluted when translated to communities.

Methods:

We adapted the RCT-tested Healthier Families Program to be adopted by 3 City Parks Departments (MI, GA, NV). Using the RE-AIM framework, we evaluated this pilot dissemination program both quantitatively (pre/post surveys of health behaviors; attendance & fidelity) and qualitatively (3 month follow-up interviews).

Results:

REACH: The 3 partner sites recruited 26 parent-child pairs. Among the 24 participants who completed pre/post surveys, 62.5% were 25-34 years old, and average child age was 3.6 (SD 0.7) years. Self-reported race/ethnicity was as follows: 54% non-Hispanic White, 38% non-Hispanic Black, and 8% Latino. EFFECTIVENESS: After the program participants reported higher rates of goal setting & monitoring, reading food labels, and using the plate-method ($p < 0.05$). ADOPTION: Average attendance for the 12-week program was 7.6 (SD 3.9), with 71% attending > 50% of sessions. IMPLEMENTATION: Average fidelity for the 12 weekly sessions was 2.8 (SD 0.13; mean of 22 domains, range 1-3). MAINTENANCE: all 3 partner sites continued offering the program after grant funding was complete. Qualitative interviews with participants demonstrated increased use of the built environment for physical activity and continued use of behavior change strategies, such as goal setting & monitoring.

Conclusions:

This pilot study is among the first to disseminate a community-based childhood obesity intervention, demonstrating 1) effective and sustained behavior change among 2) a geographically and ethnically diverse population with 3) high attendance and fidelity. Though not designed to confirm the efficacy of the original trial on BMI reduction, these results suggest an effective model on which to base future large-scale dissemination efforts to reduce childhood obesity in the community.

T-P-3042

Participation in a Physical Activity Intervention Reduces Summer Weight Gain in Diverse Youth

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Background:

Children are at increased risk for excess weight gain during the summer, particularly those children from minority groups. Our objective was to test the effect of an 8-week physical activity intervention on excess summer weight gain and related behaviors in youth from a diverse, low-income community.

Methods:

Fifty-one children, ages 6-12 years, participated in a summertime intervention, which provided ~3 hours/day of physical activity and free lunch through the USDA's Summer Food Service Program (SFSP). Controls were 30 children from the same community with similar SFSP access, but without the physical activity intervention. We examined group differences in excess summer weight gain, defined by change in body mass index z-score (BMIz) over the summer, and group differences in mid-summer energy intake, minutes of moderate to vigorous physical activity (MVPA) and percent time sedentary. Within the intervention group, we examined differences in each outcome by intervention attendance.

Results:

Over the summer, BMIz decreased by .07 units in intervention participants relative to controls ($p = .06$). Among intervention participants, attendance was strongly related to change in BMIz ($p = .01$); those who attended 30-40 intervention sessions lost 0.16 BMIz units, whereas those who attended 1-20 sessions gained 0.8 BMIz units. As compared to controls, intervention participants achieved 29.3 more

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minutes of daily MVPA ($p=.06$) and spent 5% less time sedentary ($p=.04$). Moreover, on days intervention participants were present versus absent days, they achieved significantly greater MVPA ($p=.003$) and were less sedentary ($p=.001$). No differences in energy intake were observed between groups or by intervention participation.

Conclusions:

Data from this quasi-experimental study suggest that participation in a physical activity intervention can reduce excess summer weight gain, with the magnitude of the effect on summer weight gain related to the number of days of attendance at the PA intervention

T-P-3043

Inclusive Fitness Program for Children With Obesity and Special Needs

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Background:

Children with obesity often develop chronic health conditions (high blood pressure, Type 2 diabetes, hyperlipidemia, asthma, and joint disease) and may experience depression, and low self-esteem. Children with chronic health conditions such as intellectual deficit, ADHD, cancer may experience decreased physical activity (PA) and subsequent obesity. Decreased opportunity for participation in PA programs impacts these groups differently. Purpose: To describe the challenges of adapting an existing program to be inclusive of groups with special needs and to report program feasibility, acceptance and efficacy.

Methods:

A mixed method design was utilized to explore the feasibility and effect of a twenty week (2x/wk) program on health status and self esteem among a cohort of children ($n=6$) presenting with physical, sensory, and cognitive disabilities, that were integrated into a community wellness program ($n=37$) called Fit Kids for Life (FKFL).

Results:

Attendance rates were higher for the cohort than for the larger group (86% vs. 75%). A reduction in weight and BMI was found (2.0-8.0 lbs, $=4.0$, BP remained stable). Focus groups indicated enjoyment in participating in the program and reported few limitations by their health condition. Parents and children perceived improved fitness and overall health, with changes in the family routines (eating, exercise) noted.

Conclusions:

Adaptation of the FKFL program successfully occurred to create an inclusive atmosphere characterized by fun yet challenging physical activities, nutritional education, and behavioral modification strategies that resulted in weight loss and perceived fitness and health associated with excellent compliance and enjoyed participation.

T-P-3044

Telemedicine Pilot Implementation for a Stage 3 Pediatric Weight Management Program in Rural Maine

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Background:

Pediatric weight management interventions traditionally have been delivered in face to face office visits. Limited research is available on the real world implementation of a pediatric weight management program through telemedicine. The purpose of this study is to evaluate the implementation of a multidisciplinary Stage 3 pediatric weight management program through telemedicine.

Methods:

This program was established in September 2015. Services provided include medical, behavioral and dietary consultations by certified pediatrician, registered nurse, registered dietician, and psychologist over a period of 1 year with weekly visits in 1st phase, biweekly visits in the 2nd and monthly visits in the final phase. For the purpose of this evaluation we used provider and patient/parent surveys and ethnographic observation of the tele clinic workflow.

Results:

The program serves rural Maine children (2 to 19 years) with BMI over 85th percentile; 11 children have been enrolled contributing 146 medical, 140 RN, 21 MNT and 8 psychology visits. The predominant responses to survey are high patient/family satisfaction; providers also were positive about the modality despite some initial reservations. The key challenges to program implantation are orientation of providers to equipment, including real-time troubleshooting and revision of workflow to accommodate 2 locations, including coding and scheduling.

Conclusions:

Providers feel that although the modality required a learning process, telemedicine care provides the same patient interaction as face to face care. Given the prevalence of obesity and severe obesity in the national population and USPSTF recommendations to provide moderate to high intensity medical care for pediatric obesity, telemedicine provides the best opportunity to bring this specialty medical intervention to patients in their own home towns.

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T-P-3045

Impact of High School Garden on Student Fruit and Vegetable Intake and Self-Efficacy

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Background:

Objective data of the impact of school gardens on fruit and vegetable (F/V) intake are lacking. Studies have relied on self-reported F/V intake. Reflectance spectroscopy allows non-invasive assessment of carotenoids, biomarkers of dietary intake of F/V. The purpose of this study was to evaluate the impact of a high school garden and its curriculum on F/V intake using carotenoids as a biomarker.

Methods:

In this 9-month intervention, 149 high school students (99% Hispanic, 54% male, age 14-19y) residing in El Paso, TX participated in classrooms using a school garden and related curriculum or control classrooms. Measures included reflectance spectroscopy for skin carotenoids (OD, optical density) and self-efficacy for F/V intake. Linear regression analysis was used to determine if participation in the garden intervention predicted a change in F/V intake or self-efficacy.

Results:

Irrespective of age and sex, participation in the intervention classrooms had no effect on F/V intake (Mean +/- SD: pre = 0.110 OD +/- 0.022; post = 0.112 OD +/- 0.019) or on self-efficacy for F/V intake (pre = 4.56 +/- 0.878; post = 4.67 +/- 0.868). Retrospective qualitative analysis revealed the curriculum was insufficiently designed for behavior change.

Conclusions:

Using a reliable biomarker of F/V intake, this study found no impact on F/V intake or self-efficacy for F/V intake in students in classrooms participating in a high school garden and garden-related curriculum. However, curriculum did not sufficiently target behavior change. It is important to use behavior change theory in curriculum design for school-based approaches to increase F/V intake. The ability to non-invasively measure carotenoids provides an objective tool for assessment of the impact of school garden programs on F/V intake.

T-P-3046

Nutrition Education Program Targeting Home-Based Child Care Centers in Doña Ana County, New Mexico

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Background:

Changes in familial structure and an increase in mothers of younger children entering the workforce have heightened demand for child care services. Child care settings are important social environments that play a critical role in early nutrition knowledge acquisition and the development of eating habits. HOP'N Home, a child-care center curriculum developed in Kansas, was adapted for use by in-home daycare providers in the US-Mexico border region of Dona Ana County, NM. This study evaluated the effectiveness of HOP'N Home to increase child proxy-efficacy of asking behaviors for healthy foods and physical activity, and parental practices of child screen time.

Methods:

A 12-week intervention focused on increasing proxy-efficacy of pre-school aged children to ask for fruits and vegetables (F/V) and physical activity and included 54 parent-child dyads (child age=3.9y +/- 0.8, 26% male, 97% Hispanic or Latino). Child F/V intake was assessed by changes in carotenoid levels by reflectance spectroscopy. All other measures were parent-reported.

Results:

Child proxy-efficacy to ask for F/V increased for vegetables (n=26; 2.3 servings/day vs. 3.5 servings/day; p<0.01). There was a decrease in TV/movie time (n=26; 2.0 h/day vs. 1.2 h/day; p<0.01), and a decrease in video game time approached significance (n=26; 0.31 h/day vs. 0.06 h/day; p=0.09). A correlation between child screen time of TV/movies and parental practices of limiting TV/movies at follow-up was significant (r=0.426; p=0.01) and approached significance for video games (r=0.286; p=0.07). There was no change in carotenoid levels.

Conclusions:

High attrition levels reduced statistical power and poor program implementation compromised impact. However, since some outcomes were improved, this evidence-based tool has promise for use in the border region among a primarily Mexican-American population. A thorough process evaluation would be useful in addressing logistic and implementation barriers and improving program effectiveness.

T-P-3047

Initial Appointment Attendance and the Relationship to Completion of Pre-Appointment Material

Teryn Bruni, PhD, Bethany Gaffka, PhD *Ann Arbor MI*

Background:

Appointment follow-through is a major challenge within pediatric weight management programs. Approximately one third of patients fail to show to their first appointment. Subsequently, clinic wait times can range from 2 to 12 months. Initial appointment failure contributes to lengthy wait times, disrupts clinic flow, and decreases clinician productivity. The following study examined the relationship between parent completion of pre-appointment materials and initial appointment attendance.

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Methods:

Appointment completion data, questionnaire completion rates, and basic patient demographic information were collected through the medical record. As standard clinical practice, all parents were asked to complete the Child Behavior Checklist (CBCL) prior to their first appointment. The questionnaire was delivered electronically. Chi-Square tests were conducted to examine the relationship between questionnaire completion and initial appointment follow-through.

Results:

379 participants, ages 4- to 18-years-old were scheduled in a pediatric weight management clinic between September 2015 – April 2017. The majority were female (55.7%). 66.5% of parents completed the CBCL prior to their initial clinic appointment. A chi-square test was performed to examine the relationship between parent completion of the CBCL and initial appointment attendance. The relationship was significant, $\chi^2(2, N = 379) = 65.78, p < .01$.

Conclusions:

Parents who completed the pre-appointment questionnaire were significantly more likely to attend their initial appointment. It is possible that requiring completion of materials prior to scheduling the initial appointment may improve attendance for the first visit, increase clinic efficiency, and decrease wait-times. Further research is needed to examine the impact of requiring patients to complete pre-appointment questionnaires on initial appointment follow-through rates and to determine if this predicts attendance rates during the course of pediatric weight management treatment.

T-P-3048

You Are How You Sleep: Sleep Disturbances Associated With Poorer Eating Behaviors in Preschool Age Children

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Background:

While both short sleep duration and poor sleep quality are associated with worsened weight status, little is known about their association with eating behaviors in children. Our goal was to examine the relationship between sleep behaviors and eating behaviors in young children.

Methods:

A secondary analysis of data collected from the Child Inhibitory Control through Play (CHIC Play) study was conducted. Parent report of child sleep habits were measured using the Child Sleep Habit Questionnaire (CSHQ), specifically bedtime resistance, sleep anxiety, sleep-disordered breathing, and sleep duration. Eating behaviors (i.e., emotional over-eating, food fussiness, and enjoyment of food) were assessed using the Child Eating Behavior Questionnaire (CEBQ). Multivariable linear regression models were conducted in RStudio 3.1.0. All models controlled for child age, gender, inhibitory control, and physical activity, family chaos level, and child and maternal affect.

Results:

Ninety-two children (46.0% female, mean age 60.6 months (SD 9.1), 60.3% White, and 43.2% Hispanic) participated in the study at one of 2 preschools. Results showed greater bedtime resistance and sleep anxiety were associated with greater food fussiness (Bedtime Resistance: $\beta = .10, t(79) = 2.98, p < .01$; Sleep Anxiety: $\beta = .13, t(79) = 2.61, p < .05$). Shorter sleep duration was associated with greater enjoyment of food ($\beta = -.20, t(79) = -2.28, p < .05$). Finally, sleep disordered breathing was associated with emotional over-eating ($\beta = .17, t(79) = 2.67, p < .01$).

Conclusions:

These findings suggest that sleep quality and duration may be closely linked to certain eating behaviors, even in early childhood. Further research is necessary to investigate the causal relationship between sleep and eating, and whether improving overall sleep quality would have an impact on child eating behaviors, and ultimately weight status.

T-P-3049

Community-Clinic Collaboration: A Pediatric Obesity Treatment Strategy in Low-income Hispanic Youth

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Background:

Low-income minority children are disproportionately affected by obesity, yet are underrepresented in treatment studies and experience higher rates of attrition. This study tests the effect of embedding a family-based behavioral group (FBBG) treatment program in a pediatric clinic on retention and change in child weight status.

Methods:

Children (2-18 years of age, body mass index (BMI) ≥ 85 th percentile) and their parents were recruited from a single pediatric clinic for participation in a 12-week FBBG obesity treatment program (Healthy Hawks Primary Plus [HHP+]). In addition to the 12-week program, children engaged in follow-up visits with their PCPs between post-intervention and 1-year follow-up. Child BMI percentage above the 95th percentile (%BMI95) was measured as the primary outcome at baseline, post-intervention and 1-year follow-up. The effects of 3 HHP+ cohorts were compared to the mean effects of a standard FBBG-only program, Healthy Hawks (HH), conducted in 25

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cohorts over the past 10 years.

Results:

HHP+ participants were 87.0% Hispanic and 91.1% received Medicaid. HH and HHP+ participants had reductions in %BMI95 at post-intervention (HH: $\beta=-1.29(0.36)$, $p=0.000$; HHP+: $\beta=-2.11(0.93)$, $p=0.03$). At 1-year follow-up, only HHP+ participants had significant reductions in %BMI95 ($\beta=-2.47(1.15)$, $p=0.03$) and this was significantly lower compared to HH after controlling for race/ethnicity, gender, and age ($\beta=-3.24(1.48)$, $p=0.03$). HHP+ participants also had better retention at 1-year (HH: 38.3%, HHP+: 73.9%, $\chi^2=20.59$, $p\leq 0.001$) and PCP visits were correlated with retention at 1-year ($r=0.69$, $p<0.001$). All follow-up PCP visits were billed through the clinic.

Conclusions:

These findings suggest that community-clinic partnerships might improve longer-term retention and reductions in child weight status in low-income Hispanic youth. Additionally, this model provides a potential strategy for managing the cost of obesity treatment programs and addressing health disparities in high-need populations.

T-P-3050

Will They Stay or Will They Go? Associations With Pediatric Weight Management Initiation and Attrition

Jared Tucker, PhD *Grand Rapids MI*, William Stratbucker, MD *Grand Rapids MI*, Katie Ramos, BS *MI*, Marielle Vandervennen, BS, BA *Grand Rapids MI*, Chelsea Niblock *Grand Rapids MI*, Aleasha Wyma, CMA *Grand Rapids MI*

Background:

Pediatric weight management (PWM) can be effective, but attrition rates are often high. Factors associated with attrition have been identified, but it is unknown how these factors relate to the decision to initiate treatment and the timing of dropout during the program. The current study identified patient characteristics associated with treatment initiation and patient attrition after 3 and 6 months of treatment.

Methods:

Youth with obesity were prospectively enrolled in the study during the initial consultation visit at a multidisciplinary PWM program. Characteristics gathered at baseline included patient age, sex, height, weight, race, ethnicity, and medical insurance status. Severe obesity was defined as age- and sex-adjusted percent of the 95th BMI percentile (BMI95) $\geq 120\%$. Treatment initiation was defined as any visits after the initial consultation, and patient attrition was assessed at 3 and 6 months of treatment.

Results:

Potential patients ($n=174$) were between 2-17 years of age at baseline and were 58% female. Of the 75% of patients who initiated treatment, 38% and 66% dropped out by 3 and 6 months, respectively. Youth who initiated treatment had a higher BMI95 than those who did not ($p=0.049$), but were otherwise similar. Attrition at 3 months differed by age group, including 70% of 2-5y olds, 30% of 6-11y olds, 47% of 12-14y olds, and 30% of 15-18y olds ($p=0.046$). Patients with severe obesity had 3.5 (95%CI: 1.2-9.9) times higher odds of attrition at 3 months and 2.5 (95%CI: 1.0-6.3) times higher odds of attrition at 6 months. However, among patients retained through 3 months, attrition did not differ by obesity severity at 6 months (OR: 1.1, 95%CI: 0.4-3.2).

Conclusions:

Patients with elevated adiposity are more likely to initiate PWM, but are also more likely to dropout, especially early in treatment. Future research is needed to explore reasons for age- and adiposity-related attrition differences, and to elucidate effective mechanisms for improving patient retention.

T-P-3051

Efficacy of a School-based Intervention at Reducing Added Sugar and Sodium in School Lunches

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Background:

Decreasing selection and consumption of added sugar and sodium in the school cafeteria is key to providing optimal nutrition to children. The purpose of this analysis was to determine if Louisiana (LA) Health, a school-based obesity prevention intervention, could successfully reduce children's selection and consumption of added sugars and sodium during school lunches compared to a control group.

Methods:

Food selection, consumption, and plate waste from student lunches (3 consecutive days) in 33 public schools in rural Louisiana were collected and analyzed using the digital photography of foods method at baseline and months 18 and 28 of an obesity prevention intervention (LA Health) beginning in 4th-6th grade. Selection and consumption of added sugar and sodium during lunch were objectively quantified. Mixed models were used to determine if change in selection and consumption of added sugar and sodium differed by group.

Results:

No significant changes at month 18 were detected in the amount of added sugar and sodium selected and consumed, or the amount

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discarded as plate waste. At month 28, the intervention group, compared to the control, decreased added sugar and sodium more for selection (-5.7 ± 2.5 tsp/lunch, $p=0.04$ and -301.5 ± 105.8 mg/lunch, $p=0.01$, respectively) and consumption (-4.4 ± 1.9 tsp/lunch, $p=0.03$ and -226.3 ± 82.2 mg/lunch, $p=0.01$, respectively), but not plate waste (-1.1 ± 1.0 tsp/lunch, $p=0.29$ and -78.8 ± 50.7 mg/lunch, $p=0.14$, respectively).

Conclusions:

The intervention decreased added sugar and sodium selected and consumed, but not discarded as plate waste, by the end of the 28-month intervention. These results highlight the importance of long-term interventions and policies targeting provision and selection of food to improve dietary patterns in children.

T-P-3052

Mobile Health Weight Loss Intervention Based on Addiction Treatment Approach in Obese Adolescents

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Background:

Childhood obesity has become a major public health problem. It has been theorized that overeating may have addictive qualities. But few weight management interventions have tested therapeutic techniques founded in addiction medicine principles. Furthermore, in person interventions performed in clinic settings are expensive, labor intensive, and inefficient for addressing large-scale public health issues.

Methods:

To determine the feasibility and efficacy of an mHealth behavioral weight loss intervention based on addiction treatment approach, 18 obese adolescents are completing a six month pilot study of an interactive smartphone application (W8Loss2GO) with personalized coaching. Adolescents referred to the CHLA EMPOWER Multidisciplinary Weight Management Clinic who exhibit symptoms of food addiction based on the Yale Food Addiction Scale are recruited. Participants undergo the App-based intervention, which focuses on sequential withdrawal from subject-identified highly palatable foods, elimination of snacking, and decreased amounts eaten at meals. The primary outcome is change in BMI z-score (zBMI) and success in completing the intervention as intended.

Results:

Participants attained a modest but significant reduction in zBMI compared to baseline, with the mean zBMI decreasing by 0.05 SD at 1 month ($n = 18$, $p < 0.005$). zBMI reduction continued through the six month intervention (-0.11 SD, $n = 11$ $p = 0.001$, with bonferroni adjustment). Age-matched contemporary controls currently participating in EMPOWER curriculum showed non-significant change in zBMI compared to baseline at 1, 3 and 6 months. 91% of participants who completed the app intervention had a significant decreased in zBMI at 6 months compared to control ($p < 0.001$).

Conclusions:

The mHealth intervention, founded in addiction medicine principles and targeted for obese adolescents is feasible to implement and useful in reducing zBMI. This represents a cost-effective, timely and labor efficient method for weight management in adolescents.

T-P-3053

Don't Say "Fat": What Clinicians Should Avoid When Speaking to Youth About Weight

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Background:

How clinicians talk about weight may influence the effectiveness of weight-related clinical interactions. Studies conducted among adults have examined preferred weight-related terminology, but studies among adolescents are lacking, as are qualitative studies which offer more context for preferences related to conversations about weight.

Methods:

We conducted an open-ended survey of 84 adolescents and young adults (ages 14-24) participating in the MyVoice text message cohort. Participants provided responses via text message to the question "What should a doctor NOT say when talking about weight?". Responses were coded and analyzed by two investigators using standard qualitative methods.

Results:

Our sample was mostly female (58%) and non-Hispanic White (62%), with a mean age of 18 (SD=2.4) years. Five major themes emerged from our analysis: (1) avoidance of stigmatizing terms such as "fat"; (2) avoidance of blame or shame, derogatory language; (3) avoidance of non-specific recommendations related to weight loss or a goal weight; (4) avoidance of comments which associate weight with appearance; (5) no restrictions on the conversation. More than one-quarter of participants (27.4%) recommended against the use of potentially offensive terms ("They should never say anything demeaning like 'you're too fat'") and nearly 20% felt blaming or shaming be avoided during weight-related conversations ("They should not shame someone for their weight or make anyone feel bad for their weight"). While the majority of responses indicated that some weight-related terms or topics should be avoided, a subset of participants believed that no topic should be off limits ("They should say whatever they want in accordance to their professional opinion").

Conclusions:

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Responses from this study provide an in-depth account of opinions and preferences related to conversations about weight. Adolescents and young adults dislike language that could be considered stigmatizing and favor approaches that are not blaming or shaming.

T-P-3054

Impulsivity, Emotional Eating, and Impact on Quality of Life in Adolescents With Severe Obesity

Eleanor Mackey, PhD *Washington DC*, Meredith Rose, LSW *Washington DC*, Evan Nadler, MD *Washington DC*

Background:

Quality of life is negatively impacted by severe obesity in adolescents and is associated with psychopathology and quality of food intake. Negative urgency, or the difficulty controlling impulses when in a negative mood state, has been linked to maladaptive eating behaviors including food addiction and emotional eating. Research has also found that higher BMI is associated with increases in emotion-driven impulsivity in adolescents. The current study evaluated whether negative urgency is associated with poorer weight related quality of life, mediated by increased emotional eating/food addiction in adolescents with severe obesity.

Methods:

Sixty-eight adolescents (Mean age = 16.35, range 13-21;72% female) with severe obesity (BMI>35) presenting for consideration for bariatric surgery completed the Emotional Eating Scale for Children, the Yale Food Addiction Scale for Children, the UPPS-P, and Impact of Weight on Quality of Life scales. Mediation analyses were conducted using Preacher and Hayes indirect macro for assessing multiple mediators.

Results:

Negative urgency was significantly associated with decreased quality of life associated with weight in the domains of body esteem ($F(4,63)=11.26, p<.001$), social functioning ($F(4,63)=4.00, p=.006$), and family functioning ($F(4,63)=3.46, p=.01$). This association was partially mediated by increased emotional eating and food addiction. Food addiction appeared to contribute more to the model than emotional eating.

Conclusions:

Quality of life is deemed an important outcome above and beyond weight status in youth with severe obesity, yet predictors of quality of life in this population are understudied. The current study demonstrates that a potential avenue for improving quality of life in adolescents with obesity is to apply interventions to improve non-food related coping for negative mood states in adolescents with severe obesity.

T-P-3055

Acceptability and Benefits of Learning to BREATHE in Adolescents At-Risk for Type 2 Diabetes

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Background:

Major psychosocial stress is common in adolescents with and at-risk for type 2 diabetes (T2D). Manifestations of depression, often in response to stress, predict worsening insulin resistance (IR) and T2D. Thus, stress reduction interventions may be highly suitable for teens at-risk for T2D with depressive symptoms. We conducted a pilot randomized controlled trial to (1) determine acceptability of an adolescent mindfulness program, Learning to BREATHE (L2B), and (2) estimate efficacy of L2B for lowering depression and IR compared to cognitive-behavioral therapy (CBT) in this high-risk population.

Methods:

N=33 12-17y overweight girls with a T2D family history and elevated depressive symptoms were randomized to a 6-session L2B (n=17) or CBT (n=16) condition. At baseline, post-treatment, 6mo, and 1y, mindfulness (Mindful Attention Awareness Scale; MAAS) and depressive symptoms (Center for Epidemiological Studies-Depression Scale; CESD) were assessed. HOMA-IR was estimated from fasting insulin and glucose. We tested the condition effect on changes in mindfulness, depression, and IR, adjusting for baseline, fat mass (DXA) and other covariates.

Results:

Attendance (L2B:92% v CBT:87%) was excellent and acceptability ratings were strong in both conditions. All adolescents increased mindfulness at post-treatment; in study completers, L2B tended to increase mindfulness more at 1y (MAAS .98 v .11; $p<.08$). Adolescents in L2B had a larger reduction in depressive symptoms at post-treatment (CESD -11 v -7) and 6mo (-14 v -8; $ps<.05$), and a greater decrease in IR at post-treatment (HOMA-IR -.39 v .73; $p<.05$). In completers, L2B led to a greater decrease in IR at 1y (-2.2 v 2.6; $p<.01$).

Conclusions:

A brief mindfulness intervention was highly acceptable to girls at-risk for T2D with depressive symptoms. Compared to CBT, L2B may offer psychological and metabolic benefits. Comparative efficacy and explanatory mechanisms (e.g., interoceptive awareness, stress physiology) warrant testing in a well-powered trial.

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T-P-3056

Early Response to a Lifestyle Program Predicts Longer-term Weight Loss in Adolescents With Obesity

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Background:

Short- and long-term response to adolescent lifestyle interventions is variable. Some adolescents achieve clinically meaningful weight loss and maintain it, while others do not. Early identification of treatment response to a weight loss intervention is important to improve treatment outcomes. This study examined whether early changes in BMI during a family-based lifestyle program (FLP) (month 4) were associated with changes in BMI at month 12.

Methods:

Participants were 113 adolescents with obesity enrolled in a 12-month randomized clinical trial of FLP with and without meal replacements and prescribed a 1,300 kcal/day diet. Linear regression with treatment group as a covariate was performed. Chi square and Fisher exact test were used to examine odds of achieving clinically meaningful percentage reduction in initial BMI ($\geq 5\%$ and $\geq 10\%$) at month 12 based on percentage change in initial BMI at month 4.

Results:

Adolescents had a mean age of 15.0 ± 1.3 years (68% African American; 81% female; baseline BMI 37.1 ± 5.0 kg/m²). Percentage change in initial BMI at month 4 significantly predicted percentage change in initial BMI at month 12 ($r^2=0.54$; $p<0.0001$). Children who lost $\geq 5\%$ BMI between baseline and 4 month had 10.7 times the odds of also losing $\geq 5\%$ BMI between baseline and 12 months compared to those with $<5\%$ BMI change from baseline to month 4 (OR=10.7; 95% CI, 3.9-29.4). Children who lost $\geq 10\%$ BMI between baseline and 4 month had 52.2 times the odds of also losing $\geq 10\%$ BMI between baseline and 12 months compared to those who had $<10\%$ BMI change from baseline to month 4 (OR=52.2; 95% CI, 11.3-241.6).

Conclusions:

Early response to FLP at month 4 predicted longer-term reduction in BMI at month 12. Identification of youth in whom a particular treatment is not initially effective may be important in order to adjust treatment recommendations and, thus, may improve outcomes.

T-P-3057

Emotion Regulation Difficulties and Emotional Eating in Teenagers

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Background:

Emotional eating is associated with risk for both obesity and disordered eating (Geliebter & Aversa, 2003; Stice, Presnell, & Spangler, 2016). However, little is known about the association between emotional eating and emotion dysregulation in teenagers and how these associations may differ based on weight status. In particular, different domains of emotion dysregulation may be differentially associated with emotional eating in obese compared to healthy weight individuals, which could highlight more specific targets for interventions.

Methods:

In a cohort of 163 teenagers (13-16 years old) who range from healthy weight to obese, we investigated whether different components of emotion dysregulation as measured by the Difficulties in Emotion Regulation Scale (DERS) were associated with emotional eating as measured by the Dutch Eating Behavior Questionnaire (DEBQ) and how this differed by weight status.

Results:

In healthy weight teens ($n = 95$), emotional eating was most strongly associated with lack of emotion regulation strategies ($r = .53$, $p < .001$), lack of clarity of emotions ($r = .44$, $p < .001$), and nonacceptance of emotional responses ($r = .43$, $p < .001$) while difficulty engaging in goal-directed behavior was not significant ($r = .15$, $p = .15$). In teens with overweight and obesity ($n = 68$), nonacceptance ($r = .43$, $p < .001$) and lack of emotion regulation strategies ($r = .35$, $p = .004$) continue to be important, but goal-driven issues also emerges ($r = .25$, $p = .04$).

Conclusions:

Thus, increasing clarity and acceptance of emotions and increasing coping strategies for healthy weight teens may be important targets for reducing emotional eating. Additionally, results suggest that in teens with overweight/obesity, increasing positive goal-directed behavior (possibly through behavioral activation) may be an important intervention target to reduce emotional eating.

T-P-3058

Augmented Mindfulness Intervention for Overweight / Obese Children and Adolescents

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Background:

Children and adolescents who are overweight/obese (Owt/Ob) experience comorbid behavioral health problems (e.g. psychosocial stress, depression). Mindfulness-based interventions (MBIs) augmented with Cognitive Behavior Therapy (CBT) may address these issues. The current study aimed to evaluate the feasibility, and acceptability of integrating MBI and CBT (M-CBT) activities into an existing lifestyle modification and wellness program (Fit Kids for Life!) designed for children and adolescents who are Owt/Ob .

Methods:

Participants were recruited from local pediatricians and a pediatric cardiologist (n = 15; age 10-17 = 14.18; 53% male). The 10-week course included seven 30 minute sessions of M-CBT. Activities targeted goal setting, maladaptive thoughts, behavioral activation, body image improvement, and relaxation techniques. A mixed methods design (focus groups, behavioral observations, self-report assessments of depression, anxiety, mindfulness, social stress, self-efficacy, and body satisfaction) was used.

Results:

Mindfulness significantly predicted depression scores, $\beta = -.86$, $p < .001$, anxiety scores, $\beta = -.82$, $p = .001$, self-efficacy, $\beta = .56$, $p = .047$, and body satisfaction, $\beta = .86$, $p < .001$ at baseline. Focus group themes differed by group with some parents open to M-CBT, while others felt time for these activities took away from physical activity time. All parents noted increased self esteem for their child.

Conclusions:

M-CBT has been shown to be feasible in children and adolescents, age 10-17, who are Owt/Ob. This pilot program was easily integrated into an existing program. Efficacy and acceptability will be determined at 1-month follow up and with future studies.

T-P-3059

Acceptance and Commitment Therapy for Weight Loss in Adolescents

Jena Shaw Tronieri, PhD *Philadelphia PA*, Robert Berkowitz, MD *Philadelphia PA*, Thomas Wadden, PhD *Philadelphia PA*

Background:

Behavioral treatment (BT) programs that include parental participation typically result in modest weight losses (e.g., 2-4% reduction in BMI). Acceptance and Commitment Therapy (ACT) is a cognitive-behavioral treatment that has been shown to increase weight losses compared to BT in adults. Only a few small trials have investigated the efficacy of ACT in adolescents, and none have applied ACT to the treatment of adolescent obesity.

Methods:

This pilot study tested the acceptability of a 16-week ACT-based group behavioral weight loss program for adolescents with obesity and their caregivers and sought to demonstrate that adolescents with obesity could achieve a clinically meaningful weight loss with the ACT-based program. Exploratory analyses examined the effect size associated with changes in psychosocial variables.

Results:

Seven adolescents with obesity (baseline BMI=31.6 3.2 kg/m², age=13.7 1.7 yrs; 85.7% female; 57.1% black, 42.9% white) and their caregivers enrolled in the program. The mean acceptability score (composite of 1-10 likert scales) was 8.9 for adolescents and 9.0 for parents, indicating high acceptability. Adolescents achieved a 1.3% reduction in BMI at the end of treatment (SD = 2.3, Median = 1.8%). They experienced a large increase in cognitive restraint (EI; d=.87) and a medium-sized reduction in hunger (EI; d=-.65). Improvements in quality of life subscales were small to medium in size (IWQOL-Kids; total: d=.51, social life: d=.62, family relations: d=.33, body esteem: d=.19). There was a large reduction in depression (d=-1.39) and a small reduction in stress (d=-.29).

Conclusions:

This pilot provided preliminary evidence supporting the acceptability and efficacy of ACT for improving weight and psychosocial functioning in adolescents with obesity. The study was conducted from June to September, which may have limited weight losses relative to previous studies, because adolescents on average gain weight during the summer (e.g., Adler et al., 2014).

T-P-3060

Child zBMI Changes in Obesity Treatment Are Related to Reductions in Energy-Dense Foods in the Home

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Background:

Family-based treatment for childhood obesity (FBT) promotes changes to the home food environment to facilitate healthier child and parent choices; however, little is known about which changes correspond most to weight and diet outcomes.

Methods:

170 parent-child dyads participated in a 4-month FBT program and completed assessments at pre- and post-treatment. Parents reported on availability of high energy-dense foods (savory snacks, desserts, high-fat meats, and sugar-sweetened beverages; HED) and low energy-dense foods (fruits, vegetables, and 100% fruit juice; LED) in the home. Child daily energy intake, fruit and vegetable intake, and percentage intake from fat were measured using 24-hour dietary recalls. Child height and weight were measured and used to calculate BMI z-score (zBMI). Separate linear regression models predicting post-FBT outcomes controlling for child age, sex, family

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socioeconomic status, and pre-FBT outcomes were conducted.

Results:

Results showed decreases in available HED foods were associated with greater decreases in zBMI ($\beta=0.069$, $p=.014$), but change in LED foods was not related to zBMI. Changes in available HED and LED foods were not related to change in daily energy intake. Increases in available LED were associated with greater daily fruit and vegetable consumption ($\beta=0.302$, $p<.001$), and decreases in HED foods were related to reductions in daily percent intake from fat ($\beta=0.221$, $p=.005$).

Conclusions:

Reducing HED food availability was associated with improved child weight outcomes, whereas LED food availability was not. Reducing HED food availability and increasing LED consumption were linked to improvements on different indicators of diet quality. Future research is warranted to examine the impact of the complex sequence of food availability changes during FBT on children's outcomes as well as factors (e.g., neighborhood environment, influence of other family members, etc.) that influence the changes in the home environment.

T-P-3061

Family Based Mindful Eating Program in Adolescents with Obesity: A Pilot Randomized Clinical Trial

Anoop Mohamed Iqbal, MD *Rochester MN*, Seema Kumar, MD *Rochester MN*, Amit Sood, MD *MN*, Ivana T. Croghan, PhD, Rose J Prissel, MS RDN, Bonnie Donelan Dunlap, CCRP, Katrina Croghan, CCRP, Debbie Fuehrer, LPCC

Background:

Current behavioral treatments for pediatric obesity are limited by modest efficacy. Mindfulness has gained attention as an avenue through which problematic eating behaviors can be modified. A few studies have demonstrated benefit of mindfulness instruction for weight loss in adults with obesity. There is paucity of data on the effect of family based training in mindful eating in treating childhood obesity. The objective of this study was to examine the feasibility and efficacy of a family based mindful eating behavior modification program in adolescents with obesity.

Methods:

Adolescents between ages 14-18 years with body mass index (BMI) > 95th percentile and at least one adult care giver were randomized to receive training in mindful eating (ME) or standard dietary counseling (SOC). ME program was administered over four 90-minute in-person sessions and 5 teleconferences over six months. Control group received dietary counseling at baseline and 12 weeks. Mindful Eating Questionnaire and Weight-Efficacy Lifestyle Questionnaire were administered at baseline, 12 and 24 weeks. Fasting glucose, insulin, highly sensitive c-reactive protein, and lipids were obtained at baseline and at 6 months.

Results:

22 adolescents (age range 14.5 -17.9 years, 54% males) were included in the study. Adolescents in the ME group demonstrated increase in awareness at 24 weeks and decrease in distraction at 12 weeks and these changes were significant relative to the SOC group ($p=0.01$ and $p=0.04$ respectively). No beneficial changes in weight, BMI z score or cardiovascular risk factors were noted in either of the treatment arms. Despite need for more frequent visits in the ME group, there were no dropouts in that group.

Conclusions:

A family based mindful eating based behavioral modification program was found to result in improved eating behavior in adolescents with obesity. Future studies with more intense therapy and larger sample size are warranted to examine the role of mindful eating in treating pediatric obesity.

T-P-3062

The Effect of Exercise on Eating Behaviors of Adolescents With Normal and Excess Body Weight

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Background:

Evidence suggests that exercise may lead to changes in eating behaviors, which could help explain subsequent changes in energy intake. Moreover, dietary responses to exercise are thought to differ based on weight status. While these variables have been examined in adults, it remains unclear as to how a long-term exercise intervention elicits a change in eating behaviors of adolescents. This study examined the concomitant effects of an aerobic exercise program and weight status on eating behaviors of inactive adolescents with normal and excess body weight.

Methods:

This quasi-experimental study involved seventeen adolescents with normal body weight (BMI: $20.4 \pm 1.9 \text{ kg/m}^2$) and nine with excess body weight (BMI: $29.0 \pm 3.6 \text{ kg/m}^2$) having taken part in an 8-week aerobic exercise program on cycle ergometers. Participants completed the 18-item Three-Factor Eating Behavior Questionnaire (TFEQ-18) to assess cognitive restraint, uncontrolled eating, and emotional eating. A mixed-method ANOVA was used to compare pre- and post-intervention TFEQ-18 scores between adolescents with normal and excess body weight. Statistical analyses were adjusted for sex.

Results:

No statistically significant interaction was found between exercise and weight status for cognitive restraint ($p=0.95$), uncontrolled eating

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($p=0.88$) or emotional eating ($p=0.52$). There was also no effect of the exercise intervention on any of the previously mentioned eating behaviors ($p>0.05$). Weight status did not statistically influence uncontrolled eating ($p=0.27$) or emotional eating ($p=0.62$). However, we observed that adolescents with normal body weight had greater cognitive restraint than those with excess body weight ($p=0.008$, $\eta^2=0.27$).

Conclusions:

An 8-week aerobic exercise program did not elicit changes in eating behaviors of adolescents. However, weight status was found to affect cognitive restraint. Studies with a greater sample size are needed to further investigate the effect of exercise on eating behaviors of adolescents.

T-P-3063

A Randomized Trial Testing the Effects of Behavioral Weight Loss on Migraine in Women With Obesity

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Background:

Migraine is a neurological disorder involving moderate-to-severe headache with autonomic, affective, and sensory features. Obesity is a risk and exacerbating factor for migraine. This is the first RCT to test behavioral weight loss (BWL) for reducing migraine headache frequency and severity in women with overweight/obesity.

Methods:

Women ($n=108$) 18-50 yr. with neurologist-confirmed migraine, 4-20 headache d/mo. and BMI=25-49.9 kg/m² were randomly assigned to 16 group sessions of: 1) BWL ($n=56$), that aimed to produce weight loss via targeting exercise and diet (*did not address migraine); or 2) Migraine Education control (ME; $n=52$), involving didactic topics on migraine and treatment approaches (*did not address weight loss). Both groups used a smartphone diary to record migraine activity for 4 wk. at baseline (BL), post-treatment (PTx—16 wk.), and follow-up (F/U—32 wk.). The primary outcome was PTx change in migraine d/mo. Analysis of BWL vs. ME changes in weight, migraine d/mo., and other variables controlled for BL values and used the intention-to-treat principle with no change imputed for missing data.

Results:

Retention was similar in BWL and ME at PTx (78%) and F/U (72%). BWL and ME did not differ on age (39.2 ± 7.2 yr), BMI (35.2 ± 6.7 kg/m²), migraine d/mo. (8.3 ± 4.5), and % using preventive medications (20.2%) at BL ($ps>.30$). BWL achieved significantly greater weight loss vs. ME at PTx (-3.2 ± 4.4 vs. $+0.6\pm 2.3$ kg, $p<.001$) and F/U (-2.6 ± 5.3 vs. $+0.6\pm 3.5$ kg, $p<.001$). Migraine d/mo. decreased significantly from BL to PTx to F/U in both BWL (8.1 ± 3.9 to 6.0 ± 4.3 to 5.3 ± 4.7 , $ps<.005$) and ME (8.6 ± 4.8 to 5.3 ± 4.8 to 4.9 ± 4.0 , $ps<.001$), but did not differ from each other at PTx and F/U ($ps>.10$). Similar findings occurred for pain intensity and duration.

Conclusions:

BWL and ME control participants both achieved and maintained statistically significant but similar improvements in migraine frequency and severity. Future research should determine if BWL+ME yields superior improvements to BWL or ME alone.

T-P-3064-DT

Loss of Control Eating Is Common and Associated With Emotion Regulation Difficulties Among Young Men

Nichole Kelly, PhD *Eugene OR*, Sarah Glidden, Elizabeth Cotter, PhD *Washington DC*, Tasia Smith, PhD, Elizabeth Budd, PhD, Nicole Giuliani

Background:

Loss of control (LOC) eating is associated with obesity, metabolic dysfunction, and psychiatric comorbidity. Unlike other disordered eating behaviors, young men report engaging in LOC eating at similar rates to young women. Yet, men are traditionally excluded from investigations seeking to elucidate individual factors associated with LOC eating. Theoretical models suggest difficulties regulating distressful emotions are associated with increased risk for LOC eating.

Methods:

The current study evaluated the association between emotion dysregulation (EmoDys) and LOC eating frequency in 1114 young men (18-30y; Mage= 24.1 ± 3.6 y; 28.4% white non-Hispanic, 23.4% African American, 23.9% Asian/Asian American, 24.3% Hispanic/Latino). EmoDys was assessed with the Difficulties in Emotion Regulation Scale and LOC eating was assessed with the Eating Disorder Examination Questionnaire.

Results:

50.8% of men reported LOC eating at least once in the prior month. According to a Poisson regression model, both race/ethnicity ($p<.001$) and most domains of EmoDys ($ps=.001-.04$) were associated with LOC eating frequency after controlling for BMI. Follow-up models indicated impulse control difficulties were positively associated with LOC eating frequency ($ps<.001$), except for among men who identified as Asian/Asian American ($p=.62$). Difficulties accepting one's emotional responses was only positively associated with LOC eating frequency among African American and Asian/Asian American men ($ps<.01$). Limited emotional clarity was positively

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associated with LOC frequency across all men ($p < .03$).

Conclusions:

Although some of the most effective interventions for LOC eating focus on enhancing emotion regulation strategies, most of these studies included women. Data from the current study should be considered for the adaptation of clinical interventions for culturally-diverse men.

T-P-3065-DT

A Community-based Intervention Program's Effects on Dietary Intake Behaviors

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Background:

To evaluate the effect of a community-based lifestyle behavioral intervention on intakes of fat, fruits, vegetables, fast foods, and beverages in low-income young mothers with overweight or obesity.

Methods:

Participants were randomly assigned to an intervention (watching video lessons at home plus peer support group teleconferences) or a comparison group. General linear mixed model analyses were utilized to determine mean differences between the groups (212 intervention, 126 comparison) immediately following and 3 months (196 intervention, 115 comparison) after the intervention.

Results:

Immediately after the intervention, the intervention group had significantly lower mean scores in intakes of fat (effect size $[d] = 0.24$), fast foods ($d = 0.33$) and non sugar-sweetened beverages ($d = 0.27$) than the comparison group. No significant group differences were observed for intake of fruits, vegetables, or sugar-sweetened beverages. Three months after the intervention, no significant group differences were observed for intakes of fat, fruits, vegetables, fast foods, and both sugar- and non sugar-sweetened beverages.

Conclusions:

The intervention group improved dietary intakes of fat and fast foods but not fruits, vegetables or beverages over the short-term. Our intervention had no long-term effect on dietary intake behaviors.

T-P-3066-DT

Environmental and Acceptance-based Behavioral Weight Loss: Mechanisms and Long-term Outcomes

Meghan Butryn, PhD *Philadelphia PA*, Evan Forman, PhD *Philadelphia PA*, Fengqing Zhang, PhD *Philadelphia PA*, Michael Lowe, PhD *Philadelphia PA*, Amy Gorin, PhD *Storrs CT*

Background:

This study was designed to examine environmental and acceptance-based enhancements to behavioral weight loss. Current analyses evaluated 1) mechanisms that could explain previously observed effects at end of treatment (12 months), and 2) newly available data on long-term (24 month) efficacy.

Methods:

Adults ($n = 283$) were randomly assigned to behavioral therapy in its traditional form (BT), a version augmented with skills for managing the obesogenic food environment (BT+E), or one in which environmental and acceptance-based skills were integrated (BT+EA). Change in weight, measured in the clinic, was the primary outcome. Other measures were self-report.

Results:

As previously reported, at end-of-treatment (i.e., 12 months) there was no main effect of treatment condition, but race significantly moderated the effect of condition on weight loss, with African-American participants demonstrating the greatest weight loss in BT+EA. Mediated moderation analyses indicated that significantly greater reductions in emotional eating among African-American participants in BT+EA partially accounted for that effect (95% bootstrap CI $[-2.36, -0.19]$). At 24 months, the main effect of condition on weight loss remained non-significant, and the interaction between race and condition was marginally significant ($p = .08$). Emotional eating marginally mediated the 24-month moderation effect (95% bootstrap CI $[-2.12, -0.02]$). Acceptance and mindfulness measures were not significant mediators. At 24 months, African-American participants maintained significantly greater improvements to their home food environments in the BT+EA condition, compared to BT or BT+E ($p = .04$).

Conclusions:

Although main effects of condition were not detected, the BT+EA approach has the potential to reduce the racial disparity in outcome that is typically observed, perhaps by engaging two key targets: decreasing overeating in response to emotion and increasing commitment to optimizing the availability of healthy and unhealthy foods in the home.

T-P-3067

Back to Basics? One-Year Follow-up of Scalable Weight Loss Treatments in Primary Care

Rachel Barnes, PhD *New Haven CT*, Valentina Ivezaj, PhD *New Haven CT*, Steve Martino, PhD *West Haven CT*, Brian Pittman, MS, Carlos Grilo, PhD *New Haven CT*

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Background:

Weight loss methods have begun to receive increased attention in primary care. Motivational interviewing (MI) interventions are compatible with busy primary care settings because they require relatively limited time and resources to deliver. Few studies, however, have examined the long-term impact of MI for weight loss in primary care and none have used attention-control comparisons. This study was the first randomized controlled trial with a 12-month follow-up of two web-supported interventions: motivational interviewing (MI) and nutrition psychoeducation (NP).

Methods:

Patients with overweight/obesity, with and without binge-eating disorder (BED), were randomized to receive MI (n=30) or NP (n=29) and were assessed by independent evaluators at 12-month follow-up after completing 3-month treatments in primary care (15 months total). Usual care patients were not assessed at 12-months as they were offered compassionate care.

Results:

Mixed-models examining weight loss from baseline to 12-months revealed a group and time interaction effect that trended towards significance ($F(1,42)=3.94, p=0.054$). A secondary endpoint analysis showed a decrease (-1.7%) versus an increase (1.3%) in weight at 12-months among NP ($d'=0.33$) and MI ($d'=0.26$) patients, respectively ($t(42)=1.96, p=0.056$). There were no significant differences between conditions in likelihood of participants reaching a 5% weight loss at 12-months. While nonsignificant, 17% of NP and 5% of MI patients lost/maintained 5% weight losses. BED status did not impact weight loss. Across conditions, disordered eating ($F(1,47)=19.8, p<0.0005$) and motivation ($F(1,57)=7.52, p=0.008$) decreased significantly over time, while depression decreases approached significance ($F(1, 47)=3.80, p=0.057$).

Conclusions:

Two brief and scalable weight loss interventions resulted in small effect sizes for weight loss 12-months following treatment conclusion. Given MI required significantly more resources for adequate implementation, NP may be most cost effective.

T-P-3068

Examining Motivational Interviewing and Nutrition Psychoeducation for Weight Loss in Primary Care

Rachel Barnes, PhD *New Haven CT*, Valentina Ivezaj, PhD *New Haven CT*, Steve Martino, PhD *West Haven CT*, Brian Pittman, MS, Carlos Grilo, PhD *New Haven CT*

Background:

Our previous randomized controlled trial found that nutrition psychoeducation (NP), an attention-control condition, produced significantly more weight loss than usual care, whereas motivational interviewing (MI), the active condition, did not. The NP, MI, and usual care conditions resulted in large, medium, and negligible effects on weight loss. To examine whether weight loss could be further improved by combining MI and NP, the current study tested the highly scalable combination (MINP) with accessible web-based materials.

Methods:

31 adults with overweight/obesity, with and without binge-eating disorder (BED), were enrolled in the 3-month MINP treatment in primary care. Medical assistants provided treatment. Participants were assessed by independent evaluators at baseline, post, and 3-month follow-up. Mixed-model analyses examined MINP effects over time and the prognostic significance of BED; effect sizes were calculated to allow for comparison with the initial RCT outcomes.

Results:

Mixed-model analyses ($F(2, 51)=3.97, p=.025$) revealed that percent weight loss was significant at post ($t(51)=-3.16, p=.003$) and 3-month follow-up ($t(51)=-3.07, p=.004$); $d'=0.59$ and 0.53 , respectively. BED did not impact weight loss. 21% and 26% of participants lost at least 5% body weight by post and 3-month follow-up, respectively. Significant reductions in systolic blood pressure, pulse, binge eating, disordered eating, and depression were observed. Patients with BED had significantly greater improvements in binge eating, disordered eating, and depression compared to those without BED.

Conclusions:

MINP resulted in significant weight and psychological improvements at post-treatment and through 3-months after treatment completion. Effect sizes for the MINP, however, were slightly less than those observed previously for NP. Considering the resources required to properly implement MI, a basic nutrition psychoeducation, supplemented with online materials, may be most appropriate for weight loss in primary care.

T-P-3069

Weight Suppression, The Last Supper, or Early Weight Loss: Which Predicts Weight Loss?

Rachel Barnes, PhD *New Haven CT*, Valentina Ivezaj, PhD *New Haven CT*, Carlos Grilo, PhD *New Haven CT*

Background:

Determining predictors of successful weight loss treatment outcomes may help to refine future interventions. There are weight-related variables, such as weight suppression (WS), "the last supper (TLS)," and early weight loss (EWL), that may be associated with weight loss outcomes. This study compared the prognostic significance of these weight-related change variables for scalable obesity

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interventions delivered in primary care.

Methods:

89 patients with overweight/obesity, with and without binge-eating disorder (BED), participated in a 3-month weight loss treatment trial in primary care, with post, 3-, and 12-month follow-ups performed by independent evaluators. WS was participants' highest adult weight (self-report) compared to intake weight. Pretreatment weight trajectory (PWT) was weight change in the 3-, 6-, and 12-months prior to treatment (self-report) compared to intake weight. TLS was intake weight compared to first treatment session weight. EWL was weight change from first treatment session to mid-treatment.

Results:

Overall, EWL was positively associated with percent weight loss at post ($r(76)=-.87, p<.0005$), 3-month ($r(75)=-.68, p<.0005$), and 12-month ($r(40)=-.56, p=.0002$) follow-up, and to 5% weight loss by post ($t(76)=5.00, p<.0005$), 3-month ($t(73)=5.55, p<.0005$), and 12-month ($t(38)=2.38, p=.025$) follow-up. PWT was related to reaching 5% weight loss at post-treatment ($t(81)=2.26, p=.026$). WS and PWT were also positively associated with weight loss for patients without BED but not for those with BED.

Conclusions:

Participants with EWL (i.e., lost more weight at treatment midpoint) were more likely to continue to lose weight through the remaining course of treatment, to attain 5% weight loss, and to maintain 5% weight loss through 12-months following treatment. EWL was a particularly strong weight loss outcome predictor for patients with BED. These results suggest the importance of a stepped-care approach (i.e., increased intensity) early in treatment for patients who do not respond.

T-P-3070

Examining Weight Bias in Bariatric Surgery Patients With and Without Binge-Eating Disorder

Valentina Ivezaj, PhD *New Haven CT*, Leslie Schuh, PhD *Carmel IN*, David Creel, PhD, RD *Carmel IN*, Carlos Grilo, PhD *New Haven CT*

Background:

Weight biases are pervasive and seem to be linked with a plethora of detrimental sequelae, particularly for individuals with obesity who internalize the biases. Recent research suggests that individuals with excess weight and binge-eating disorder (BED) may have greater weight biases than those without BED and greater weight-bias internalization among those with BED is associated with greater eating disorder psychopathology and depression and lower self-esteem. Little is known, however, about the relationship between weight bias, BED, and bariatric surgery candidates.

Methods:

Participants were 230 patients seeking bariatric surgery (82% female) with a mean BMI and age of $49.6(\pm 9.1)$ kg/m² and $43.1(\pm 11.2)$ years. Participants completed a self-report battery including the Weight Bias Internalization Scale (WBIS), Attitudes Towards Obese People (ATOP), Patient Health Questionnaire (PHQ-9), Weight Efficacy Lifestyle Questionnaire (WEL), and the Eating Disorder Examination Questionnaire-Brief (EDEQ-B). BED status was determined based on loss-of-control eating frequency, associated behavioral symptoms, and distress.

Results:

Negative weight biases were extremely common. Weight bias was significantly correlated with greater eating disorder psychopathology and depression scores and less weight efficacy (p -values $<.05$). The BED subgroup (28%) had significantly greater weight biases (ATOP) and higher levels of internalized weight biases (WBIS), eating disorder psychopathology (EDEQ-B), and depression (PHQ-9), and less weight efficacy (WEL) than bariatric candidates without BED (p -values $<.01$), despite not differing in BMI ($p=.868$).

Conclusions:

Bariatric surgery candidates report high rates of negative weight biases and high levels of weight bias internalization; the presence of BED is associated with significantly elevated weight bias and psychosocial problems. Future research should examine the prognostic significance of co-occurring pre-surgical BED and internalized weight bias following bariatric surgery.

T-P-3071

Characteristics of Weight Loss Trajectories in a Comprehensive Lifestyle Intervention

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Background:

Focusing on average weight loss (WL) from interventions provides useful efficacy data but masks large variability across patients. We determined parameters of weight loss trajectories that differentiated individuals during a 15-week clinical lifestyle intervention.

Methods:

Patients ($N=595$) were in a fee-for-service WL lifestyle program with a partial meal replacement diet and lifestyle change counseling. Seven parameters were used to derive groups through latent class analyses: percent WL (%WL), weight nadir, number of weekly weight gains, maximum weekly weight gain%, standard deviation (SD) of weekly weight changes, linear slope value, and change in slope.

Results:

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Average %WL in the sample was 9.73%. Latent class analyses revealed three groups with considerable overlap in %WL ranges: Group A (n=178) had the smallest %WL (Range: -9.32% [gain] to 8.06%), %WL slope, and change in %WL slope, highest weight nadir, and the greatest weekly weight gain, SD of weekly weight changes, and number of weekly weight gains. Group B (n=133) had the greatest %WL (Range: 12.84% to 29.79%) and %WL slope, fewest weekly weight gains, lowest maximum weight gain and weight nadir, and relative to Group A, smaller SD of weekly weight changes, and greater change in %WL slope. Group C (n=284) fell in between the other groups on all parameters, differing significantly from both groups on %WL (Range: 4.18% to 16.09%), number of weekly weight gains, maximum weekly weight gains, weight nadir and %WL slope, and differing only from Group A on change in %WL slope and SD of weekly weight changes.

Conclusions:

Emphasis on average WL likely obscures considerable variability in individual courses of weight change. Moreover, patients with similar %WL can have different WL trajectories. Identification of behavioral and physiological characteristics associated with different weight loss trajectories may facilitate the development of more tailored interventions, particularly for trajectories associated with less optimal outcomes.

T-P-3072

Estimating Energy Intake From Energy Dense Food Using Wearable Devices: Results From a Pilot Study

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Background:

Given the key role of lifestyles in the development of chronic diseases, dietary assessment plays a key role in clinical research. However, traditional methods for dietary assessment (e.g. food frequency questionnaire and 24-hour dietary recall) presents several limitations, such as underreporting, and poor precision in reporting portion's size. Recently, it has been advocated the role of wearable devices in estimating subjects' actual food intake, overcoming limitations of traditional methods. The aim of the study was to evaluate the feasibility and reliability of a wearable device in estimating caloric intake of a standard fast-food meal. Such device consisted on a Bite Counter (Bite Technologies®), a watch that tracks wrist motion to count bites and estimate calories intake through an ad hoc algorithm.

Methods:

Eighteen subjects were enrolled, aged 20-35 years, equally distributed between males and females and observed in a McDonald's setting. Subjects were requested to wear the Bite Counter on the wrist of the dominant hand, and they were served with a standard fast-food meal (consisting of a hamburger and French fries). It was estimated caloric intake of each subject on the basis of bites recorded by the watch and such estimation was compared to subject's actual caloric intake.

Results:

Correlation among estimated Kcal and actual consumed calories was significant ($p=0.04$) although not very useful in terms of day-by day usage (correlation= 0.489).

Conclusions:

Results of the present study show a low feasibility and reliability of estimating Kcal using bites, despite the fact that the assessment was performed in an experimental setting, serving subjects with a standard meal. These findings showed that also such innovative devices seem to present several limitations, given the great variability in food intake (e.g. the size of bite of food). Further research is needed in order to improve feasibility and reliability of such devices.

T-P-3073

Patient-Evaluation and Weight Outcome of an Outpatient Clinic Obesity-Intervention Program

Line Kristin Johnson, Inger Marie Flakstad, Andreas Aarvik, Stine Merete Larsen, Bachelor *Tønsberg*, Anne Hildegunn Baarnes, Randi Størdal Lund, MD *Tønsberg*, Jens Kristoffer Hertel, PhD *Tønsberg*, Jøran Hjelmæsæth, PhD, MD

Background:

Secondary care obesity treatment is mainly implemented in outpatient clinics in Norway. To ensure user satisfaction and treatment efficacy, evaluation of patient-feedback and weight measures is important. We aimed to describe user feedback and explore possible age- and gender-specific differences in weight outcomes in a cohort of Europoid patients with severe obesity.

Methods:

User satisfaction of a group-based interdisciplinary 6 month weight loss course (15 meetings) based on current guidelines for lifestyle intervention, was assessed using systematic patient evaluation forms. Patient satisfaction, patient experience with educational presentation, evaluation of own efforts regarding physical activity and beneficial dietary implementation were assessed on a scale from 1-10 (10 best). Weight-measures (kg) were taken at meeting 1 and 10-13. Successful weight-loss of $\geq 5\%$ was recorded. Statistics; Independent and paired samples t-tests, chi-square test, logistic regression.

Results:

A total of 172 consecutive patients (127 women) with a mean (SD) age of 43.2 (12.1) years and body weight 117.9 (22.1) kg were included. Men and women had comparable ages. The mean weight loss was 4.2 (5.1) kg, 3.6 (4.4) %, $p<0.0001$. Twenty-eight % of all patients achieved $\geq 5\%$ weight loss, with no significant gender differences. Patient satisfaction, was 9.0 (1.4) and experience with

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educational presentation 9.3 (1.1). Self-assessed satisfaction with own efforts regarding physical activity and dietary implementation was 7.8 (1.7) and 7.5 (1.5) respectively. Multiple logistic regression analyses showed no significant association between age or gender and weight loss $\geq 5\%$.

Conclusions:

Patients suffering from severe obesity who attended a secondary care outpatient obesity clinic in Norway reported high satisfaction-scores. Twenty-eight % of all patients achieved $\geq 5\%$ weight loss.

T-P-3074

What Strategies Help Dieters Manage Problem Foods and Facilitate Weight Loss?

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Background:

Dieters are often faced with problem foods that they cannot resist and find it hard to stop eating. The aim of this study was to identify effective strategies used to control intake of problem foods in the context of a weight loss intervention.

Methods:

186 women with overweight and obesity were enrolled in a 1-year randomized weight-loss trial that compared standard advice to eat less food with 2 portion-control interventions (choosing portions based on energy density or using pre-portioned foods). At months 0, 6, and 12, subjects used visual analog scales to rate how frequently they used 8 strategies to control their intake of problem foods. Random coefficient models were used to assess the effects of strategy use on the trajectories of weight loss over the year.

Results:

The problem food strategy most strongly related to weight loss was limiting portion sizes. After 1 year, women who reported more frequently restricting portions of problem foods had a greater rate of weight loss, regardless of intervention group ($P < 0.0001$). Among women who limited portions less frequently, those in the pre-portioned foods group had greater weight loss in the first months, but subsequently regained weight at a greater rate (both $P < 0.0001$). Other frequently reported strategies for problem foods were avoiding keeping them at home or work and avoiding buying them; however, these strategies did not relate to weight loss during the trial. The least frequently reported strategies for managing problem foods were substituting lower-calorie versions, allowing consumption as a treat or reward, and relying on friends and family for help; none of these were related to weight loss.

Conclusions:

Advising dieters to adopt and maintain strategies to manage portions of problem foods, rather than avoiding them, could facilitate weight loss. Utilizing pre-portioned foods to control intake may be beneficial for dieters who have difficulty limiting portions of their problem foods.

T-P-3076

Psychiatric Disorders in Sleeve Gastrectomy Patients: Diagnostic Interview Findings and Significance

Valentina Ivezaj, PhD *New Haven CT*, Rachel Barnes, PhD *New Haven CT*, Janet Lydecker, PhD *New Haven CT*, Marney White, PhD, MS *NEW HAVEN CT*, Ashley Wiedemann, PhD *CT*, Carlos Grilo, PhD *New Haven CT*

Background:

The literature is mixed with regard to the frequency and prognostic significance of psychiatric disorders in bariatric surgery patients. This study examined DSM-5 psychiatric disorder comorbidity in an ethnically diverse sample of bariatric patients assessed using structured diagnostic interviews administered six months following surgery.

Methods:

100 patients seeking treatment for loss-of-control eating roughly six months after undergoing sleeve gastrectomy were assessed using structured diagnostic interviews (MINI International Neuropsychiatric Interview and Eating Disorder Examination). The sample was 84% female, 56% White (33% Black, 11% other); mean age of 45.8 (± 10.9) years, mean percent total weight loss of 21.3 (± 7.1), and mean percent excess weight loss of 47.5 (± 16.6).

Results:

79% met criteria for at least one lifetime psychiatric disorder; the most common were major depression (57%), binge eating disorder (BED) (56%), and alcohol/substance use disorders (24%). 27% met criteria for at least one current psychiatric disorder; the most common were anxiety disorders (19%), major depression (8%), and BED (8%). Neither lifetime nor current psychiatric disorders differed significantly by race, except for a higher rate of lifetime BED in White versus Black patients (67.9% vs 36.4%, $p = .004$). Psychiatric disorders were not significantly associated with total or excess percent weight loss.

Conclusions:

Our study presents new DSM-5-based findings that lifetime rates of psychiatric disorders are high (79% lifetime diagnoses) but current rates determined 6-months post-surgery are much lower (27%) even when assessed in bariatric patients seeking treatment for eating concerns. Our findings, based on structured diagnostic interviews administered following surgery thus reducing concerns about reporting

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biases (“faking good”), suggested few racial differences (except for higher BED rates in Whites), and that co-morbidity was unrelated to percent total or excess weight loss following surgery.

T-P-3075 - WITHDRAWN

T-P-3077-DT

Recruitment and Baseline Sample of a Weight Management Intervention Targeting African Americans

Jennifer Lemacks, PhD, RD *Hattiesburg MS*, Ashley Parker, MPH *Hattiesburg MS*, Robert James, Hwanseok Choi, PhD *Hattiesburg MS*, Penny Ralston, PhD

Background:

The purpose of this study is to examine the recruitment strategies/methods and resulting participant enrollment of a community-based participatory research approach, weight management intervention focusing on diet and physical activity among rural, young adult (18-45 years of age) African Americans.

Methods:

Churches and church leaders were utilized to recruit participants primarily by word-of-mouth and flier distribution. Area outpatient primary care clinics also received a study flier and were enlisted to recruit participants for the project. Participants called research staff to be enrolled in the study and attended orientation to officially consent to participate in 12 education and motivational interviewing sessions.

Results:

Contact information for sixty-four individuals was received by research staff and 43 were successfully enrolled in the program. The majority were recruited by church leaders (76.74%) followed by other enrolled participants (18.6%); none were recruited from clinics. Seventeen individuals attended orientation and consented to participate in the study. The majority were female (82.4%) and reported as African American (82.5%), some college or more (88.24%), married/cohabitating (82.35%) and individual income <\$49,000(70.59%). Many participants had high blood pressure and an immediate family history of hypertension (80.2%) and diabetes (70.5%). All participants were obese 39.3 ± 5.9 (mean \pm SD). Only 25% of participants regularly checked their weight, 43.8% ate breakfast daily, 5.8% exercised regularly, and 17.7% recorded their food intake.

Conclusions:

Outpatient primary care offices of the study area proved to be difficult to engage for patient recruitment and study participation. Church members were most successful at recruiting participants for this church-based program; however, participant commitment to the program remains in question. Most participants did not engage in positive weight behaviors to lose or maintain weight at baseline.

T-P-3078

2 Year Outcomes Following a Physician Supervised 12 Week Intensive Lifestyle Intervention Program

Sagar Mehta, MD *Allentown PA*, Maureen Miletics, Amber Kinney, RD, CSG, LDN *Allentown PA*, Salma Alkhal, Kathryn Boardman, MS, RD, LDN

Background:

Overweight and obesity affect more than two-thirds of the US population and increase risk of diabetes, hypertension, hyperlipidemia, cardiovascular disease, and cancer, resulting in greater healthcare costs. Studies suggest that a modest 5-10% weight loss can significantly improve health outcomes, which intensive lifestyle interventions (ILI) have successfully promoted. We present two-year weight loss data following a 12-week, physician-supervised, multi-disciplinary ILI program.

Methods:

This retrospective cohort study included patients from 4/1/15-3/31/17 who enrolled in our 12 week ILI program and had subsequent follow up. In the ILI program, patients were instructed on a low calorie diet by our dietitian (500-1000 calorie deficit based on Mifflin-St. Jeor equation) and had the option of using a partial meal replacement plan. Education was provided through either weekly classes on dietary, behavioral, and exercise topics with monthly individual visits or biweekly individual visits to encourage a 1-3lb/week weight loss. Patients were offered several followup options. Weight was measured at each visit.

Results:

354 patients were included in this study. There were 273 females(81%) and 81 males(19%) with an average age of 49.4, average BMI 37.6 and an average weight of 231.5 pounds. Data points were collected at 3, 6, 12, and 24 months and include %TBWL, mean change in BMI, mean change in weight(lbs). At 3 months: n=189, with respective values of 7%, -2.67, -16.79lbs. At 6 months: n=127, with respective values of 9.43%, -4.27 and -26.41lbs. At 12 months, n=70, with respective values of 10.76%, -4.27 and -26.41lbs. At 24 months, n=11; with respective values of 10.9%, -4.36 and -26.18lbs.

Conclusions:

Patients enrolled in our physician-supervised 12 week ILI program achieved a modest 5-10% weight loss, with maintenance or

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improvement over two years of follow up. Although additional research is needed to confirm our results, insurers should consider expanding coverage for such services in the future.

T-P-3079

Outcome and Cost Comparison of Shared Medical Appts. VS 1:1 Appts. in a Bariatric Medicine Practice

Stephanie Therrien, BS *Boston MA*, Juliana Simonetti, MD *Boston MA*, Alyson Shea, BS, Maria Cano Garcia, BS

Background:

To accommodate an increased demand for Obesity Medicine specialists, “Shared Medical Appointments” (SMA) improve access to care by allowing providers to see a higher volume of patients in a shorter time frame. Studies have also shown that SMA’s may enhance outcomes, promote patient satisfaction and optimize financial resources making it a particularly appealing model to treat patients with obesity.

Methods:

A retrospective analysis was performed from January 2013 to December 2016 on clinic patients between the ages of 18 and 75, with a BMI >25, and with a minimum of four documented visits of any type in a 12 mo. period with the physician. 392 patients were identified. These patients were then divided into one group who had attended ≤ 3 SMAs (352), and one group who had >4 SMAs (40). Forty-one data points were abstracted from each record to assess any changes in associated comorbidities for each group.

Results:

It was found that patients who attended SMA greater than four times per year lost more weight (8.8 kg) than patients seen individually (6.4 kg). SMA patients had an average percent body weight loss of 7.65% compared to 5.78% for patients seen individually. The difference in mean weight loss was not found to be statistically significant with an ANOVA p-value of p=0.082. Due to the small sample size, we are unable to demonstrate superiority. Other confounders include inability to control for varying lengths of program absence and data outliers in total weight loss > 45.5 kg.

Conclusions:

SMA patients on average lost 2.3 kg more than patients seen individually. There is sufficient evidence to declare their equivalence. The null hypothesis and confounders should be investigated. The SMA setting allows the clinician to see up to 10 patients in 90 minutes, nearly twice as many patients than can be seen individually in the same time. This appointment style has the potential to relieve some of the patient access issues faced by some medical specialties without compromising quality of care.

T-P-3080

All Women With Morbid Obesity Are Not Alike: Females Pre-Op for LRYGB Vary Clinically by Race

Manasa Sridhar, DO *Vineland NJ*, Jennifer Cobernus, DO *Vineland NJ*, Nicole Zucconi, DO *Vineland NJ*, GUS SLOTMAN, MD *Vineland NJ*

Background:

The obesity epidemic impacts patient care everywhere. However, racial differences among morbidly obese woman have not been widely investigated. Objective: To identify clinical variations by race among obese women.

Methods:

Baseline data on 65,325 women in the Surgical Review Corporation’s BOLD database having LRYGB was analyzed in 5 groups: African American (n=7745), Caucasian (n=49184), Hispanic (n=5374), Asian (n=145) and Other (Pacific Islands, Native American, or >1 race recorded; n=2877). Statistics: analysis of variance and Chi-Squared equation.

Results:

African American weight (135+-26 kg) and BMI (50+-9) were highest and Caucasians oldest (45.6+-11.5), (p<0.0001). African-Americans had the highest weight, BMI and gout, 5 cardiopulmonary illnesses, and unemployment; lowest panniculitis, depression/psych impaired/mental health, dyslipidemia, liver disease, PCOS, and stress urinary incontinence (n=8). Caucasians had the highest cholelithiasis, GERD, liver disease, 6 cardiopulmonary including OSA, 3 somatic, depression/psych impairment, 4 others (n=18); lowest substance abuse. Hispanics had the highest tobacco; lowest CHF, hypertension, 3 cardiac, musculoskeletal pain, pseudotumor cerebri, gout (n=8). Asians had the highest hernia, alcohol use, mental health/impaired function, diabetes, menstrual irregularities (n=6); lowest cholelithiasis, GERD, fibromyalgia, 4 cardiopulmonary, tobacco (n=8). ‘Other’ had the highest substance abuse; Lowest hernia, alcohol use, back pain, impaired function, diabetes, menstrual irregularities, and OSA (n=7).

Conclusions:

Women with morbid obesity vary by race. African-Americans had more cardiopulmonary problems, while Caucasians had the most obesity co-morbidities overall. Hispanics smoked most, but were lowest in 8 co-morbidities. Asians had the most alcohol use, diabetes, hormonal and psychological concerns. The ‘other’ race category had the fewest co-morbidities. This advance knowledge can help clinical management of obese females in a diverse population.

T-P-3081

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Social Media Use and Eating Pathology in Young Adult Women and Men With Overweight/Obesity

Sylvia Herbozo, PhD *Loma Linda*, Serena Stevens, MA *Loma Linda CA*, Jennifer Harriger, PhD *Malibu CA*

Background:

Studies have shown that social media use is associated with poor body image and eating pathology. However, this research has primarily focused on young adult women who are average weight, despite the high rates of overweight/obesity in young adult women and men during their college years. The current study examined gender as a moderator of the relationship between social media use and eating pathology in young adults with overweight/obesity.

Methods:

Participants were 398 young adults (62.8% female) aged 18 to 29 ($M = 19.41$, $SD = 1.69$) with a mean body mass index of 30.08 ($SD = 5.94$) who were recruited from university subject pools in the Midwestern and Southwestern U.S. regions. A social media questionnaire and the Eating Disorder Examination-Questionnaire were completed. SPSS PROCESS macro was used to test the moderation effect of gender on the relationship between social media use and eating pathology.

Results:

Approximately 84%, 62%, 79% and 47% of young adults use Facebook, Twitter, Instagram, and other forms of social media, respectively. The overall model was significant, $F(3,394) = 30.11$, $p < .001$, $R^2 = .19$, indicating that 18.7% of the variance in eating pathology is accounted for by time spent using social media and gender. On average, women scored 12.95 points higher on eating pathology than men ($B = 12.95$, $p < .001$). For every one-point increase in time spent using social media, eating pathology increased by 0.59 points ($B = 0.59$, $p < .03$). The interaction term was not significant ($B = 0.26$, $p > .60$).

Conclusions:

Results indicate that gender and social media use influence eating pathology in young adults with overweight/obesity. Both young adult women and men with greater frequency of social media use may be at increased risk for eating pathology. Future studies should examine specific social media activities that may contribute to such negative outcomes. This research may help inform intervention efforts for reducing the potential harmful effects of social media.

T-P-3082

Examining Food Addiction and Acculturation in a Hispanic Bariatric Surgery-Seeking Population

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Background:

The construct of food addiction (FA) continues to gain interest, however there is a lack of cross-cultural research. Ethnicity and acculturation play a critical role in eating and related pathology. Hispanics in the U.S. carry a disproportionate burden of the prevalence of obesity which warrants greater understanding of FA symptoms within this population.

Methods:

The sample consisted of 215 English speaking (mean BMI 44.52; $SD = 7.75$) and 229 Spanish speaking (mean BMI = 41.57; $SD = 6.51$) Hispanic adults presenting for bariatric surgery. FA, as measured by the Yale Food Addiction Scale 2.0, acculturation as measured by the Short Acculturation Scale for Hispanics, and socio-demographic differences were examined.

Results:

There was a significant difference in FA between groups with 39.6% of the English speaking sample and 32.4% of the Spanish speaking sample meeting criteria, $t = 3.44(442)$, $p = .002$. Mean BMI was significantly higher in the English speaking sample (44.52, $SD = 7.75$) compared to the Spanish speaking sample (41.57, $SD = 6.51$), $t = 4.33(418)$, $p = .001$. Comparatively, the English speaking sample endorsed living significantly more years in the U.S., greater acculturation to the U.S., and earning higher income. Participants who endorsed greater acculturation had significantly higher level of FA symptoms (M symptom count = 4.28, $SD = 3.53$) compared to those who endorsed lower acculturation (M symptom count = 3.60, $SD = 3.43$), $t = -2.02(437)$, $p < .05$ (95% $CI = 1.34$ to $-.04$). There was no significant difference found between participant place of birth and FA endorsement.

Conclusions:

Prevalence of FA in this sample is similar to other rates reported with weight loss surgery samples of varying ethnic backgrounds. Results suggest a relationship between greater FA symptom expression and weight gain, higher income, and Hispanics' level of acculturation in the U.S. Improving understanding of FA may have clinical implications in the standard of care for assessing and treating Hispanic weight loss surgery patients.

T-P-3083

Effects of Food Intake Behaviors on Longitudinal Weight Change

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Background:

We have previously reported the results of a study designed to evaluate the appetitive and metabolic effects of short-term under- and overfeeding in normal and overweight individuals. We now report the longitudinal weight data for these individuals, and associations between food intake behaviors and measures of weight change.

Methods:

51 subjects (27 M, 24 W) with baseline weight 71.1 ± 14.2 kg (BMI 23.4 ± 3.6 kg/m²) were studied in a eucaloric state. They completed the Three Factor Eating Questionnaire (TFEQ) and were asked to rate food images of high hedonic value with respect to the image's appeal and pleasantness and their desire to eat the food. Subjects were followed every 6 months for 31.9 ± 6.4 mos.

Results:

Absolute weight change was 1.2 ± 3.7 kg, corresponding to $1.9 \pm 4.5\%$ weight change. Weight fluctuation (estimated as the standard deviation of the weights measured at each follow up time point) was 1.7 ± 1.1 kg. Overall, men gained more weight than women ($3.2 \pm 4.2\%$ vs $0.39 \pm 4.5\%$, $p=0.02$), but weight fluctuation did not differ by sex. Baseline restraint as measured with the TFEQ showed an inverse correlation with percent weight change ($R = -0.33$, $p=0.02$). Baseline disinhibition showed a correlation with weight fluctuation ($R = -0.384$, $p=0.006$). Percent weight change showed inverse correlations with food image appeal ($R = -0.33$, $p=0.02$), pleasantness (-0.36 , $p=0.01$), and desire to eat ($R = -0.41$, $p=0.002$). Although there were no sex-based differences with respect to hunger, restraint or disinhibition, women rated food images with higher appeal ($p=0.02$) and pleasantness ($p=0.02$).

Conclusions:

These findings suggest that although women find hedonic foods more appealing, they tend to gain less weight over time than men. In addition, higher ratings of hedonic food images and greater restraint are associated with less weight gain over time, while disinhibition is associated with greater weight fluctuation.

T-P-3084

Behavioral Phenotypes in Young Adults Who Are Overweight or Obese

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Background:

Obese or overweight young adults have higher risk of developing risk factors for serious chronic conditions later in life. Obesity is a heterogeneous condition for which information regarding phenotypes may lead to novel means of targeted prevention and treatment.

Methods:

The Early Adult Reduction of weight through Lifestyle intervention (EARLY) is comprised of separately funded randomized controlled trials targeting weight loss or weight gain prevention in 18-35 year old participants. The studies contributed common measures to a shared database. Using this resource, latent class analyses of 37 baseline characteristics (eating behaviors, physical activity, sedentary time, weight management behaviors, sleeping patterns, tobacco use, alcohol consumption) were used to identify phenotypes in a sample of 1692 participants with body mass index (BMI) of at least 25 kg/m².

Results:

The 5 phenotypes are characterized by: 1) relatively poor eating habits but high total physical activity ($n=596$), 2) low physical activity and high sedentary behavior ($n=144$), 3) high consumption of diet and sugar sweetened beverages ($n=130$), 4) cigarette smokers and alcohol consumers ($n=110$), and 5) relatively healthy eating habits and high leisure-time physical activity ($n=712$). The last and most common phenotype has the highest percentage of females (71%), the highest percentage of never smokers (74%), and the largest percentage of overweight but not obese participants (53%).

Conclusions:

Obesity phenotypes in young adults can be differentiated by eating habits, physical activity, smoking and alcohol use. The largest group, with the highest percentage of overweight but not obese members, have higher percentages of members reporting better eating habits and more leisure time physical activity than other phenotypes. But since all have BMI at least 25 kg/m², lifestyle improvements are still needed. These behavioral phenotypes potentially provide specific targets for weight loss interventions.

T-P-3085 - WITHDRAWN

T-P-3086

Weight and Shape Concern Is Associated with Reduced Weight Loss Among Look AHEAD Participants

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Background:

Few baseline characteristics have been shown to contribute to variability in weight loss outcomes. The current study examined whether level of weight/shape concern (WSC) among participants in Look AHEAD trial predicted weight loss outcomes.

Methods:

Using the public use data set, we examined 4896 overweight or obese adults with type 2 diabetes (age: 59.6±6.75, BMI: 35.95±5.87; 66% white, 59% female) who were randomly assigned to Intensive Lifestyle Intervention (ILI) designed to create 10% weight loss with dietary and exercise changes over 12mos or a Diabetes Support and Education (DSE) control group. Participants were assessed at baseline, 12-, 24-, 36-, and 48-mos. WSC was evaluated with one-item: During the past 6 months, has your weight or shape mattered to how you feel about yourself?

Results:

Twenty-two percent of participants reported that WSC was 'very important' (27% reported 'pretty important'; 40% reported 'somewhat' and 11% reported 'not important at all'). WSC had no impact on weight change in DSE. However, logistic regression analysis controlling for baseline age and gender revealed individuals with high WSC were less likely to achieve the weight loss goal than those who said WSC was 'pretty important' (OR:0.70; 95%CI:0.54-0.87; p=0.003), 'somewhat' important (OR: 0.61; 95%CI:0.49-0.77; p=<.001), as well as those who said it was 'not important at all' (OR=0.61; 95%CI:0.45-0.84; p=0.002). Average weight change differed significantly by WSC at 12mos (p<.001; 'very important':-7.7±7.1kg; 'pretty important':-8.9±7.6kg; 'somewhat important':-9.6±7.5kg; 'not at all important':-9.7±8.5kg). Weight regain was observed over the next 3 years in participants across levels of baseline WSC, with no difference in overall weight loss by 48-mos.

Conclusions:

Individuals expressing high initial WSC lost less weight and thus may require additional intervention to achieve weight loss outcomes comparable to those with lower weight/shape concerns.

T-P-3087

Weight and Shape Concern Among Young Adults in the SNAP Trial: Implications for Treatment Matching

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Background:

The Study of Novel Approaches to Weight Gain Prevention (SNAP) demonstrated that two self-regulatory interventions delivered among young adults helped prevent weight gain. Because both interventions were effective, we aimed to identify potential moderators of intervention effects that could inform treatment matching. We examined the degree to which weight and shape concern (WSC) moderated weight outcomes at 24-mos.

Methods:

Young adults (n=599; 27.7±4.4 yrs, BMI: 25.4±2.6, 78.3% female, 26.9% minority), were randomized to self-regulation with Small Changes (SC), self-regulation with Large Changes (LC) or control (C). SC targeted small daily changes in diet and physical activity to result in a 200 kcal/day deficit. LC aimed to facilitate preemptive weight loss of 5-10 lbs. to create a buffer against future weight gains. WSC was assessed using one item from the Eating Disorder Assessment: During the past 6 months, has your weight or shape mattered to how you feel about yourself?

Results:

Approximately 22% of participants reported high WSC, 37% reported moderate and 41% reported low concern. In analysis of variance adjusted for age, gender, and baseline weight, the effect of treatment condition on percent weight change at 24-mos differed by level of WSC at baseline. While WSC was not associated with weight change among control participants, in LC those with high WSC gained weight compared to those with lower WSC (high WSC: +.67±4.8%, moderate: -2.95±6.5%, low: -2.67±6.5%). In contrast, those with high WSC in SC lost weight over 24-mos and observed greater reductions than those with lower levels of WSC (high WSC: -2.48±5.7%, moderate: -.78±6.5%, low:-1.08±6.6%), resulting in a significant interaction of condition by WSC on weight change (p=.03).

Conclusions:

Individuals with high WSC have better weight control outcomes in SC than LC. Those with moderate or low WSC observed greater weight loss in LC than SC. These findings suggest that WSC may be used to match individuals to treatment conditions.

T-P-3088

Pilot Study of Energy Balance Models and Bite Goals to Build Adherence to Online Weight Loss Treatment

Carly Goldstein, PhD *Providence RI*, Diana Thomas, PhD, FTOS *West Point NY*, Adam Hoover, PhD *Clemson SC*, Dale Bond, PhD *Providence RI*, J. Graham Thomas, PhD

Background:

Online behavioral weight loss (OBWL) treatment can be effective but often produces less weight loss than in-person treatment, likely due in part to insufficient adherence to the prescribed caloric restriction. Technology to convey and support adherence may improve outcomes.

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Methods:

Adults with BMI 27-45 kg/m² (83.3% women, mean±SD age 49.8±8.9, BMI 38.4±11.4) were randomized to 12 weeks of OBWL alone (N=9), OBWL plus energy balance modeling (OBWL+EBM, N=7) that involved weekly feedback in the form of a graph depicting their actual and expected weight loss based on their physiological parameters, or these two interventions plus the provision of the wrist-worn Bite Counter device (OBWL+EBM+BC, N=8) that was used to set a EBM-based within-meal bite goal with alarm after two consecutive weeks of lower than expected weight loss per the EBM. All 24 participants were weighed weekly at the clinic for 24 weeks and the EBM and BC interventions were continued during weeks 13-24.

Results:

The experimental interventions were administered successfully. Study completion rates were 44.4% in OBWL, 74.4% in OBWL+EBM, and 62.5% in BWL+EBM+BC (p=.53). Failure to complete was most often attributed to dislike of weekly weigh-ins, of which 67.4% were attended across groups. In intent-to-treat analysis with zero weight loss imputed for missing data, mean±SD weight loss (kg) was 4.0±5.0 in OBWL, 4.6±5.1 in OBWL+EBM, and 5.3±3.7 in OBWL+EBM+BC at 12-weeks (p=.85) and 3.7±4.4 in OBWL, 5.9±7.6 in OBWL+EBM, and 6.3±4.7 in OBWL+EBM+BC at 24-weeks (p=.58). The BC was used 120.5±46.1 (71.7%) of the 168 days it was instructed to be used per participant.

Conclusions:

EBM and BC were feasible for administration but acceptability of the interventions was low due to the requirement for weekly clinic weigh-ins. Though not statistically significant in this small sample, the larger mean weight losses achieved via these interventions warrant further investigation in an adequately-powered clinical trial without clinic weigh-ins.

T-P-3089

Daytime Eating Improves Weight and Metabolism Compared with Delayed Eating in Normal Weight Adults

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Background:

The timing of food intake contributes to body weight regulation. However, the metabolic consequences of a consistent daytime, compared with a delayed, eating schedule in the presence of a stable sleep-wake cycle are unknown.

Methods:

Nine adults (age: 25.8±3.3y; BMI: 22.2±1.9 kg/m²; 5 females) participated in a randomized cross-over study in free-living conditions, eating 3 meals + 2 snacks per day between: 1) 0800h-1900h (daytime) or 2) 1200h-2300h (delayed), with energy and macronutrient content held equal. The sleep-wake cycle was held constant between 2300h-0900h (verified by actigraphy), with exercise levels balanced. Participants spent 8 wk on condition #1, followed by a 2-wk washout period, followed by 8 wk on condition #2 (order counterbalanced). Weight, adiposity, energy metabolism, and hormonal markers were assessed 4 times: 1) baseline; 2) after eating condition #1; 3) after the washout period, before eating condition #2 began; and 4) after eating condition #2. Paired t-tests were used for statistical analysis and cosinor analysis determined circadian rhythm phase. Cohen's d effect sizes quantified the size of pre-post changes between conditions.

Results:

Weight, insulin, total cholesterol, and respiratory quotient decreased on the daytime schedule, while triglycerides and glucose increased on the delayed schedule, with moderate to large effect sizes of .408-1.364. In the daytime vs the delayed eating condition, the circadian phase of ghrelin was advanced (earlier) while the phase of leptin was delayed (later). Melatonin phase remained unchanged. Data from all 13 participants will be available at the time of presentation.

Conclusions:

This study provides the first experimental evidence that a prolonged daytime versus a delayed eating schedule promotes weight loss and a positive profile for fuel oxidation, energy metabolism and hormonal markers in normal weight adults. Meal timing may also affect peripheral clocks, while the central clock remains entrained to the sleep-wake cycle.

T-P-3090

Weight Loss Goals Among Adults Enrolling in a Hospital Clinic-Based Dietary Intervention

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Background:

Weight loss of 5-10% is recommended in national guidelines for the treatment of obesity, as it is associated with improvements in weight-related comorbidities, and is achievable with lifestyle intervention. People seeking treatment for obesity often have weight loss goals well beyond this. We evaluated weight loss goals among adults enrolling in a dietary weight loss study based on our hospital's obesity clinic program.

Methods:

100 adults with obesity undertook an 8-week modified very-low-energy diet, which involved consuming 2 meal replacements (Optifast

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VLCD, Nestlé Nutrition) and one low-carbohydrate meal per day (total daily energy intake approx. 3350 kJ/800 kcal), followed by a structured transition to regular meals and 12 month follow-up. Prior to starting the program, participants' weight loss goals were assessed using the Goals and Relative Weights questionnaire, which asks them to nominate a dream weight, and weights they would be happy with, accept, or be disappointed to achieve.

Results:

The participants were 61 women and 39 men with (mean \pm SD) age 48.2 ± 12.5 years, weight 250 ± 57 lb (113.5 ± 25.9 kg) and body mass index (BMI) 39.8 ± 7.3 kg/m². Mean percentage weight losses required to achieve "dream", "happy", "acceptable" and "disappointed" weights were 29.8 ± 9.5 , 22.3 ± 8.3 , 16.5 ± 7.5 and $9.9 \pm 5.7\%$ respectively. Mean BMI at the nominated weights was 27.4 ± 3.3 (dream), 30.5 ± 4.0 (happy), 32.9 ± 4.5 (acceptable) and 35.7 ± 5.8 kg/m² (disappointed).

Conclusions:

Weight loss of 10% was viewed as disappointing by patients. However, although their weight loss goals greatly exceeded the average results achieved with lifestyle interventions, the goal weights reported by adults seeking medically supervised dietary treatment for obesity were within the overweight/obese BMI ranges.

T-P-3091

Strategies Used by Women of Differing Weight Status to Moderate Energy Intake From Large Portions

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Background:

We reported previously that the weight of food consumed in response to increasing portion size was similar for women trained in portion-control strategies in a 1-year weight loss trial and untrained controls. Trained participants, however, consumed less energy than controls with either normal weight or overweight, whose intake did not differ. The aim of this study was to determine how strategies used to moderate energy intake from larger portions differed by training and weight status.

Methods:

Subjects were 102 women: 39 trained participants with reduced obesity who completed the Portion-Control Strategies Trial and 63 untrained controls (34 overweight; 29 normal weight). In a crossover design, subjects came to the lab on 4 occasions to eat a lunch of 7 foods with a range of energy density (ED): chicken, pasta, broccoli, green salad, garlic bread, grapes, and cookies. Across meals, all foods were varied in portion size (100%, 125%, 150%, or 175% of baseline).

Results:

Across the meals, energy intake was 94 kcal (16%) lower for trained participants than controls ($P = 0.023$). This was attributable to consuming meals lower in ED (1.09 ± 0.02 kcal/g) than those of controls (1.27 ± 0.02 kcal/g; $P = 0.003$), whose meal ED did not differ by weight status ($P = 0.25$). At meals, trained participants consumed a greater proportion of lower-ED foods than controls. For all groups, ratings of the healthfulness of the foods were correlated with the ED of the foods ($r = -0.82$; $P < 0.0001$). However, only in trained participants were higher ratings of the influence of healthfulness on food choice related to lower energy intake at meals ($P = 0.032$).

Conclusions:

Training, but not weight status, influenced energy intake from larger portions. Trained participants moderated energy intake by preferentially consuming foods based on healthfulness, which was related to ED. This is further evidence that individuals should focus on selecting lower-ED foods in order to attenuate the effects of large portions on energy intake.

T-P-3092-DT

I Heart Yoga! A Pilot, Culturally-Tailored Yoga Intervention for African-American Women With Obesity

Eydie Kramer, BS *Minneapolis MN*, Daheia Barr-Anderson, PhD *Minneapolis MN*

Background:

African-American women report elevated stress levels, higher prevalence of hypertension, lower engagement in physical activity, and greater risk for obesity than other adults; resulting in increased risk for cardiovascular disease. Yoga interventions have positively impacted some of these physiological, psychological, and behavioral risk factors. However, the effects of a culturally-tailored yoga intervention on health outcomes has not been previously examined in this high-risk population.

Methods:

Fifty-nine African-American women (mean age= 46.6 ± 12.7 years, mean BMI= 36.93 ± 7.3 kg/m²) were recruited from a Midwestern metropolitan community to participate in a 12-week pilot yoga intervention. Participants were randomized to either an immediate intervention (INTERVENTION) or a delayed-intervention control (CONTROL) group. They were encouraged to attend at least three 60-minute yoga sessions weekly taught by African-American or overweight instructors. Trained staff collected anthropometric and blood pressure measures and participants self-reported perceived stress levels, physical activity, and screen-time behavior at baseline and post-intervention.

Results:

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At baseline, participants reported stress scores above 20 which indicate "high stress". INTERVENTION group scores decreased slightly below 20, but were not statistically significant. INTERVENTION participants reported increases in moderate physical activity from baseline to post-intervention; mean hours/week=1.360±1.31 to 2.905±2.41 (p=0.014); CONTROL group did not significantly increase. Similarly, INTERVENTION group decreased screen-time; mean hours/day=2.905±2.41 at baseline; 2.375±1.83 at post-intervention (p=0.002). Reductions in BMI were modest.

Conclusions:

Findings indicate that a culturally-tailored yoga intervention for African-American women with obesity may increase moderate physical activity, and decrease sedentary screen-time. Further investigation is warranted to address perceived stress level, blood pressure, and weight reduction.

T-P-3093

Increased Patient Accountability Promotes Weight Loss Success in Medical Weight Management

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Background:

Body weight reduction is a component for measuring the effectiveness of a Medical Weight Management (MWM) programs in patients with obesity. Frequent and consistent visits over an extended MWM treatment period may assist in achieving successful body weight loss (sBWL). The intention of this study was to evaluate the association between the number of MWM visits and sBWL.

Methods:

This retrospective study of electronic health record data included patients visiting Geisinger MWM clinics between 2007-2016 and were limited to those having 3+ MWM visits over an extended treatment period (6-12 months). sBWL was defined as achieving >10% of body weight loss by the end of the first year of treatment. Multiple logistic regression was used to evaluate probability of sBWL while adjusting for age, sex, BMI, and starting year of treatment.

Results:

The study included 4,320 patients from Geisinger MWM clinics (73% female, mean age of 47 years, and mean baseline BMI of 44 kg/m²). The distribution of visits to a MWM included 51% with 3-5 visits, 23% with 6-7 visits, 16% with 8-9 visits, 8% with 10-11 visits, and 2% with 12+ visits. Each additional visit with a MWM clinic was associated with 1.19 times greater chance of sBWL (odds ratio adjusted for age, sex, BMI, and program starting year = 1.19 [1.16, 1.23], p<0.0001). The predicted probability of sBWL ranged from 10.7% for patients with 3 visits during the treatment period to 36.7% for patients with 12 visits during the treatment period.

Conclusions:

Increased weight loss success was exhibited in patients receiving the most clinic visits during a first-year treatment period within a comprehensive Medical Weight Management clinic. When all possible, more accountability and follow up should be encouraged for the greatest success. Further studies to determine compatible weight loss results via "remote" or "e-visits" are ongoing.

T-P-3094

Association of Subjective Social Status with Compensation in Response to Large Meals

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Background:

Subjective social status (SSS) is inversely associated with body fatness. The physiological and psychological effects of low social status may spur increased energy intake as a strategy to buffer against future food scarcity. We examined the associations between SSS, fat gain, and energy intake. We tested whether those with low SSS were more likely to compensate poorly and gain more fat in response to large meals.

Methods:

This study included 14 female participants with mean age of 33.53 ± 8.86 and BMI of 25.04 ± 1.82. A 14-day feeding protocol was used, where they consumed a lunch-time meal that was 60% of their estimated 24-hour energy requirements each day. Free-living food intake was recorded using the Remote Food Photography Method outside of the lab on days 1-2, 7-8, and 12-13 to measure compensation in response to the large lunch. 24-Hour energy balance, post-lunch energy intake, and change in percent body fat (measured by dual x-ray absorptiometry) were analyzed as a function of SSS. IBM SPSS Statistics 22 was utilized to conduct a univariate ANOVA including SSS as a fixed factor and continuous variable with age and body weight (BW) as covariates.

Results:

SSS was not significantly associated with change in percent body fat (p= 0.504); however, lower SSS was associated with increased post-lunch intake (p=0.017). Following the standardized lunch-time meal, participants with the lowest SSS (3) consumed 570 kcal more than individuals with the highest SSS. Energy balance was higher in those with lower SSS compared to those with higher SSS, but neither SSS, age, nor body weight were significant; (p= 0.08), (p= 0.608) and (p= 0.070) respectively.

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Conclusions:

This pilot study suggested that low SSS is associated with a reduced ability to compensate later in the day for a large meal. The study was not powered to detect a chronic positive energy balance and fat gain, but future studies that are well-powered and longer in duration are warranted to detect this association.

T-P-3095 - WITHDRAWN

T-P-3096

The Relationship between Intuitive Eating and Health Indicators in Overweight/Obesity

Natalie Keirns, BS *Stillwater OK*, Misty Hawkins, PhD *Stillwater OK*, David Gahn, MD

Background:

Efforts have been made to combat obesity. However, minorities, especially American Indians (AIs), are under-represented, and current treatments often produce only short-term weight loss, with potential adverse outcomes (e.g., weight regain, eating pathology). Subsequently, intuitive eating (IE) has emerged and has been linked to various positive results. This project investigated the relationship between baseline IE and health indicators in a sample of obese, treatment-seeking adults with strong AI representation.

Methods:

Participants were 85 obese adults enrolled in the COSMOS or POWER-UP ongoing weight loss programs (Identifier: NCT02786238) (age: 45±11 years, female: 64 (75%), non-white: 59 (69%), BMI: 36.1±4.7 kg/m²). IE total score (TOT) and four subscales (1. permission to eat; PERM, 2. eating for physical rather than emotional reasons; PHYS, 3. reliance on hunger and satiety cues; REL, 4. body-food choice congruence; CON) were measured (Intuitive Eating Scale-2). Health indicators were systolic and diastolic blood pressure (SBP, DBP), fasting glucose (GLU), and fasting insulin (INS). BP was measured by research assistants. GLU values were obtained from clinic blood draws or from home glucometer readings. INS values were obtained from clinic blood draws and were only available for a subset of participants (42%). Covariates in all models included demographics and body mass index.

Results:

PERM was associated with SBP ($r = -.31, p = .019$). TOT ($r = -.24, p = .057$) and CON ($r = -.25, p = .087$) showed trends with SBP. TOT ($r = -.24, p = .093$), PERM ($r = -.28, p = .058$), and CON ($r = -.28, p = .098$) all showed trends with DBP. TOT ($r = -.29, p = .090$) and PHYS ($r = -.35, p = .089$) showed trends with INS. IE was not associated with GLU.

Conclusions:

IE – especially permission to eat and body-food choice congruence – may predict health indicators. Further research is needed, as IE could help decrease disease risk for those with treatment-resistant obesity and/or be a potential adjunct to behavioral obesity treatments.

T-P-3097

Timing of Energy Intake, Sleep, and Weight Loss

Hollie Raynor, PhD *Knoxville TN*, Chelsi Cardoso, MS, RD *Maryville TN*

Background:

Consuming a larger portion of energy earlier and a smaller portion later in the day is an eating pattern associated with enhanced weight management. This pattern may assist with chronoenhancement (synchronization of biological and behavioral circadian rhythms). This 8-week pilot study examined if the amount of energy consumed and the time of day it is consumed (behavioral circadian rhythm) enhanced weight loss and regularity of sleep and wake times (marker for biological circadian rhythm).

Methods:

Eight females (53.1 ± 6.4 yrs, 36.0 ± 2.4 kg/m², 75% non-Hispanic White) were randomized to Morning or Evening. Both conditions received a hypocaloric, low-fat diet (1200-1500 kcal/d, < 30% energy from fat), an activity goal (> 200 min/wk of moderate-intensity physical activity), and a weekly cognitive behavioral intervention. Morning consumed 50%, 30%, and 20% of energy at breakfast, lunch, and dinner, respectively, and Evening consumed 20%, 30%, and 50% of energy at breakfast, lunch, and dinner, respectively. The first meal was to be consumed within 60 min of awakening, with at least 60 min of no eating prior to sleep. No guidance was provided for sleep. Measures of weight and sleep via accelerometry were taken at 0 and 8 weeks.

Results:

Percent weight loss was significantly ($p < 0.05$) greater for Morning than Evening (-8.9 ± 1.4% vs -4.8 ± 1.3%, $d = 3.0$). For sleep efficiency, a significant ($p < 0.05$) interaction occurred, with Morning increasing and Evening decreasing in sleep efficiency. A significant ($p < 0.05$) interaction also occurred with regularity of sleep and wake times, with regularity increasing in Morning and decreasing in Evening.

Conclusions:

An eating pattern in which a larger amount of energy was consumed earlier and a smaller amount of energy was consumed later in the day was beneficial for weight loss and may enhance synchronization of biological and behavioral circadian rhythms.

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T-P-3098

WillSense: Will Participants Wear Passive Sensing Devices Long Enough to Study Eating Behavior.

Nabil Alshurafa, PhD *Chicago IL*, Rawan Alharbi, Angela Fidler Pfammatter, PhD *Chicago IL*, Bonnie Spring, PhD *Chicago IL*

Background:

Due to high burden and bias of self-report, passive sensing of food intake systems is rising as an alternative measure to operationalize eating habit and caloric intake behavioral constructs. Existing machine learning models designed to detect eating based on studies in-lab fail to detect eating episodes in free-living populations. In order to improve our machine learning models, a sensing suite comprising a wrist- and neck-worn sensor, and a wearable video camera (with a fish-eye lens) was designed to reliably capture eating in the field.

Methods:

Participants (n=24, 12 obese, 6 overweight, and 6 normal BMI) wore the sensing suite while performing structured (talking to a stranger in the mall, eating, using a restroom, checking email, using an ATM, looking at a mirror) and unstructured activities in the field for a day that would affect willingness to wear the sensors. They were requested to take notes in a diary about how they felt while out in the field. Participants then answered questions regarding their willingness to wear the sensor suite. To prevent breach of privacy participants were provided with a Data Annotation Tool (DAT) to facilitate deletion and annotation of data.

Results:

87.5% of the participants agreed to wearing the wrist- and neck-worn sensor for 30 days during waking hours if paid \$100. 87.5% were also willing to wear the entire system (including the video camera) for 30 days if paid \$100 and were able to keep the equipment. Participant's main motivators for wearing the sensor suite are money and health; and the main barriers included user-comfort, and bystander reactions.

Conclusions:

Participants are willing to wear a sensing suite with a video camera if the price is right. This system opens up the potential to build effective machine learning models that can reliably passively operationalize eating-related constructs in the field. Future studies will test the device's performance in the wild and utility as part of an eating intervention.

T-P-3099

Pilot RCT of a Weight Management Intervention Within Primary Care at Veterans Affairs

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Background:

Obesity is under-treated and primary care teams find it difficult to provide effective lifestyle counseling. We conducted a pilot RCT of the Goals for Eating and Moving (GEM) intervention to improve counseling in primary care and encourage patients to use resources at the Department of Veterans Affairs (VA).

Methods:

Veterans with a BMI of ≥ 30 kg/m² or between 25 and 29.99kg/m² with comorbidity were randomized to GEM or Enhanced Usual Care (EUC). GEM utilizes the Patient Aligned Care Teams within the VA to deliver 5As counseling (Assess, Advise, Agree, Assist and Arrange) to promote modest weight loss and behavior change. Patients meet with trained health coaches who use a tablet-delivered tool to facilitate goal-setting and follow up telephone coaching. At 6-months, we measured weight and used a 17-item questionnaire to assess fruit and vegetable intake. Leafy greens/salad and sugar-sweetened beverages were measured as single items. We used Wilcoxon rank-sum test and Fisher exact test to assess the relationship between GEM and variables. We used multiple-imputations procedure for missing data.

Results:

Twenty-nine Veterans enrolled, 24 returned at 3-months and 25 at 6-months. Participants in GEM lost more weight at 6-months than those in EUC (-1.2 ± 3.5 kg vs. 0.1 ± 4.9 kg; $p=0.04$). After imputing missing data, the adjusted p-value was 0.07. Compared to EUC, GEM reported increases in number of servings per week of fruits and vegetables (0.1 ± 0.3 vs. -0.5 ± 0.5 ; $p=0.01$) and leafy greens/salad (3.8 ± 5.2 vs. -2.6 ± 6.2 ; $p=0.01$). Mean number of coaching calls completed was 3.9 out of 9 calls; and higher number of calls were correlated with more weight loss (Spearman $\rho=-0.58$; $p=0.05$).

Conclusions:

GEM may promote weight loss at 6-months. Since weight loss was correlated with number of coaching calls, improving patient engagement and number of interactions with the health coach may increase weight loss.

T-P-3100

You Can't Always Get What You Want But It May Not Matter: Findings From SNAP

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Background:

Patient preference and perceived treatment efficacy are key considerations in discussions of personalized medicine. Here we examine whether these preferences and beliefs predict subsequent outcomes in a weight gain prevention intervention for young adults (SNAP).

Methods:

Young adults (n=599), 18-35 yrs with BMI 21.0-30.0 kg/m² (78.3% female, 26.9% minority), were randomized to self-regulation with Small Changes (SC), self-regulation with Large Changes (LC), or Self-guided (SG). SC prescribed daily small (~100 calories per day) decreases in intake and increases in physical activity. LC focused on initially losing 5-10 lb. to buffer against anticipated weight gains. Participants assigned to SG were provided with intervention materials from both approaches to pursue independently. Assessments included: 1) baseline measure of intervention preference and perceived treatment effectiveness, and 2) perceived treatment effectiveness and percent weight loss at 4 months.

Results:

At baseline, 58% of participants expressed preference for LC, 28% for SC, and 14% for SG. Regardless of assigned treatment, neither baseline preference (p=0.65) nor perceived treatment effectiveness (p=0.95) was related to weight loss. Among participants randomized to the intervention they initially viewed as less effective (N=174), percent weight loss at 4 months was significantly associated with odds of changing perception of treatment effectiveness (OR=1.14 per % loss (p=0.005), with a weight loss of -3.76% in those who changed perception vs -1.87% in those who continued to think the other approach would be better.

Conclusions:

Neither initial participant preference nor perceived treatment effectiveness impacted outcome. Greater weight loss was associated with reconciling perception of effectiveness with treatment assignment.

T-P-3101-DT

Early Engagement Is Associated With Better Weight Loss Outcomes in Emerging Adults

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Background:

Emerging adults are at high risk for overweight and obesity, yet are notoriously challenging to recruit and retain in behavioral weight loss trials. Given the limited work targeting this age group, little is known about early predictors of weight loss success. We examined whether early program engagement predicted better overall engagement, retention and weight loss outcomes in this vulnerable population.

Methods:

Data were pooled from two randomized controlled pilot trials, both of which enrolled 18-25 year olds with BMI between 25 and 45 kg/m² and involved weekly intervention contact for 3 months. Participants (N=99) were 80% female, 48% minority, age=22.1 (2.0) years, with a BMI=33.7 (5.1) kg/m². Early engagement was defined as the initial 4 weeks of treatment and analyses compared participants who engaged in all 4 weeks vs. those who did not meet this threshold. Weight was objectively assessed at 0 and 3 months; engagement was tracked weekly throughout (attendance at initial in person session, weight reporting); retention was scored yes or no at 3 months.

Results:

A total of 70% of participants engaged in all 4 initial weeks of treatment. Compared to those who did not meet this threshold, early engagers experienced greater overall engagement (9.6 weeks vs. 4.2 weeks, p<.001), greater ITT weight losses (-3.8% vs. -1.3%, p=.005), greater weight losses among completers (-4.8% vs. -2.4%, p=.045), and better retention (78% vs. 53%, p=.012). There were no differences in early engagement by sex (p=.61), race (p=.10) or ethnicity (p=.60).

Conclusions:

Findings suggest that early engagement in behavioral weight loss trials is associated with more favorable outcomes in terms of overall engagement, retention and weight losses among emerging adults. Future work should examine whether this threshold predicts longer-term outcomes and identify characteristics associated with poor early engagement in order to further tailor weight management approaches for this high-risk age group.

T-P-3102

Executive Function and Weight Loss Outcomes in a Behavioral Weight Loss Intervention

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Background:

Executive functions (EF) have been implicated in successful health behavior change, yet few studies have prospectively explored the relationship between EF and weight loss using both task-based assessment and self-report measures. The present study examined associations between EF and weight loss outcomes in the context of a longitudinal couples-based weight loss intervention.

Methods:

Participants were cohabitating spousal dyads who attended weekly behavioral weight loss groups (Ncouples = 64, Mage =54.0 ±9.5, MBMI=34.2±5.4kg/m², 50% female, 88.8% Caucasian). Weight was measured in kgs at baseline and 3 months. Delis-Kaplan Executive

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Function System Color-Word Interference tasks were used to assess inhibitory control and switching. Self-report EF was measured using the Behavior Rating Index of Executive Functions-Adult (BRIEF-A). BRIEF-A subscales tap several EFs, including inhibition, initiation, and shifting; higher scores indicate greater difficulty. IQ was assessed using the WASI 2-subscale measure.

Results:

Multilevel regression analyses were used to account for interdependence within dyads, controlling for baseline weight, intervention group, and IQ. Basic processing speed was controlled when using objective measures of cognitive processing. Regression analyses revealed that a cognitive interference task measuring inhibitory control significantly predicts percent weight loss at 3 months, $B = -.30$, $t(101.28) = 2.33$, $p = .02$. No other objective or self-reported measures of cognitive processing significantly predicted weight loss, $p > .13$.

Conclusions:

Results indicate that a task of cognitive interference, one's ability to inhibit a prepotent response, predicts percent weight loss at 3 months in a behavioral intervention. This objective measure of EF was a better predictor of weight loss than switching (i.e., mental flexibility/attention shifting) and self-report measures of similar executive skills. Findings may provide insight into cognitive processes recruited in health behavior change.

T-P-3103

No Difference in Decision Making Assessment by Individuals Maintaining or Regaining Weight Loss

William Neumeier, PhD *Birmingham*, Marissa Gowey, PhD *Birmingham AL*, Samantha Henry, MA *Birmingham AL*, Janice Phillips, BS *Birmingham AL*, Gareth Dutton, PhD *Birmingham AL*

Background:

Obesity has been associated with impaired decision-making, planning, and problem solving. These deficits may interfere with weight loss. Less is known about decision-making ability and long-term weight outcomes. The current study aimed to compare decision-making skills in individuals who achieved clinically significant weight loss via behavioral intervention and either regained weight or maintained weight loss.

Methods:

Participants were 91 adults (Mean age=63.9 years; Mean BMI=33.5) who completed a behavioral weight loss intervention and lost at least 5% of their initial body weight. Participants completed the Iowa Gambling Task (IGT), which assesses cognitive and emotional decision-making. Descriptive statistics and published norm-based reference ranges for the IGT were used to characterize participants' score ranges. Chi-square tests were conducted to determine differences in IGT scores in individuals who maintained or regained their weight loss.

Results:

Eighty-five percent of the sample scored in the average or above average range when compared to a normative sample. IGT scores did not significantly differ between individuals who maintained vs. regained their weight loss ($\chi^2(1, N = 91) = 1.82$, $p = NS$).

Conclusions:

Previous studies for IGT and weight loss have demonstrated heterogeneity. This study extended this area of research to a sample of individuals that completed a behavioral weight loss intervention, but did not observe measurable differences in decision making when applying the IGT to weight loss maintenance. Future research should explore other possible explanations for deficits in decision-making skills by individuals that are obese in efforts to improve understanding of behavioral weight loss and weight loss maintenance interventions.

T-P-3104

Obesity Management Using Telemedicine: Using Video Conferencing Is Successful for Body Weight Loss

Michelle Alencar, PhD *CCN Long Beach CA*, Kelly Johnson, PhD *Leavenworth*, Elizabeth Gutierrez, Rashmi Mullur, MD *CA*, Olga Korosteleva, PhD *Long Beach CA*

Background:

Clinically significant weight loss is defined as a $\geq 5\%$ of initial body weight loss within a 6-month period. Ideally, the use of a multi-disciplinary health team has been shown to be the most effective at targeting the needs of the obese patient. The purpose of this study was to determine if using video conferencing health coaching via a telemedicine platform is an effective medium to induce body weight reduction.

Methods:

$N=25$ obese participants (12 males, 13 females) were recruited for this fully on-line 12-week multi-disciplinary weight loss program. Participants were randomly assigned to either an intervention group or control group ($n=13$ Intervention, $BMI=35.19 \pm 3.91$ kg/m², $n=12$ Control, $BMI=34.86 \pm 4.43$ kg/m²). All participants were given three mHealth devices (blood pressure cuff, activity tracking watch, and body fat/body weight monitoring scale) with direct access to a secure telemedicine platform for data tracking and video conferencing with the research team. The intervention group met with the medical doctor once per month and with a registered dietitian weekly through video conferencing via a telemedicine platform. Control participants met with the medical doctor and dietitian at baseline and at

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12 weeks. To analyze the data, independent samples t-tests and t -tests were performed via SPSS v24 with significance set to $p > 0.05$.

Results:

There was a significant difference between the intervention and control groups for body weight loss (7.3 +/- 5.2 vs 1.2 +/- 3.9 kg, respectively, $p < 0.05$) as well as for percent body weight loss (7.16 +/- 4.4 vs 1.5 +/- 4.1%, respectively, $p < 0.05$).

Conclusions:

Our findings suggest that the implementation of a multi-disciplinary health team for obesity management through weekly video conferencing via telemedicine might be an effective tool for inducing significant body weight loss in obese individuals.

T-P-3105

Weight Cycling Severity Influences the Body Image of Adults Seeking Weight Loss Treatment

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Background:

Research has shown that weight cycling is prevalent in the general population and is associated with greater weight gain and binge eating. Less is known about weight cycling and body image, especially among adults with obesity. The current study examined the impact of weight cycling severity on body image in adults with obesity seeking weight loss treatment.

Methods:

Participants were 114 adults (84% female) seeking weight loss treatment aged 18 to 84 ($M = 49.94$, $SD = 14.98$), with a mean body mass index of 38.43 ($SD = 7.94$). The Body Dissatisfaction subscale of the Eating Disorder Inventory-3, and Weight and Shape Concern subscales of the Eating Disorder Examination Questionnaire were completed. Participants were categorized into weight cycling groups based on the number of times they lost and regained at least 20 pounds. There were 24 non-cyclers (never cycled), 39 mild cyclers (1-2 times), and 51 severe cyclers (≤ 3 times). ANCOVAs were used to determine the effect of weight cycling severity on body image after controlling for age.

Results:

After adjusting for age, there were significant group differences in weight concern ($F(2, 109) = 17.27$, $p < .001$, partial $\eta^2 = .24$), shape concern ($F(2, 103) = 8.67$, $p < .001$, partial $\eta^2 = .14$), and body dissatisfaction ($F(2, 96) = 10.62$, $p < .001$, partial $\eta^2 = .18$). Specifically, severe cyclers had more weight concern, shape concern, and body dissatisfaction than mild cyclers and non-cyclers, while mild cyclers had more weight concern than non-cyclers ($ps < .001$). There were no significant differences between mild cyclers and non-cyclers on shape concern and body dissatisfaction.

Conclusions:

Results indicated that severe weight cyclers had more body image concerns than mild cyclers and non-cyclers. Given that poor body image has been linked to dieting and binge eating, severe cyclers with poor body image may be at an increased risk for weight gain. Future studies should examine whether negative body image contributes to the onset and maintenance of weight cycling.

T-P-3106

Effects of Stress on Weight and Eating during an Obesity Intervention Using Portion-Controlled Food

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Background:

Stress is associated with increased consumption of palatable foods and weight gain. However, the influence of stress on obesity treatment is unclear. This study examined the effects of perceived stress on changes in weight and eating behaviors (stress-related eating, disinhibition, hunger, restraint) during a 14-week weight-loss intervention using portion-controlled foods.

Methods:

Data were from 178 participants (mean baseline BMI = 40.9 +/- 5.9 kg/m²; mean age = 44.2 +/- 11.2 yrs; 70.8% black, 21.9% white; 88.2% female) who were prescribed a 1000-1200 kcal/d portion-controlled diet (HMR 800) and attended weekly group lifestyle modification sessions. Participants completed the Perceived Stress Scale, Eating and Appraisal due to Emotions and Stress Questionnaire, and Three-Factor Eating Questionnaire. Weight was measured weekly. Analyses were conducted using linear mixed models adjusting for demographics, and baseline weight and scale scores.

Results:

At baseline, greater perceived stress was associated with higher stress-related eating, dietary disinhibition and hunger ($ps < 0.001$). Stress was not significantly correlated with baseline cognitive restraint or BMI ($ps > 0.05$). Overall, participants lost 7.6 +/- 4.1% of initial body weight. Higher stress scores were associated with significant improvements in stress-related eating ($p = 0.001$) and dietary disinhibition ($p = 0.02$). Baseline stress was not associated with percent weight loss ($p = 0.15$) or changes in cognitive restraint ($p = 0.79$) or hunger ($p = 0.41$). Baseline stress was not associated with attrition ($p = 0.12$) or number of sessions attended ($p = 0.97$).

Conclusions:

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Lifestyle interventions that incorporate meal replacements may be an effective way to help individuals who are experiencing stress lose weight and improve stress-related eating and dietary disinhibition. Future studies are needed to assess the long-term sustainability of these outcomes and effects of stress on weight loss maintenance.

T-P-3107

Executive Function in Adults With Clinically Significant Weight Loss via Behavioral Intervention

Marissa Gowey, PhD *Birmingham AL*, William Neumeier, PhD *Birmingham*, Samantha Henry, MA *Birmingham AL*, Janice Phillips, BS *Birmingham AL*, Gareth Dutton, PhD *Birmingham AL*

Background:

Executive function (EF) is a system of higher order cognitive processes that facilitate behavioral, emotional, and cognitive regulation. Obesity has been associated with impaired EF, with evidence demonstrating that weight loss can improve EF. However, less is known about the role of EF in behavioral intervention response and long-term weight outcomes. The current study aimed to characterize EF in individuals who achieved clinically significant weight loss via behavioral intervention and examined whether there were differences in EF between those who maintained vs. regained their weight loss.

Methods:

Participants were 92 adults (Mean age=63.9 years; Mean BMI=33.5) who previously completed a behavioral weight loss intervention and lost at least 5% of their initial body weight. They were administered a comprehensive battery of performance-based neuropsychological tests to evaluate EF domains (inhibitory control, planning/organization, cognitive flexibility, working memory, and verbal fluency). Descriptive statistics and published norm-based reference ranges for performance-based tests were used to characterize participants' score ranges. Chi-square tests were conducted to determine differences in EF in individuals who maintained vs. regained their weight loss.

Results:

More than two-thirds of the sample (71.7–79.4%) performed in the average to above average range on EF test domains. However, EF domains did not differ between individuals who maintained vs. regained their weight loss.

Conclusions:

The current findings demonstrate that most individuals who were successful in losing a clinically significant amount of weight in a behavioral weight management program had average to above average executive function. There were no differences found in EF between individuals who maintained vs. regained the weight loss following treatment. Future research should examine whether pre- and post-treatment EF assessments can predict behavioral treatment outcomes.

T-P-3108

Providers' Attitudes About Medications and Exercise Changed After a Pragmatic Weight Loss Trial

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Background:

Most obese patients do not receive weight loss counseling from their primary care providers (PCPs). We sought to understand PCPs' views on weight loss counseling and relative effectiveness of evidence-based tools.

Methods:

As part of a 1-year pragmatic weight loss trial conducted at a safety net institution, we obtained cross-sectional, anonymous surveys from intervention providers (PIs) and those from control clinics (PCCs) at baseline and post-trial to assess changes in comfort discussing and perceived efficacy of exercise, lifestyle modification, meal replacements, and medications, measured as the median and interquartile range (IQR) on a 0-10 Likert scale.

Results:

Eighty five PCPs completed the pre-intervention survey (pre) (71% female, 71% physicians); 95 PCPs completed the post-intervention survey (post) (65% female, 69% physicians). Combining data from all clinics, PCPs were most comfortable discussing exercise (median 8, IQR 7-9), with no change after the trial ($p=0.68$). In contrast, PCPs had the least comfort discussing phentermine/topiramate ER (P/T, 4, 2-6) yet significant increased comfort between pre (3, 1.5-6) and post (5, 3-7) ($p=0.002$); PIs drove this increased comfort ($p<0.001$), PCCs less so ($p=0.15$). Unlike PCCs, PIs were more comfortable discussing phentermine after the trial (pre 7, 4-8; post 8, 7-9; $p=0.026$). Queried about tool effectiveness, PCPs at all clinics after the study gave higher ratings to phentermine (pre 5, 4-7 vs post 6, 5-7, $p=0.005$) and P/T (pre 5, 3-6 vs post 6, 5-8, $p<0.001$). Unlike PCCs, PIs after the trial felt exercise was significantly less effective (pre 7, 4-8.5 vs post 5, 3-7, $p=0.035$) and phentermine more effective (pre 5, 5-7 vs post 7, 6-8, $p<0.001$).

Conclusions:

After a 1-year pragmatic obesity treatment trial, PCPs had more comfort discussing and gave higher effectiveness ratings to weight loss medications. In contrast, exercise received lower effectiveness ratings. Intervention PCPs drove these changes rather than control clinics PCPs.

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T-P-3109

A Three Year Assessment of a Popular Commercial Weight Loss Program: A Single Center Experience

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Background:

Meal replacements and low calorie diets have become popular for treating overweight and obese patients. Many of these commercial programs are used by physicians and providers in current clinical practices. Most of these interventions are costly and have limited data to support long-term sustainability and outcomes. Our aim was to evaluate our experience using one such program.

Methods:

A retrospective analysis was performed in 184 overweight and obese adult patients who were placed on the Ideal Protein weight loss program. Subjects were included for analysis if they completed at least 3 months of the diet and had a minimum of 1 year follow up. Additional assessment was performed at 2 and 3 years for determining sustainability. After active weight loss occurred (3-6 months), we classified subjects based on maintaining +/- 5% weight from their 3-6 month nadir (sustainers), losing an additional >5% weight from their 3-6 month nadir (losers) or gaining an additional >5% weight from their 3-6 month nadir (gainers).

Results:

All subjects were Caucasian. Females represented 66.8% of the cohort. Mean Age was 61 +/- 8.5 years. Baseline weight 97.5 +/- 14.7 kg; Body Mass Index 34.4 +/- 4.4 kg/m². The majority of subjects (58.7%) had a least one obesity-related comorbidity. The mean time of the intervention was 15 +/- 11.8 months. At 3-6 months, mean active weight loss was 13.9 +/- 6.2 kg with a 14.1 +/- 7.6 % mean reduction in baseline weight. At 1 year (N=116), 51.7% of subjects were sustainers, 19% were losers and 29.3% were gainers. At 2 years (N=94), 19.6% were sustaining, 15.2% were losing and 65% were gaining. And at 3 years (N=84), 22.6% were sustainers, 9.5% were losers and 67.9% were gainers. At 3 years, there was poor correlation associated with length on the program and sustainability (r=0.1).

Conclusions:

In our single center experience, this weight loss method resulted in limited long-term sustainability.

T-P-3110

Effect of VLCD and Dietary Transition in a Patient With T2D and Comorbidities: Case Report

Jessica Barnes, PhD *Southborough Massachusetts*, Gerald Dembrowski, DC *Wayland MA*, Krista Curry, RN *North Chelmsford MA*

Background:

An epidemic of type 2 diabetes (T2D) and related comorbidities highlights the need for effective complementary approaches to current treatments.

Methods:

We present a case review of a 47yr old man with history of hypertension, hyperlipidemia, and poorly controlled T2D who enrolled in/completed the 20Lighter Program (T20LP) between Nov16-Jan17. At enrollment (2+yrs since formal diagnosis/onset of treatment and an additional 4yrs prior of documented hyperglycemia) BMI was 32.7, HbA1c was 9.1. Medication history included lisinopril 10mg once a day (QD), lovastatin 20mg QD, and metformin 500mg twice a day (BID, escalated to 1000mg BID). Failure to manage blood glucose with existing medications/dietary changes led to addition of glimepiride at 2mg QD. As blood glucose continued to rise, symptoms of diabetic neuropathy and acute hyperglycemia were evident even with increase of glimepiride to 4mg QD. Refusal to maintain daily insulin regimen led to addition of combination sitagliptin/metformin (50/500mg). While reducing HbA1c to <8, high out of pocket cost led to discontinuation, HbA1c again increased to 9.6. At this point he enrolled in T20LP.

Results:

T20LP included 6w of a defined/nutritionally complete very low calorie diet (VLCD), followed by ~3w of transition to a normal diet. After the first 3w, glycemia was reduced without hypoglycemic events (HbA1c: 7.7), BMI had dropped to 29.9, blood pressure was reduced (120/90), glimepiride was discontinued, and metformin was reduced (500mg BID). Fifteen weeks after beginning T20LP (6w after completion) glycemia had normalized (HbA1c: 5.1), blood pressure was normal (110/76), and BMI was 26.4.

Conclusions:

While longer follow-up is required, this case report shows a relatively short (~6w) period of nutritionally complete VLCD, followed by gradual return to moderate dietary lifestyle (~1800 Kcal/day) is capable of producing clinically significant improvements in health and quality of life in individuals with difficult to control T2D and comorbid conditions.

T-P-3111

Clinical Efficacy of Adipose Tissue on Abdomen and Metabolic Variables by CryoElsa (Huons, Korea)

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Background:

Cryolipolysis is considered as an adjuvant method for fat reduction since approval of Zeltiq by FDA in 2010.

Methods:

As an open clinical interventional study, the purpose of this study is to investigate for reduction of abdominal fat using by new device (Elsa, Huons, Korea) for thirteen apparently healthy volunteers. Their height, weight, and waist girths and adipose tissues at umbilicus level by CT were checked at initial and 8th week. Thirteen healthy Koreans (27.83 +/- 2.6 kg/m², 7 Females) were recruited to compare visceral/subcutaneous adipose tissues on abdominal fat and metabolic variables using by cryolipolysis (CryoElsa, Huons, Korea) for 8 weeks. The Wilcoxon signed-rank test was performed through SPSS program (version 18, Chicago, USA), probability less than 0.05 was considered as significant at both sided. All 13 patients were submitted to a single 60 minute application of cryolipolysis on abdominal fat through vacuum.

Results:

The subcutaneous adipose tissue and visceral adipose tissue are lost 2.74/246.97 (11%), 12.22/134.86 (9.07%), respectively. Statistically non-significant but clinically decreases in visceral/subcutaneous fat on abdomen, waist circumferences and V/S ratios were founded without change of weight metabolic risk variables. Some adverse events such as pain, bruise were noted.

Conclusions:

In conclusion cryolipolysis through Elsa (Huons) promotes to reduce abdominal fat without change of metabolic risk variables for 8 weeks in thirteen apparently healthy Koreans.

T-P-3112

Lifestyle Intervention Via Remote Contact in a Balloon Program Is Associated With Weight Loss

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Background:

Intra gastric balloons (IGB) were FDA approved in 2015 for treatment of patients with obesity. The FDA recommends that IGBs are placed under a multidisciplinary program which includes life-style interventions (LI). However, the effect of LI in an IGB program is unknown. We aimed to compare effects of LI via remote contact on weight loss in patients with an intragastric balloon for management of obesity.

Methods:

The Multidisciplinary Intra gastric Balloon Program at Mayo Clinic consists of initial screening, endoscopic IGB placement (Orbera, Apollo), lifestyle intervention and follow-up for 12 months. IGB is removed via endoscopy at 6 months according to regulatory guidance. Our LI care consists of monthly telephone sessions for 12 months facilitated by a registered dietitian nutritionist and a clinical health psychologist. Patient communication is administered via group calls with facilitator discussing/coaching patients on selective topics: nutrition, physical activity, and behavioral strategies for lifestyle modifications in the treatment of obesity over time. We conducted a retrospective review of electronic medical records of patients enrolled in the IGB program [total of n=25, age 46.7±2.4 (mean± SEM); BMI 36.9±1.1 kg/m², Female 70%]. Statistical analysis examined body weight changes in response to participation in the LI sessions (Low vs. High adherence).

Results:

Patients with an IGB and high adherence (n=10) to the LI program lost 16.7 ± 1.6 % TBWL compared to 10.5 ± 2.4% TBWL (p= 0.04) in the low adherence group (n=15). Weight loss association to number of participations in the LI program was borderline significant (r=0.36, p=0.08).

Conclusions:

These findings suggest that a LI in conjunction with IGB endoscopic bariatric therapy promotes more profound weight loss, thus reinforcing the significance of patient engagement with LI along with such procedures. Additionally, the results demonstrate the positive outcomes and feasibility of a remote program as an LI intervention.

T-P-3113

Associating Body Composition Profiling to Propensity for Coronary Heart Disease

Jennifer Linge, PhD, Brandon Whitcher, PhD *Linköping*, Alexandra Dumitriu, PhD *Cambridge MA*, Magnus Borga, PhD *Linköping*, Olof Dahlqvist Leinhard, PhD

Background:

To determine the propensity for coronary heart disease (CHD) in the UK Biobank using body composition profiling, and compare its performance in detecting CHD with BMI.

Methods:

6,021 subjects (2,864 males, 3,157 females, 44 to 78 years) from the UK Biobank imaging study were characterized for history of CHD based on hospital in-patient data. Visceral and abdominal subcutaneous adipose tissue volume divided by height squared (VATi and

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ASATi), intramuscular fat in the anterior thighs (IMAT), and liver proton density fat fraction (PDFF), were measured with a 2-point Dixon (body) and 10-point Dixon (liver) protocol using a 1.5T MR-scanner (Siemens, Germany). The images were analyzed using AMRA® Profiler Research (AMRA, Sweden). For each subject, one control group for estimation of the individual CHD propensity was identified using the k-nearest neighbors algorithm on imaging variables. The control group size was increased until 20 events of disease were found, minimum group size was 50. The propensity for CHD was based on the fraction of controls in the disease definition. The AUROC and 95% CI for detection of CHD, using CHD propensity and BMI, were calculated for overweight (25<BMI<30) and obese (BM>=30) subgroups of males and females separately.

Results:

The AUROC for CHD detection based on CHD propensity was 0.75 +/- 0.18 for overweight and 0.65 +/- 0.21 for obese females, compared with 0.53 +/- 0.24 for overweight and 0.50 +/- 0.26 for obese females using BMI. The AUROC for CHD detection based on CHD propensity was 0.71 +/- 0.13 for overweight and 0.65 +/- 0.19 for obese males, compared with 0.55 +/- 0.12 for overweight and 0.57 +/- 0.19 for obese males using BMI.

Conclusions:

Disease propensity analysis based on visceral fat, subcutaneous fat, liver fat, and muscle fat infiltration enables identification of overweight/obese subjects with CHD beyond what is achievable using BMI. The results need prospective validation but indicate a high potential for body composition profiling to identify subjects with high CHD risk.

T-P-3114

Associating Body Composition Profiling to Propensity for Diabetes

Jennifer Linge, PhD, Brandon Whitche, PhD *Linköping*, Alexandra Dumitriu, PhD *Cambridge MA*, Magnus Borga, PhD *Linköping*, Olof Dahlqvist Leinhard, PhD

Background:

To determine the propensity for diabetes type 2 (DT2) in the UK Biobank using body composition profiling, and compare its performance in detecting DT2 with BMI.

Methods:

6,021 subjects (2,864 males, 3,157 females, 44 to 78 years) from the UK Biobank imaging study were characterized for history of DT2 based on hospital in-patient data. Visceral and abdominal subcutaneous adipose tissue volume divided by height squared (VATi and ASATi), intramuscular fat in the anterior thighs (IMAT), and liver proton density fat fraction (PDFF), were measured with a 2-point Dixon (body) and 10-point Dixon (liver) protocol using a 1.5T MR-scanner (Siemens, Germany). The images were analyzed using AMRA® Profiler Research (AMRA, Sweden). For each subject, one control group for estimation of the individual DT2 propensity was identified using the k-nearest neighbors algorithm on imaging variables. The control group size was increased until 20 events of disease were found, minimum group size was 50. The propensity for DT2 was based on the fraction of controls in the disease definition. The AUROC and 95% CI for detection of DT2, using DT2 propensity and BMI, were calculated for overweight (25<bmi=30) subgroups of males and females separately.

Results:

The AUROC for DT2 detection based on DT2 propensity was 0.78 +/- 0.19 for overweight and 0.78 +/- 0.13 for obese females, compared with 0.59 +/- 0.21 for overweight and 0.63 +/- 0.18 for obese females using BMI. The AUROC for DT2 detection based on DT2 propensity was 0.68 +/- 0.13 for overweight and 0.74 +/- 0.12 for obese males, compared with 0.57 +/- 0.12 for overweight and 0.66 +/- 0.12 for obese males using BMI.

Conclusions:

Disease propensity analysis based on visceral fat, subcutaneous fat, liver fat, and muscle fat infiltration enables identification of overweight/obese subjects with DT2 beyond what is achievable using BMI. The results need prospective validation but indicate a high potential for body composition profiling to identify subjects with high DT2 risk.

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T-P-3115

Blood Mercury Concentration in Relation to Phenotypes of Metabolic Syndrome and Weight in Koreans

Kayoung Lee, MD *Busan*

Background:

It is unclear whether blood mercury concentration (Hg) is independently associated with obesity or metabolic syndrome (MetS). This study aimed to assess the association of blood Hg with the phenotypes of MetS and obesity.

Methods:

In 6006 Korean adults using data from the Korea National Health and Nutrition Examination Survey 2011-2013, blood Hg, MetS components, and body mass index were measured. Metabolic and weight phenotypes were classified based on body mass index and presence of metabolic syndrome (MetS); metabolically healthy and normal weight (MHNW), metabolically unhealthy but normal weight (MUNW), metabolically healthy but obese (MHO), and metabolically unhealthy obese (MUO).

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Results:

The geometric mean of blood Hg was 3.37 (95% CI, 3.32- 3.43)µg/L. Higher quartile of blood Hg was associated with older age, male, higher education, alcohol use, current smoking, low physical activity, greater energy intake, and history of hypertension. After adjusting for confounding factors (age, sex, education, income, health behaviors, and energy intake), MUO group had higher blood Hg than MHO; MHO group had higher blood Hg than normal-weight group (P <0.05). Blood Hg tended to be higher across the MHNW, MUNW, MHO, and MUO. After adjusting for the confounding factors and MetS, obese group had higher blood Hg than normal-weight group (P <0.05). After adjusting for the confounding factors and weight status, those with MetS had higher blood Hg than those without MetS (P<0.05). The odds (95% CI) for MHO and MUO were respectively 1.41 (1.16-1.70) and 1.61 (1.33-1.94) in those with blood Hg > 5.8µg/L (recommended reference value of blood Hg) compared to those with blood Hg ≤ 5.8µg/L.

Conclusions:

The association of blood Hg with MetS was independent from the association with obesity. Blood Hg tended to increase across the combined phenotypes of MetS and obesity in the Korean population.

T-P-3116

Impact of Obesity in Men With Breast Cancer

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Background:

Obesity is a well established risk factor for hormone receptor (HR)-positive breast cancer in postmenopausal women. In men, some studies have reported obesity to be a risk factor for breast cancer, however the link is not well characterized. Here we examined the relationships among pre-diagnosis body mass index (BMI) and breast cancer features in men.

Methods:

Males diagnosed with stage 0 – III breast cancer who underwent mastectomy at Memorial Sloan Kettering (MSK) between August 1991 – November 2011 were included in this retrospective cohort study. Pre-operative BMI was calculated from measured height and weight and categorized as normal or underweight (<25), overweight (25 – 29.9), obese (≥30), or morbidly obese (≥40 or ≥35 + co-morbidity). Clinicopathologic data were extracted from medical records. Differences between BMI groups were compared using independent t-test.

Results:

A total of 141 men were included; median age 63 (range 23 – 96). By BMI category, 24 were normal or underweight, 66 overweight, and 51 obese – of which 19 were morbidly obese. Only 11 men had known BRCA1/2 mutations. Invasive tumors were present in 128 men; of which 122 were HR-positive. Median age at diagnosis was 68 in normal/underweight men versus 58 in obese men (P<0.05) and 51 in morbidly obese men (P<0.05). In normal/underweight men, 29% had tumors >2cm versus 49% of obese men (P=0.14). Cancer recurrence rates were similar among BMI categories.

Conclusions:

Obesity is associated with early onset breast cancer in men. Morbidly obese men were diagnosed with breast cancer at an even younger age. These findings support further studies to investigate mechanisms through which obesity may promote earlier onset breast cancer in men.

T-P-3117

Roux-en-Y Gastric Bypass Delays Progression to Diabetes In Persons With Pre-diabetes

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Background:

Despite the serious health consequences in transitioning from pre-diabetes to diabetes, the long-term success of treatment options is not well known. This study compares 5-year progression to diabetes within persons with pre-diabetes and severe obesity treated with Roux-en-Y gastric bypass (RYGB) versus a matched group managed within primary care.

Methods:

Patients with pre-diabetes (HbA1c 5.7-6.4 excluding a history of diabetes) and severe obesity (BMI>35 kg/m²) who underwent RYGB, were selected from an ongoing prospective research cohort. Persons with 5+ years of follow-up after RYGB were randomly matched to controls within primary care (1:2 ratio identified retrospectively within the electronic medical record) based on baseline HbA1c, use of metformin, sex, age, BMI, and calendar year. The primary outcomes were the rate of progression to diabetes, achieving normoglycemia, and the rate of hypoglycemia.

Results:

The 142 RYGB cases and the 284 matched primary care controls included 92% females, had a mean age of 47.4 years, and a mean BMI of 45.9 kg/m². After 5-years of follow-up, the RYGB group had fewer cases of progression to diabetes (<1% versus 26%, p<0.001), more cases return to normoglycemia without medication treatment (67% versus 20%, p<0.001), but had a higher percent with hypoglycemia (6% versus <1%, p<0.001). Within the RYGB group, return to normoglycemia was associated with lower pre-surgery

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HbA1c ($p=0.028$) and female sex ($p=0.038$). Though not significant, percent weight loss at 5-years after RYGB was higher in patients that returned to normoglycemia (32.6% versus 28.7%, $p=0.111$).

Conclusions:

For persons with pre-diabetes and severe obesity, treatment with RYGB offers a decreased risk of progression of diabetes and increased chance of return to normoglycemia.

T-P-3118

Anthropometric Predictors of Obesity-Related Cancer Among Men and Women in Framingham

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Background:

Excess body fat, diabetes, and metabolic syndrome are associated with some cancers. Although obesity is associated with metabolic dysfunction (MetDys), some overweight individuals do not develop MetDys, while some lean individuals do. The objective of this analysis was to estimate cancer risk associated with simple anthropometric measures of body fat and composition in men and women in the Framingham Offspring Study and to evaluate possible effect modification by prevalent MetDys.

Methods:

The independent and combined effects of BMI, waist circumference (WC), and MetDys on obesity-related cancer (ObCa) risk were examined in 3818 45–69 year-olds using Cox proportional hazards analyses to control for confounding. To control for effects of body shape, hip circumference (HC) and WC measures were added to the multivariable models as appropriate. Primary ObCa types included postmenopausal breast, endometrial, and colon. Markers of MetDys included fasting glucose, triglycerides, HDL-cholesterol, and hypertension. Subjects with ≥ 2 metabolic abnormalities were considered to have MetDys.

Results:

Obese (BMI ≥ 30) men had nearly a 2.5-fold increased risk of ObCa; obese women a 74% higher risk (95% CI: 1.03-2.94). HC in men and WC in women confounded the relations between BMI and ObCa. MetDys was an independent risk factor for ObCa in women but not men. However, WC was not a cancer risk factor among these women. In men, a WC >40 inches among those with MetDys (vs. WC ≤ 40 in those without) led to 86% increased cancer risk (95% CI: 1.03-3.07); controlling for HC strengthened this hazard ratio to 2.4 (95% CI: 1.24-4.65). HC was also an independent predictor of ObCa in men. After adjusting for WC, men with smaller HCs [≤ 38 vs. 38.1–41 in. (ref)] had 2.68 times the risk (95% CI: 1.46–4.89) of ObCa.

Conclusions:

This study suggests that both body shape and overall body fat (BMI) are risk factors for ObCa in men, particularly men with MetDys, while BMI and MetDys are independent predictors of ObCa risk in women.

T-P-3119

Cardiometabolic Risk and Affective Symptoms in Obesity; Associations With Gender and Obesity Onset

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Background:

We assessed, first, the prevalences of metabolic syndrome (MetS), dyslipidemia and anxiety and/or depression, and, second, their associations with gender and time of obesity onset, in treatment-seeking subjects with severe obesity.

Methods:

Data from 4624 patients consecutively enrolled in the Morbid Obesity Registry and Biobank Study in Vestfold, Norway, were analyzed. MetS was defined according to guidelines and dyslipidemia as LDL-cholesterol ≥ 2.6 mmol/L. Symptoms of anxiety and/or depression and obesity onset were self-reported. Logistic regression models adjusted for age and BMI were used to estimate the odds ratios (ORs) for comorbidities according to gender and obesity onset categories: adult-onset obesity: age >20 yr, adolescent-onset obesity: 12-20 yr and childhood-onset obesity: 0-11 yr.

Results:

Sixty-nine percent of the patients were females, women were younger than men: mean (SD) 42.5 (12.0) yr and 45.6 (12.1) yr ($p<0.001$), and mean BMI was lower in women compared with men: 43.4 (5.8) kg/m² and 44.0 (6.1) kg/m² ($p<0.001$). Women had a significantly lower prevalence of MetS (67% vs 77%, $p<0.001$), but a higher prevalence of dyslipidemia (73% vs 62%, $p<0.001$) and anxiety and/or depression (50% vs 33%, $p<0.001$), than men. Accordingly, women had significantly lower adjusted odds (OR (95% CI)) of MetS (0.56 (0.48, 0.65)) and higher odds of dyslipidemia (1.73 (1.52, 1.98)) and anxiety and/or depression (1.93 (1.70, 2.20)). The odds of MetS, dyslipidemia and anxiety and/or depression did not differ significantly between obesity-onset categories in neither men or women.

Conclusions:

Compared with treatment-seeking men with severe obesity, women had 44% lower odds of MetS, 73% higher odds of dyslipidemia and 93% higher odds of anxiety and/or depression. Time of obesity-onset was not associated with MetS, dyslipidemia or symptoms of anxiety and/or depression.

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T-P-3120

Relationship Between BMI and Strength in Patients With Class III Obesity

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Background:

Strength levels are related to BMI, however it is not known whether this association occurs in people with morbid obesity. Our purpose was to investigate the relationship between body mass index (BMI) and muscle strength (absolute, relative to body mass and lean mass) in patients with class III obesity.

Methods:

Thirty-nine female obese patients (45.0±4.6 years, 44.7±8.0 kg/m² BMI) were recruited between January 2016 and February 2017 from the obesity surgery consultation. Muscle strength of the quadriceps and hamstrings was measured by isokinetic dynamometer during maximal dynamic concentric movement of the knee at 60°/s of angular velocity and between 0° (maximum knee extension) and 90° of flexion. Data was corrected for the gravity effect. The isokinetic peak torque was selected as a surrogate of muscle strength and was analyzed both in absolute terms and relative to body mass and lean mass. Body mass and lean mass were measured by dual-energy X-ray absorptiometry (DXA). Linear regression analyses were used to examine the relationship between BMI and muscle strength.

Results:

BMI was significantly associated with all surrogates of muscle strength. Our model showed that BMI explained 33% of the variance of the knee extension absolute strength (unstandardized $\beta = -3,502$; standardized $\beta = -0,574$; $p < .001$), 29% of the knee flexion absolute strength (unstandardized $\beta = -2,028$; standardized $\beta = -0,540$; $p < .001$), 60% of the knee extension relative to body mass (unstandardized $\beta = -0,054$; standardized $\beta = -0,782$; $p < .001$), 42% of the knee flexion relative to body mass (unstandardized $\beta = -0,026$; standardized $\beta = -0,646$; $p < .001$), 46% of the knee extension relative to lean mass (unstandardized $\beta = -0,090$; standardized $\beta = -0,675$; $p < .001$) and 39% of the knee flexion relative to lean mass (unstandardized $\beta = -0,049$; standardized $\beta = -0,640$; $p < .001$).

Conclusions:

In patients with class III obesity, the extreme BMI adversely affects both absolute and relative lower limb maximal strength.

T-P-3121

Older Adults' Perceptions of Precision Medicine in Weight Management

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Background:

Genetics and genomics are increasingly recognized as important factors for understanding obesity by both the public and to scientific communities. As the number of older adults classified as having obesity increases, it is important to gain an understanding as to whether older adults will view weight-related precision medicine favorably.

Methods:

An online survey was conducted in 2014-5 recruiting 896 respondents through advertisements at a genetics exhibition and through online postings. United States residents were included, classified according to age group (18-30; 31-64; ≥65 years), and asked questions pertaining to the use of genetics in obesity care (Likert scales: 1-7). Regression models were adjusted for sex, race, self-reported body mass index (BMI), and education level.

Results:

We identified 164 older adults (83% female) meeting study criteria. Mean BMI in younger, middle and older age categories were 27.5, 29.8, and 30.9kg/m², respectively ($p < 0.001$). Older adults were less interested in learning about how genes affected their weight compared to younger adults ($b = -0.37 \pm 0.18$; $p = 0.03$). Older adults were more likely to look to their primary care provider for help with weight management when considering current genomic weight applications ($b = 0.38, \pm 0.18$; $p = 0.04$), and were also more likely to believe that genetic factors underlie weight ($b = 0.35 \pm 0.14$; $p = 0.01$). Despite these perceptions, older adults were more likely to respond that they would not want weight-related genetic testing if it were available (OR=2.8 [95% CI:1.3,5.7]).

Conclusions:

Older adults had less interest in learning about their own genetic predisposition with respect to weight as compared to younger adults. Our results provide preliminary evidence suggesting that precision medicine may be most accepted among younger as opposed to older age groups, who may be less interested in these novel testing modalities.

T-P-3122

Association Between Household Food Environment and Excessive Gestational Weight Gain

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Background:

Excessive gestational weight gain (GWG) has significant negative health implications for mother and child. 47% of women gain more than the recommended weight by Institute of Medicine, with overweight and obese women at higher risk for excessive GWG. Previous studies have shown an association between home food environment and dietary intake in non-pregnant populations. In the current study, we aim to investigate the impact of the home food environment on GWG. We also examined the association between BMI early in gestation and the home food environment, given the strong association between pre-pregnancy BMI and excessive GWG.

Methods:

Pregnant women recruited between 2011 and 2014 (N=228) completed measures of high-fat food availability, low-fat food availability, and food storage practices at baseline (pre-pregnancy or 4-10 weeks) and 30 weeks gestation. GWG was calculated as the difference between weights at the first (4-10 weeks) and final (36 weeks) prenatal visit, and based on each participant's baseline BMI category, GWG was classified as being above, within, or below the 2009 Institute of Medicine's GWG guidelines. Multivariable models were adjusted for mother's age, race, marital status, and household income.

Results:

At baseline, overweight and obese women stored significantly more foods visibly in their home compared to normal weight women. At 30 weeks, overweight women stored significantly more foods visibly compared to normal weight women, and, there was a trend for obese women to have significantly fewer low-fat foods in the home. However, there was no significant relationship between BMI category and number of high-fat foods in the home. The number of low-fat food items in the home at baseline was associated with decreased odds of excessive GWG (OR: 0.84, 95% CI: 0.72, 0.98).

Conclusions:

These findings suggest that the number of low-fat foods in their home and reduce the visibility of food may influence eating behaviors among pregnant women and may impact excessive GWG.

T-P-3123

Influence of Pre-Pregnancy BMI and Prenatal Exercise on Predictors of Postpartum Weight Retention

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Background:

Exercise (EX) and psychological well-being are targets for managing gestational weight gain (GWG) but little is known about the extent to which they explain postpartum weight retention (PPWR). This analysis examined maternal EX in the 3rd trimester and at 6-months postpartum, and predictors of 1- and 6-month PPWR among women categorized according to pre-pregnancy weight status and pregnancy EX.

Methods:

Data were used from a subset of women (N = 1709) enrolled in the First Baby Study, a 3-year longitudinal cohort of women delivering first live births. Participants self-reported pre-pregnancy weight status, GWG, EX, depressive symptoms and stress. Self-reported PPWR was calculated at 1- and 6-month (postpartum weight – pre-pregnancy weight). Women were categorized as: normal weight (NW) inactive (BMI 18.5-24.9; <150 min/wk moderate EX; 34%), NW active (BMI ≥18.5-24.9; ≥150 min/wk moderate EX; 23%), overweight (OW) inactive (BMI ≥25; <150 min/wk moderate EX; 30%), and OW active (BMI ≥25; ≥150 min/wk moderate EX; 13%).

Results:

Women categorized as NW inactive, NW active, and OW active significantly decreased in EX from 3rd trimester to 6-month postpartum while OW inactive significantly increased ($p < .05$). GWG significantly explained 14-58% of the variance in 1-month PPWR and 5-27% in 6-month PPWR. High depressive symptoms and stress explained an additional 6% combined variance in 1 and 6-month PPWR in NW inactive and active women however not in OW women.

Conclusions:

The study findings suggest that GWG is a strong predictor of 1- and 6-month PPWR in all women, and depressive symptoms and stress may be additional important predictors for NW women. Of interest, only OW inactive women increased EX from 3rd TRI to 6-month postpartum; additional research is needed to understand determinants of EX in this group. Intervention efforts aimed at reducing PPWR in first time mothers need to target GWG and may require different tailoring for NW and OB women based on their EX patterns.

T-P-3124-DT

Maternal Prepregnancy Overweight and Obesity Are Associated With Lower IQ Scores in Boys at Age 7

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Background:

Obesity and environmental toxicant exposures, including air pollution and pesticides, disproportionately affect low-income, minority populations, with implications for maternal and child health. While higher prepregnancy BMI may adversely affect child

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neurodevelopment, it is unclear whether maternal weight-related factors interact with prenatal toxicant exposures to impact child neurodevelopment.

Methods:

In 409 African American and Dominican dyads (46% male offspring) with measures of prenatal maternal polycyclic aromatic hydrocarbons DNA adducts (PAH) and cord blood chlorpyrifos (CPF), we measured 7-year neurodevelopment using the Wechsler Intelligence Scale for Children (WISC). Linear regression models estimated associations between prepregnancy BMI categories and child outcomes, stratified by child sex and controlling for covariates. In models with PAH (boys n=144; girls n=164) or CPF (boys n=127; girls n=159), we evaluated for interactive and confounding effects of high-PAH (detectable/non-detectable) and high-CPF (>6.17 pg/g plasma).

Results:

Before pregnancy, 48% of the women were of normal weight, 4% were underweight, 25% were overweight and 23% were obese. While prepregnancy BMI categories were not associated with full-scale IQ in girls, prepregnancy overweight and obesity were associated with lower full-scale IQ scores among boys (b: -5.5, 95% CI: (-10.0, -0.9), p=0.02; b: -4.7, 95% CI: (-9.2, -0.2), p=0.04, respectively). There was no evidence of interaction between maternal BMI and PAH or CPF (all interaction-p>0.1), or confounding by PAH or CPF (all β -coeff. Δ <10%) in the linear models.

Conclusions:

The study suggests that maternal prepregnancy overweight and obesity are associated with intellectual deficits among boys at 7 years of age; but not among girls. Prenatal toxicant exposures did not impact these associations. These findings are important in light of the high prevalence of maternal overweight and obesity, and longer-term implications of early cognitive impairment.

T-P-3125

Perioperative Counseling Experiences and Contraceptive Use in Women Undergoing Bariatric Surgery

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Background:

Obstetric and bariatric professional societies recommend avoiding pregnancy for 12-18 months after bariatric surgery, however little is known about women's experiences with perioperative counseling. Our objective was to determine the prevalence of perioperative contraceptive and pregnancy discussions and postoperative contraceptive use.

Methods:

We performed a cross-sectional study of women ages 18-45 years recruited using Facebook who underwent bariatric surgery within the last 24 months.

Results:

We enrolled 363 geographically-diverse, U.S. women with a median age of 36 (IQR 31-40). Most were White and privately insured. Three-quarters of women recalled having perioperative pregnancy or contraceptive discussions. Approximately 72% felt it was "very important" to have discussions perioperatively and 42% wished they had more discussion about these issues. Two-thirds used contraception in the first 12 months after surgery. One-third of contraceptive users who had Roux-en-Y gastric bypass (RYGB) were using oral contraceptives. Women who reported contraceptive or pregnancy discussions had 2.6 higher odds (95% CI 1.5-4.4) of using contraception postoperatively in multivariable analysis.

Conclusions:

A substantial minority of women did not have perioperative discussions about pregnancy and contraception, and many of those who did felt they were insufficient. Women who had discussions were more likely to use contraception postoperatively. A significant proportion who had RYGB were using oral contraceptives – a potentially less effective method with malabsorptive procedures. Together, these findings indicate that this population's counseling needs are not being met. Reproductive-age women should be routinely counseled perioperatively about pregnancy and contraception, particularly with consideration of their needs so they can make informed decisions about perioperative pregnancy prevention and contraceptive method use.

T-P-3126

WIC Providers' Perceptions of Managing Obesity in Pregnancy

Julia Carp, Jessica Wallen, BA, Sharon Herring, MD *Philadelphia PA*

Background:

Obesity is exceedingly common among low-income pregnant mothers, a primary target population of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). While protocols at WIC address this nutritional problem, WIC nutritionists' perceptions of the challenges of managing obesity in pregnancy are unknown.

Methods:

A qualitative study was conducted using data transcribed from audiotapes of focus groups among 27 Philadelphia WIC nutritionists to identify barriers and facilitators of counseling pregnant clients with obesity. Transcripts were coded for common themes.

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Results:

Findings revealed 11 major themes clustered into 3 categories. The first category focused on barriers to counseling that WIC providers perceived were client driven. They perceived that mothers with obesity 1) were burdened by competing demands in their lives; 2) lacked interest in changing their nutrition behaviors; 3) misperceived their weight and healthfulness of diet; and 4) had difficulty prioritizing WIC input due to conflicting advice from others. The second category addressed barriers WIC providers perceived were WIC driven. They felt that 5) they were constrained by structural barriers at WIC; 6) counseling was protocol driven; and 7) they feared they would offend mothers. The last category described facilitators to creating more effective counseling sessions. Providers' strategies were to 8) meet mothers where they're at; 9) set small behavioral goals; 10) frame messages around baby's development; and 11) build rapport early to establish trust.

Conclusions:

WIC nutritionists reported numerous barriers to counseling pregnant clients with obesity. Yet several potential solutions were uncovered, including: rewarding counseling that uses a patient-centered approach; incorporating ubiquitous technologies to overcome issues of time-management and follow-up; enhancing collaborations with family and other health care providers; and message framing around baby to help clients adhere to nutrition goals.

T-P-3127

Access to a Scale and Self-Weighing Habits Among Public Housing Residents

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Background:

Regular self-weighing is an effective weight management tool, but few studies examine how many individuals have access to a scale. Financial constraints might preclude the purchase of a scale, particularly among low-income populations that are disproportionately affected by obesity. Our objective was to determine the proportion of public housing residents who have access to a scale and their self-weighing habits.

Methods:

We conducted a cross-sectional survey of randomly selected households in public housing developments in Baltimore, MD. We asked participants if they had "regular access to a scale where they can weigh themselves," and to describe their self-weighing habits ("I weigh myself daily" with responses dichotomized as 'never or hardly ever/no scale access' versus 'some/about half/much of the time/always'). We used t-tests or Chi2 tests, as appropriate, to examine the association of scale access with the following characteristics: age, gender, marital status, education, employment, food insecurity, smoking status, physical activity, diet, BMI, and health status.

Results:

266 head of households participated (48% response rate). Mean age was 45 years, 86% were women, 95% were black, and 54% were obese. Only 32% reported having access to a scale; however, 78% of those who had access reported engaging in at least some self-weighing. Residents who had access to a scale were significantly older ($p=0.03$) and significantly less likely to be disabled/unemployed ($p=0.01$) or food insecure ($p<0.01$).

Conclusions:

While only one-third of public housing residents have access to a scale, those who do have access self-weigh with some regularity. Economic status may be a factor influencing scale access in this population, as we found a significant inverse association with markers of low economic status. Addressing economic barriers to scale ownership may be a reasonable target for future weight management interventions.

T-P-3128-DT

Adiposity and Cardiometabolic Risk in South Asians: Results From the Kerala Diabetes Prevention Program

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Background:

Cardiometabolic disorders are frequently observed among those who are obese as measured by body mass index (BMI). However, there is limited data available on the cardiometabolic profile of those who are non-obese (by BMI) but with a high body fat percentage (BFP), a phenotype frequently observed in the Indian population. We examined the frequency of normal weight obesity in a South Asian population at high risk of type 2 diabetes (T2D) and assessed their cardiometabolic profile.

Methods:

In the Kerala Diabetes Prevention Program, we screened 3689 individuals aged 30 to 60 years using the Indian Diabetes Risk Score and an oral glucose tolerance test in 60 rural communities in the Indian state of Kerala. Normal weight obesity (NWO) was defined as a BMI 18.5 – 24.9 Kg/m² and a high BFP ($\geq 20.6\%$ in men and $\geq 33.4\%$ in women); Non-obese (NO) BMI 18.5 – 24.9 Kg/m² and normal BFP ($< 20.6\%$ in men and $< 33.4\%$ in women) and overtly obese (OO) BMI ≥ 25 Kg/m² and a high BFP. Data on demographic, clinical and biochemical characteristics were collected using standardized protocols

Results:

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The mean age of the study participants at screening was 46.3 ± 7.4 years and 46% were female. The proportion with NWO was 32% (n=364), NO was 17% (n=200) and OO was 51% (n=583). Among those with NWO, 19.7% had undiagnosed T2D, compared to 18.7% of those who were OO (p value=0.71) and 8% with NO (p value=0.001). Among those with NWO, mean systolic and diastolic blood pressure were 129 ± 20 ; 78 ± 12 mmHg, compared to 127 ± 17 ; 78 ± 11 mmHg among those with OO (p value=0.11;0.94) and 120 ± 16 ; 71 ± 10 mmHg among with NO (p value =0.001; 0.001), respectively. A similar pattern of association was observed for HDL cholesterol and triglycerides.

Conclusions:

Nearly one-third of this South Asian population, at high risk of T2D based on a risk score, were normal weight obese. The significantly higher cardiometabolic risk associated with increased adiposity even in lower BMI individuals has important implications for its measurement.

T-P-3129

Openness to Bariatric Surgery: Quantitative and Qualitative Analysis of Patient Variables

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Background:

Many individuals who are medically appropriate for bariatric surgery elect not to pursue it. This study examined demographic, behavioral, and attitudinal variables of individuals who are eligible for and open to bariatric surgery.

Methods:

Individuals who met NIH-defined surgical eligibility criteria and described themselves as open to surgery were surveyed via a 30-minute online survey in July 2015. A separate sample of 12 individuals subsequently participated in an online interview to further explore interest in and barriers to surgery.

Results:

A total of 269 individuals completed the survey (60% female). Of those who completed the survey, 38% identified themselves as very open vs. 62% who were open to pursuing bariatric surgery. Those who were very open to surgery were younger (avg. age 40 vs. 42.7), had a slightly higher BMI (41.7 vs. 40.3) and were more likely to feel guilty about their weight (68% vs. 59%). No significant gender differences were found. Attitudes regarding bariatric surgery differed for those who were very open. They were less likely to be concerned about invasiveness (30% vs. 40%) and less likely to fear surgery in general (48% vs. 63%). A portion of those who considered themselves open to surgery also were actively investigating surgery (13% overall; 26% among those very open to surgery). A comparison of those actively investigating to those not researching surgery showed differences in age (39 vs. 42) and gender (65% male).

Conclusions:

The results of the study suggest demographic, attitudinal, and behavior differences in eligible patients that might distinguish those who are somewhat open to surgery from those who consider themselves to be very open. While many individuals accept that surgery can be beneficial, fears around surgery and invasiveness remain. Identifying the very open population and tailoring effective communication to them may help them see surgery as an informed choice to improve their health.

T-P-3130

The Importance of Good Dialogue Between Healthcare Professionals and People With Obesity

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Background:

The ACTION (Awareness, Care, and Treatment In Obesity maNagement) study examined perceptions, attitudes and behaviors related to obesity management among people with obesity (PwO) and healthcare professionals (HCPs).

Methods:

A cross-sectional, US-based, stratified sampling of 3008 adults with obesity and 606 HCPs completed an online survey assessing perceptions, attitudes and behaviors associated with obesity management. Both groups self-reported on their height and weight and perceptions of obesity-related discussions between PwO and HCPs.

Results:

Most PwO (82%) agreed weight loss (WL) is completely their responsibility and most HCPs (72%) agreed they are responsible to contribute to PwO WL efforts. PwO believe reaching a target weight is central to success. Half of PwO reported receiving a formal obesity diagnosis; however, PwO were more likely to have an obesity diagnosis if they were actively seeking treatment (57% vs. 51%) or reported successful WL (69% vs. 53%). Half of HCPs reported not discussing weight issues with PwO because of lack of appointment time. Of PwO who discussed weight with HCPs, 24% are scheduled for follow up appointments to discuss weight. Most PwO reported they would keep the appointment and would trust HCPs' weight management advice. Despite recent treatment developments, clinical discussions about WL focused more on healthy eating and physical activity and less on behavioral modifications and medical options

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like specialist visits, medications or surgery. Eighty percent of PwO wanting to lose weight would commit to general improvements in eating habits and physical activity increases; 40% would commit to prescription WL medication.

Conclusions:

HCPs can activate PwO using simple solutions: initiating discussions instead of waiting for patients to do so, scheduling follow up appointments and formally diagnosing obesity. HCPs can improve dialogue by comprehensively discussing all treatment modalities and setting goals according to obesity guidelines.

T-P-3131

Urbanization and Its Longitudinal Association With Blood and Pulse Pressure in Adult Filipino Women

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Background:

Dietary and environmental exposures associated with urbanization and modernization have roles in the development and progression of hypertension (HTN). Yet, we know little about how exposure to urbanicity impacts systolic, and diastolic blood (SBP and DBP) and pulse pressure (PP) in migrant populations vs those whose environments urbanize over time. We determine how urbanicity is associated with BP and PP in adult women of the Cebu Longitudinal Health and Nutrition Survey (CLHNS) from 1998-2012.

Methods:

We describe participants' (N=2107) Urbanicity Index (UI), BP trajectories, and classified participants as movers or non-movers based on previous migration history from 1998-2012. We estimated mixed-effects longitudinal regression models of the associations of change in UI and moving on change in BP and PP. We assessed heterogeneity of effects of change in UI and moving on BP by previous UI levels and age. We also estimated the association of change in UI and moving with the likelihood of anti-hypertensive medication use. Finally, we assessed the association of 2005 BP and PP with HTN-related mortality between 2005 and 2012.

Results:

Movers' UI increased more than non-movers' throughout follow-up. Secular BP trends show that women who were 50 y in 2012 had higher SBP and PP than 50 y olds in 1998 by up to ~9 mmHg, respectively. Change in UI effected change in SBP, DBP, and PP differently according to previous UI ($p<0.1$). Moving effected change in SBP, DBP, but not PP, differently according to previous UI. Compared to 2002, participants in 2012 were 0.36 times as likely to use medication ($p<0.01$). Every mmHg increase in 2005 DBP, but not in SBP nor PP, is significantly and positively associated with increased likelihood of HTN-related mortality between 2005 and 2012 ($p<0.001$).

Conclusions:

Predicted BP and PP changes were highest among previous rural dwellers who underwent UI increases and the oldest participants, respectively. Our results focus special attention to young and migrating populations.

T-P-3132

Weight Loss Behaviors of Adolescents and Young Adults

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Background:

Adolescents and young adults with obesity are at increased risk for disordered eating behaviors. We aimed to assess in a nationally representative sample the weight loss behaviors of adolescents and young adults and the association of these behaviors with weight status.

Methods:

We used the National Health and Nutrition Examination Survey, 1999-2014 to examine whether individuals (n=11,823) aged 16-29 years had tried to lose weight in the previous year. Of those who reported trying to lose weight (n=3,619), we examined specific weight loss behaviors; individuals could report more than one behavior. We used descriptive statistics to create nationally representative estimates of weight loss behaviors.

Results:

Increasing obesity severity was associated with increased attempts at weight loss (34% overall, 20% healthy weight, 44% overweight, 56% class I obesity, 62% class II obesity; $p<0.001$). Greater obesity severity was associated with increased likelihood of eating less food (Class II vs. healthy weight, 66 vs. 56%), increased skipping meals (19 vs. 16%), and increased prescription diet pill use (7 vs. 1%), and decreased likelihood of exercising (70 vs. 82%). There were no statistical differences for lowering calories (overall 31%), eating less fat (27%), consuming diet products (13%), using liquid diet formula (5%), joining a weight loss program (4%), taking non-prescription diet pills (9%), taking laxatives or vomiting (1.4%), drinking a lot of water (39%), eating more fruits and vegetables (14%), eating less sweets (10%), and eating less junk food (13%).

Conclusions:

Many adolescents and young adults attempt to lose weight. Weight loss behaviors differ based on weight status; although healthy and unhealthy behaviors were seen in all weight categories. Future research must examine how adolescents and young adults can be encouraged to have positive motivations for healthy eating and physical activity, rather than focusing on weight loss itself.

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T-P-3133 - WITHDRAWN

T-P-3134

Age and Waist Circumference Modify Discordance of Body Fat Measurements in Adults With Obesity

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Background:

Body composition assessments are a chief component on the evaluation of adipose tissue and its relation to lean tissue within the body in clinical weight management settings. However, due to differences in body type some body composition methods may not be appropriate for certain patient populations. Additional research is needed addressing the validity of body fat estimates within more specific sub-populations such as adults with obesity. The objective of this study was to investigate the concurrent validity of percent body fat (%BF) measures estimated by multifrequency bioelectrical impedance analysis (MFBI) and air displacement plethysmography (ADP) in adults with obesity.

Methods:

This retrospective study examined the %BF in 94 adults with obesity (BMI>30 kg/m²) measured through ADP (BOD POD®) and MFBI (InBody 720®) at the same appointment. Differences in %BF measured from ADP and MFBI were evaluated for associations with age, gender, BMI, and waist circumference (WC).

Results:

The 94 adults (44 male, 50 female) included 53% female with mean age of 50.1 +/- 9.9 years, and mean BMI of 38.8 +/- 7.5 kg/m². In the overall group, %BF from MFBI (42.1% +/- 9.7%) was significantly (p<0.0001) lower than %BF from ADP (44.7% +/- 9.5%). When stratified by age (<50 n=46; 50+ n=48), the differences in %BF between MFBI and ADP were lower (p=0.0017) within those aged <50 (44.1 +/- 9.9 versus 45.5 +/- 10.0) as compared to those age 50+ (40.2 +/- 9.2 versus 43.9 +/- 9.0). A smaller subset (n=27) of our sample population was associated with MFBI having greater underestimation of %BF relative to ADP (r= -0.42, p=0.029). Differences in %BF from ADP and MFBI were not associated with BMI (p=0.238) or gender (p=0.114).

Conclusions:

Agreement between %BF from ADP and %BF from MFBI was applicable for patients with obesity of younger age and smaller waist circumference. Caution should be used when interpreting %BF measurements in adult patients with obesity of older age or larger waist circumference.

T-P-3135

Association Between Sleep Chronotype, Duration and Obesity in the Bogalusa Heart Study

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Background:

Sleep chronotype represents an individual's circadian proclivity. Recent studies have reported sleep duration and quality as related contributors to obesity, but few have focused on sleep chronotype. We examined the associations between chronotype, sleep duration, and obesity among black and white men and women participating in the Bogalusa Heart Study (BHS).

Methods:

Body mass index (BMI) and sleep data were available for 1,197 middle aged men and women (mean age 48.2 years) who participated in the BHS 2013-2016. Based on scores of the reduced Morningness-Eveningness Questionnaire (rMEQ), first we dichotomized sleep chronotype as early/intermediate vs. late. Then we created 6 phenotypes, self-reported sleep duration (short (<6h/night), medium (6-8h/night) and long (>8h/night) by chronotype (early/intermediate, late). Obesity was defined as a BMI ≥ 30kg/m². Multivariable logistic and linear regression models were used to examine associations.

Results:

Late chronotype, reported by 9.3% of participants, was associated with obesity after multi-variable adjustment, including shiftwork and physical activity (OR 1.64, 95% CI: 1.06-2.53). Among the 6 phenotypes examined, those with medium and long sleep durations and late chronotype had significantly higher mean BMIs compared to short, medium or long duration with early chronotype or short duration with late chronotype (p for trend = 0.013 for multivariate linear regression, p<0.05 each for pair-wise analysis).

Conclusions:

In our biracial, community-based, population study, late chronotype is independently associated with obesity. Late chronotype with medium and long sleep duration was also associated with higher BMI. Further research is needed to identify behavioral, endocrine, nutritional and genetic pathways which underlie these associations.

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T-P-3136

Clothing Choice and Sizes as Indicators of Need for Obesity Prevention in Young Adults

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Background:

Preventing the development of overweight and obesity is potentially a more effective and sustainable solution to the epidemic than current treatments, where regain is the rule rather than the exception. However, people often fail to recognise when action is required to counter a weight problem in the early stages. Clothing choices and sizes might provide early indicators of a need of weight-management. This study explores the relationships between clothing and weight-changes in young adults.

Methods:

In a prospective study of weight-changes, young adults self-reported their height, weight and clothing size at two time-points, at the start and the end of the academic year (9 months). Data were analysed using SPSS (Version 24).

Results:

A total of 2,920 young adults completed data on weight and clothing-size changes. Mean age: 19.8 (SD 1.8) years, 59.2% females, mean weight: 66.5(SD 13.7) kg, mean height: 1.71(SD 0.01)m, mean BMI:22.6 (SD 0.6)kg/m². Mean weight change over the academic year was for women was 1.2(SD 0.3) kg and for men 1.4(SD 0.5) kg. At baseline, women's mean dress size was 10 (UK dress size) and men's trouser waist size was 34 inches (86 cms). An increase in at least one clothing-size was reported by 73% (n=303) of women and 81% (n=241) of men who experienced weight-gain of more than 2.3kg and by 94% (n=115) of women and 97% (n=89) who experienced weight-gain of more than 5kg.

Conclusions:

Increase in clothing-size is reported with relatively small weight-changes. It may have potential to be used as a simple and low-cost 'nudge' for alerting people to the need for weight management early in overweight/obesity development.

T-P-3137

Ectopic Fat Depots Are Associated With Cardiometabolic Risk Factors Even After Adjusting for BMI

Audrey Choh, PhD *Brownsville TX*, Miryoung Lee, PhD *Brownsville TX*, Brandon Gonzalez, BS *Brownsville TX*, Stefan Czerwinski, PhD *Brownsville TX*

Background:

There are differential relationships between various ectopic fat depots and cardiometabolic risk factors (CMRs). Distinguishing differential associations among fat depots, however, is complicated because fat depots are often correlated with one another. The purpose of this study is to examine how the relationships between various CMRs differ among different ectopic depots.

Methods:

The study population consists of 1,156 Fels Longitudinal Study adults (509 males, 647 females) aged ≥ 18 years who had an MRI between July 2001 and June 2016. Sex-stratified Spearman correlations were used to test for associations between different ectopic depots and CMRs including fasting serum glucose, insulin, C-reactive protein (CRP), systolic (SBP) and diastolic blood pressure, triglycerides, high density lipoprotein, low density lipoprotein (LDL), and total cholesterol (TC). Fat depots were assessed using anthropometry (weight, waist circumference, BMI), dual energy x-ray absorptiometry (total body fat, trunk fat), and magnetic resonance imaging (abdominal visceral (VAT) and subcutaneous adipose tissue (SAT), and liver fat content). Models were initially adjusted for age, smoking, alcohol consumption, and race. BMI was subsequently added to the models.

Results:

After adjusting for age, drinking, smoking and race, all fat depots were associated with CMRs ($0.13 < |r| < 0.66$), with the exception of LDL and TC in both males and females. Only liver fat content in males ($r=0.13$, $p < 0.04$) was associated with LDL and TC. After additionally adjusting for BMI, VAT and liver fat remained significantly associated with all CMRs ($0.13 > |r| > 0.39$) except with SBP in females. SAT was associated with CRP ($r \geq 0.17$, $p < 0.003$) and insulin ($r \geq 0.12$, $p < 0.02$) in both sexes, but not associated with the remaining CMRs.

Conclusions:

These results indicate that after adjusting for BMI, an indicator of overall adiposity, liver fat content and VAT are still significantly associated with CMRs.

T-P-3138

Effect of Obesogenic Medications on Weight-Loss Outcomes in a Behavioral Weight-Management Program

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Background:

The Veterans Health Administration MOVE! program is an evidence-based behavioral weight-management intervention which uses a multidisciplinary approach to treat obesity. Many medications used to treat routine medical problems are obesogenic. Our aim is to determine whether obesogenic drugs affect weight loss outcomes in the MOVE! program.

Methods:

This is a retrospective single-center study of 666 patients within VHA health system that participated in the MOVE! program between January 2011 - December 2015. We identified a list of 33 drugs which have been identified as obesogenic by The Endocrine Society. Veterans were divided into two groups based on receiving at least one month's prescription of an obesogenic medication between the time of intake and completion of the MOVE! Program; those who were prescribed one or more obesogenic medications (Meds group) and those who were not (Control group). Primary outcome was 5% weight loss (5% WL), which is considered clinically meaningful, at the conclusion of the program.

Results:

A total of 411 patients were prescribed one or more obesogenic medications and 255 patients were prescribed none. There were no significant differences in gender, and race between the Meds and Control groups. Meds group patients were older, had higher BMI, and were more likely to have diabetes mellitus type II, depression, hypertension, dyslipidemia, and seizures ($p < 0.05$). Patients in the Control group were 1.4 times more likely to achieve 5% WL compared to the Meds group (27.1% vs 19.7%, $p = 0.027$). Multivariate regression analysis shows that the difference in 5% WL could not be attributed to differences in co-morbidities between the two groups, baseline BMI, age, or gender. Patients prescribed a larger number of obesogenic medications had even smaller chance to succeed 5% WL ($p = 0.02$).

Conclusions:

Obesogenic medications during the behavioral weight-management program MOVE! may adversely influence weight loss outcomes.

T-P-3139

Inaccurate Weight Perception and Disordered Eating Behavior in Adults of Overweight or Obese Status

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Background:

The protective nature of weight status misperception is established among adolescents with overweight/obesity; however, the extent to which weight status misperception may confer benefit in adulthood remains unclear. This study investigated the associations between weight status perceptions and maladaptive eating attitudes and behaviors in a large, community-based sample of adults.

Methods:

A total of 570 individuals participated via MTurk (58.8% female; Mage = 39.49) and completed the Uncontrolled and Emotional Eating subscales of Three Factor Eating Questionnaire, and the Restrained Eating subscale of the Dutch Eating Behavior Questionnaire. Participants self-reported height and weight, as well as their perceived weight status. Controlling for age, MANCOVA analyses examined the effects of weight status perception (under-perceiving versus accurately perceiving) and weight classification (overweight, obesity class 1, 2, and 3) on disordered eating behaviors.

Results:

Results indicated significant main effects of weight status perception, $F(3, 553) = 7.91, p < .001$, and weight classification, $F(3, 553) = 6.32, p < .001$, such that less maladaptive eating behavior was reported by 1) individuals who under-perceived their weight status compared to accurate perceivers and 2) those in the overweight class compared those in the three obesity classes, which did not differ on their reports of maladaptive eating. No interaction between perceived weight status and weight classification emerged.

Conclusions:

These findings suggest that the protection associated with underperception of one's weight status persists into adulthood, regardless of weight class. Inconsistent with previous literature suggesting mental health differences among individuals with obese status, disordered eating behaviors seem to remain stable across obesity classes. These findings challenge the cultural idea that accurate weight status perception is necessary for the maintenance of healthy eating attitudes and weight control behaviors.

T-P-3140

Low Abdominal Adiposity and Liver Fat Content as Determinants of Metabolically Healthy Obesity

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Background:

Individuals who are obese but metabolically healthy (MHO) may be at different risk for cardiometabolic diseases. Using multi-slice magnetic resonance imaging, the aim of this study was to determine whether there are any differences in visceral adiposity and/or liver fat content between MHO adults when compared with groups of metabolically healthy normal weight (MHNW), and unhealthy obese (MUO) and unhealthy normal weight (MUNW) adults in the Fels Longitudinal Study.

Methods:

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A total 651 participants (55.9% females, aged 18–94 years) were included in the cross-sectional analysis and were measured for metabolic syndrome components including insulin resistance, and abdominal adiposity (kg) and liver fat (%). Based on total % body fat, insulin resistance, and metabolic syndrome (excluding waist circumference) risk factors, metabolically unhealthy was defined as having ≥ 2 criteria above the threshold criterion values. Multiple linear regression analysis was used adjusting for significant covariates (e.g. sport activity).

Results:

Mean (standard error, SE) age was 51.9 (0.7) years. Approximately 43% of obese individuals were categorized as MHO. Abdominal visceral adipose tissue (VAT) and subcutaneous adipose tissue (SAT) depots in MHO individuals were significantly lower compared to MUO individuals, but were significantly higher than in the MUNW and MHNW groups ($P < 0.05$). However, MHO individuals had significantly lower ($P < 0.01$) VAT to SAT ratio (VSR, mean [SE] = 0.54 [0.01]) and liver fat content (3.37 [0.19]) than those in the MUO (0.63 [0.01], 5.89 [0.32]) and MUNW (0.69 [0.01], 5.04 [0.38]) groups. There were no significant differences in VSR or liver fat content between the MHO and MHNW groups.

Conclusions:

MHO individuals had significantly lower VAT, SAT, VSR and lower liver fat content compared with MUO individuals. Our findings suggest that VSR and liver fat may potentially be valuable indices for profiling cardiometabolic risk among obese populations.

T-P-3141

Neighborhood Credit Score as a Novel Measure for Individual Obesity Risk

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Background:

Credit scores reflect financial history and economic resources, and may directly impact disease risk or frame risk-related behaviors. Credit scores may be useful for summarizing the resources individuals and communities bring to obesity prevention and management, but no studies have examined how credit scores reflect neighborhood characteristics and the resulting risk of obesity. Our objective was to 1) describe neighborhood-level characteristics associated with neighborhood-level credit score and 2) evaluate the association between credit score and body mass index (BMI).

Methods:

A cross-sectional, random digit dialing telephone survey was conducted in 2015 to collect sociodemographic and health outcome data from residents of Philadelphia, PA. One credit bureau's projection of average household credit score in 2015 was mapped to the zipcode+4 in which participants lived, as were census-derived neighborhood characteristics. Neighborhoods were compared by FICO credit score categories (Excellent/Very Good, Good/Fair, and Poor/Very Bad) using Kruskal-Wallis tests. Multilevel regression models estimated the association of neighborhood-level credit score with individual BMI, adjusting for participant age, race, income, and education and neighborhood income, housing value, and age.

Results:

There were 2038 participants for whom zipcode+4 could be mapped and BMI data were available. Mean BMI was 29 (SD= 6.8), and average credit score was 671 (SD= 58). Compared to neighborhoods with poor/very bad credit (n=833), those with very good/excellent credit (n= 219) and with good/fair credit (n=986) had older populations ($p < 0.0001$), higher income ($p = 0.0001$), and higher home value ($p = 0.0001$). A 50-point increase in neighborhood-level credit score was associated with a decrease in BMI of 0.73 [95% CI: -1.2, -0.28], independent of individual and neighborhood socioeconomic factors.

Conclusions:

Neighborhood-level credit score may be another method to classify neighborhoods with heightened risk of obesity.

T-P-3142

Predictors of Weight Loss Outcomes in Obesity Care

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Background:

Clinically meaningful, sustained weight loss (WL) is achievable for some, but challenging for most people with obesity (PwO). To better understand factors contributing to WL outcomes, we examined attitudes and behaviors related to obesity care in a nationally representative sample of PwO from the ACTION (Awareness, Care, and Treatment In Obesity maNagement) Study.

Methods:

3008 US adult PwO in a stratified cross-sectional sample completed surveys assessing recent WL outcomes and associated attitudes and behaviors. A multivariate logistic model compared variation in WL success [10% of sample; defined as $\geq 10\%$ WL in previous 3 years and self-reported success in weight management over previous year (PwO-S)] with seven characteristics taken from demographic, attitudinal and behavioral survey domains.

Results:

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Self-reported weight history one and ten years prior were both significantly associated with WL success, controlling for relative weight change over time. Compared with PwO who did not meet the criteria for WL success, PwO-S reported 1) healthcare professionals (HCPs) more often recognized their previous WL efforts, 2) they had more motivation to lose weight, and 3) they were more inclined to discuss weight with a diabetes educator. PwO who reported not receiving a formal “obesity” or “overweight” diagnosis and PwO who felt their lack of motivation was a barrier to WL had lower odds of reporting WL success.

Conclusions:

WL success by our definition was consistent with PwO-reported WL history. PwO perceived that support, motivation for WL, and reinforcement and engagement with HCPs, are associated with WL success, even after controlling for weight history. This study underscores the potential role of motivation and engagement of PwO in WL success and provides a strong foundation for exploring mechanisms for these factors to predict success. Understanding these mechanisms should help identify important targets to enhance obesity treatment outcomes.

T-P-3143

Recent Secular Trends in Abdominal Adiposity in the Fels Longitudinal Study

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Background:

Recent studies have observed a positive secular trend in waist circumference (WC) over the last two decades in both children and adults in the US. There is some debate, however, about whether or not these secular increases are due to concomitant secular increases in weight/BMI, an overall indicator of adiposity. To assess this question in a longitudinal manner, we use available anthropometric data from adults participating the Fels Longitudinal Study

Methods:

We examined secular changes in WC and BMI from the year 2000 to 2015 in a sample of 818 individuals (436 females, 382 males) ranging in age from 20 to 65 years who had 2,329 measurements over this period. Sex-specific linear mixed effects models were used to estimate the change in average WC from 2000-2001 to each of the subsequent two-year intervals 2002-03, ..., 2014-15, controlling for age modeled as a natural cubic spline and including a random subject-level intercept and age slope.

Results:

We observed a significant secular increase in WC for both men and women over this period ($p < 0.0001$). Rates of increase were 0.18 cm/yr in men and 0.30 cm/yr in women. When these models were adjusted for BMI (modeled as a natural cubic spline, and including a linear age x linear BMI interaction), we observed an attenuation of the secular effect, with meaningful change only remaining among women (-0.02 cm/yr, men; 0.16 cm/yr, women).

Conclusions:

These results, using longitudinal data, further corroborate the results of others who have used cross-sectional data to show a recent secular increase in waist circumference in the US. Our results also show that after adjusting for secular changes in BMI, a significant secular increase in waist circumference remains among women. Further work will evaluate secular trends in more comprehensive measures of body composition to gain a better understanding of this phenomenon.

T-P-3144

Relationship Between Obesity and Stress Oxidative in Chilean People

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Background:

Oxidative Stress (OS) is a metabolic dysfunction that favors the oxidation of biomolecules, contributing to the oxidative damage of cells and tissues. This consequently contributes to the development of several chronic diseases. The objective of this study was to analyze the association between biomarkers of OS and obesity in a sample of Chilean subjects, belonging to -middle incomes group, from Santiago de Chile.

Methods:

2451 subjects (aged 20-59y, 1880 women and 571 men) were studied. Body composition was analyzed by DXA. Nutritional status was defined according WHO: undernutrition BMI<20kg/m², normal BMI:20-24.9kg/m², overweight BMI:25-29.9kg/m² and obese BMI ≥30kg/m². Reduced-glutathione, thiobarbituricacid-reactive substances and conjugated-dienes as well as enzymatic activity of Superoxidedismutase, Catalase, Glutathione-S-transferase and Glutathione-peroxidase were measured in an overnight fasting blood sample. The relationship between nutritional status and biomarkers of OS was studied through multinomial logistic regression.

Results:

The mean±SD of age of participants was 39.6±19.7 years (95%CI:39.2-40.0y). 26.2% (95%CI:24.4-29.7) of the subjects are normal weight, 47.2% (95%CI: 45.2-49.2) are overweight and 25.9% (95%CI: 24.2-27.9) are obese. The % of obese is higher in men than women (46.2% vs 19.7%). The mean of fat mass is similar in men and women (30.8 vs 29.4 kg) and the mean of lean mass is higher in men than women (61 vs 40.6 kg). 52.7% of men and 64.3% of women have abdominal obesity ($p < 0.0001$). The activity-antioxid

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significantly higher in women than men (139.2 vs 135.8) and prooxidant-activity too (153.3 vs 155.5). We found that act-proox is risk to obesity (RRR=1.02;95%CI:1.01-1.02) and act-antiox was associated inversely with obesity (protective factor) (RRR=0.98; 95%CI: 0.98-0.99), adjusted by sex and age.

Conclusions:

The results emphasize that OS was involved in the pathophysiology of chronic diseases, such as obesity.

T-P-3145

Relative Low Limb Muscle Mass Has Associated With Obesity and Its Relating Metabolic Changes

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Background:

Low muscle mass is believed to associate with obesity, metabolic syndrome and insulin resistance. We compared two different sarcopenia definitions regarding their relationship with obesity, metabolic syndrome and insulin resistance.

Methods:

The data from Korea National Health and Nutrition Examination Survey (2008-2010, 3,176 subjects aged over 65 years old), were analyzed. To define sarcopenia, we used Appendicular Lean Mass (ALM)/(height (ht))² and ALM/trunk lean mass (TLM) at a value more than 1 SD or 2SD below the mean of a young reference group. Obesity measured by fat mass index (FMI; fat mass/(ht)²). Metabolic syndrome used the International Diabetes Federation definition, and insulin resistance was measured by the homeostasis model assessment of insulin resistance.

Results:

ALM/(ht)² was positively correlated with FMI($r = 0.288$ (men), $r = 0.358$ (women); $p < 0.001$), but ALM/TLM was negatively correlated with FMI($r = -0.210$ (men), $r = -0.227$ (women); $p < 0.001$). When adjusted by age, exercise, smoking, alcohol, and fat mass, sarcopenia by ALM/TLM increased the risk of metabolic syndrome (men; OR=1.527, 95% CI = 1.004–2.322, women; OR=1.49, 95% CI = 1.08–1.62), but sarcopenia by ALM/(ht)² decrease (men; OR=0.260, 95% CI = 0.170–0.399, women; OR=0.45, 95% CI= 0.24-0.83). And insulin resistance was positively correlated with ALM/(ht)² (men: B = 0.060, $p < 0.001$; women: B = 0.074, $p < 0.001$) but negatively with ALM/TLM (men: B = -0.130, $p < 0.001$; women: B = -0.068, $p = 0.004$).

Conclusions:

ALM/TLM was stronger correlated than ALM/(ht)² with Obesity and its relating metabolic changes.

T-P-3146

Population Health: Long Haul Truck Driver Work Environment Association With Body Mass Index

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Background:

Long haul truck drivers travel hundreds of miles from home transporting goods across the country. This population is associated with poor health outcomes, including obesity. The prevalence of obesity among U.S. adults was 40%, and 69% among long haul truck drivers in 2009-2010. Researchers have not established a clear relationship between working environment and weight among truck drivers.

Methods:

This quantitative cross-sectional study, using an ecological framework, evaluated the relationship between the working environment (sleep performance, food choices, driving environment, and activity level) and body mass index (BMI) among long haul truck drivers using multiple regression analysis. Mean differences between weight groups (e.g., normal weight, overweight, obese Class I, obese Class II, and obese Class III) were analyzed using a 1-way ANOVA.

Results:

Of the 126 adult respondents, none were underweight, 20 were healthy weight, 28 were overweight, and 78 were obese. Using multiple regression analysis, no statistically significant associations were found between the working environment and BMI. However, statistically significant ($p < 0.05$) mean differences between weight groups were found using a 1-way ANOVA. Regarding physical activity level, there was a statistically significant difference between the overweight and obese Class II groups, and a statistically significant difference between the overweight and obese Class III groups regarding physical activity within the prior month.

Conclusions:

Study findings support the need for further research to advance the knowledge of associations between weight groups and physical activity, guiding effective BMI reducing interventions among long haul truck drivers.

T-P-3147

Sitting Time Prevalence, Trends and Its Association With Obesity and Diabetes in Mexico City

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Background:

Sedentary behaviors such as sitting time are associated with obesity and diabetes independently of the total reported physical activity. The objective of this study was to describe the current prevalence and trends of sitting time/day and to examine its association with sociodemographic and clinical indicators in Mexico City.

Methods:

Two cross-sectional representative surveys of Mexico City were used for this analysis (2006: n=1148 and 2015: n=1329). Sedentary behavior questions from the IPAQ included time spent sitting in the last week and in the last Wednesday. Sitting time, calculated from the total daily minutes, was classified as: low (<420 min/day) and high (\geq 420 min/day). To evaluate the association between sitting time category sociodemographic and clinical indicators, multivariate logistic regressions were calculated controlling for confounders and testing for potential interactions among participants

Results:

A total of 13.6% (2006) and 14.8% (2015) adults were classified within the highest sitting time category (\geq 420 min/day). There was a significant increase in the average sitting time/day between surveys (216.0 \pm 6.3 (2006) and 233.8 \pm 5.5 (2015), p<0.05). In 2015, males (vs. females), 20-49y (vs. all other age groups), low-intensity jobs (vs. all other jobs), and students (vs. non-students) were more likely to be in the highest sitting time category. Participants with normal weight and with a previous diagnosis of diabetes were less likely to report sitting time in the highest category (OR= 0.40, 95%CI= 0.23, 0.71 and OR= 0.47, 95%CI= 0.22, 0.99 respectively)

Conclusions:

Based on our results, sitting time/day prevalence increased 8.8% and average daily sitting minutes significantly increased 18 minutes in the 9-year period. Current public health policies should consider strategies not only for increasing physical activity levels, but also for reducing sitting time/day among the population as a measure to fight the growing non-communicable chronic diseases rates

T-P-3148

Comparison of a Body Shape Index and BMI as Predictors of Metabolic Syndrome: NHANES 2007-2012

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Background:

A calculated anthropometric measurement, A Body Shape Index (ABSI), was recently introduced as a more reliable index of body composition than waist circumference (WC) and body mass index (BMI). ABSI has demonstrated stronger prediction of visceral fat, blood pressure, dyslipidemia, and overall mortality. Thus far, the relationship between ABSI and Metabolic Syndrome (MetS) has not been studied on a large U.S. population. The purpose of this cross-sectional study was to determine whether ABSI is a better predictor of the risk of MetS and its individual risk factors than BMI on a large and diverse sample of the U.S. population using the National Health and Nutrition Examination Survey (NHANES) 2007-2012.

Methods:

The study conducted had a total of 6,921 non-pregnant, non-lactating, fasted adults (\geq 20 years). ABSI was defined as WC (m)/ [BMI^{2/3} × height (m)^{1/2}]. The revised National Cholesterol Education Program Adult Treatment Panel III definition was used to diagnose MetS.

Results:

The prevalence of MetS was 68.5% and 57.5% in the highest quartiles of BMI and ABSI, respectively. Odds ratios (OR) were determined using multiple regression analysis (adjusted for age, gender, and ethnicity) and revealed that all of the odds ratios (OR) for BMI quartiles were substantially higher than ABSI quartiles for MetS (for the fourth quartile, OR = 31.2, 95% CI = 23.2 - 41.9 for BMI, OR = 3.7, 95% CI = 2.9 - 4.5). Higher ORs for BMI quartiles compared to ABSI quartiles were also found for each individual MetS risk factor.

Conclusions:

This study concludes that BMI is a stronger predictor of MetS and each individual MetS risk factor in the general U.S. population.

T-P-3149

Determinants of Longitudinal Change in sCD163, a Biomarker of Adipose Tissue Macrophage Activation

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Background:

Chronic inflammation driven by increased adipose tissue macrophage (ATM) activation may be central in type 2 diabetes (T2D) etiology. Soluble CD163 (sCD163), a novel biomarker of ATM activation, is elevated in obesity and may be a useful biomarker in understanding the obesity-T2D relationship. To date, little is known regarding multivariate determinants associated with change in sCD163 concentration over time. Therefore, our aim was to assess the associations of baseline anthropometric and metabolic variables with longitudinal sCD163 concentrations in subjects at high risk for T2D.

Methods:

Non-diabetic adults \geq 30 years old at-risk for T2D participating in the PROspective Metabolism and Islet Cell Evaluation (PROMISE) cohort had three assessments over 6 years (n = 408). Fasting serum was used to measure sCD163 concentration. Anthropometric measurements and metabolic parameters were determined using standardized procedures and questionnaires. Generalized estimating

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equations (GEE) evaluated the baseline multivariate determinants of longitudinal change in sCD163.

Results:

Serum sCD163 concentration increased over the 6-year follow-up ($p < 0.05$). Longitudinal GEE results indicated both waist circumference and weight were positively associated with increased sCD163 concentration (β per SD = 8.19 (6.64, 9.74) and 1.07 (0.23, 1.91) $p < 0.05$, respectively). Similarly, age and non-European ethnicity were positively associated with increased sCD163 levels ($\beta = 14.26$ (2.84, 26.95) and 28.07 (7.79, 43.88) $p < 0.05$, respectively). Conversely, there was an inverse association of sCD163 with HDL and diastolic blood pressure ($\beta = -10.05$ (-17.58, -1.82) and -9.46 (-17.18, -1.03) $p < 0.05$, respectively).

Conclusions:

In conclusion, increases in sCD163 concentrations over time were associated with core anthropometric and metabolic disorders associated with inflammation in a population at-risk for T2D. sCD163 may be a useful biomarker of ATM and may improve the characterization of obesity-driven subclinical inflammation.

T-P-3150

Loss of Control Eating Associated With Elevated hsCRP Among Racial/Ethnic Minority Young Adults

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Background:

High-sensitivity C-reactive protein (hsCRP) is an inflammatory biomarker associated with coronary heart disease events. Independent of body mass index (BMI), positive associations have been found between binge eating disorder and hsCRP among adults and between loss of control (LOC) eating and hsCRP among youth. To our knowledge, this is the first study to examine the relationships of each of the distinct yet interrelated constructs that together define binge eating – overeating and LOC eating – with hsCRP among adults.

Methods:

We used data from white, black, Hispanic/Latino, and Asian/Pacific Islander young adults in the National Longitudinal Study of Adolescent to Adult Health for this study ($n=8,883$). Overeating and LOC eating were assessed via self-report at Wave III (W3: mean age=21.8 years, SD=1.8); hsCRP was assessed at Wave IV (W4: mean age=28.8 years, SD=1.8) and analyzed as a continuous and a dichotomous (high hsCRP, defined as >3.0 mg/L) outcome. We conducted linear and logistic regression analyses, adjusting for age, sex, race/ethnicity, percent federal poverty level in adolescence, parental education, smoking status at W4, baseline depressive symptoms, baseline BMI, and change in BMI from W3 to W4.

Results:

Overeating was reported by 5.7% of respondents and LOC eating was reported by 2.0% of respondents. No association was seen between overeating and hsCRP. The association between LOC eating and hsCRP differed by sex and race/ethnicity in linear regression analyses ($p=.07$) and by race/ethnicity in logistic models ($p=.02$). LOC eating was positively associated with high hsCRP among black (OR: 2.50; 95% CI: 0.97, 6.46) and Hispanic/Latino (OR: 2.82; 95% CI: 1.16, 6.89) respondents, but not among white (OR: 1.03; 95% CI: 0.54, 1.94) or Asian/Pacific Islander (OR: 0.25; 95% CI: 0.05, 1.24) respondents.

Conclusions:

Independent of BMI, LOC eating was associated with elevated hsCRP among black and Hispanic/Latino young adults, but not among white or Asian/Pacific Islander young adults.

T-P-3151

Metabolites Predict Clinically-Relevant Liver Adiposity in the Multiethnic Cohort Body Imaging Study

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Background:

Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease worldwide and varies in frequency among ethnic groups in the US. While NAFLD is obesity-associated, neither weight nor BMI alone are sufficient to either predict or to diagnose NAFLD. The minimal predictive ability that they do have is attenuated by relative ethnic-specific differences in ectopic fat deposition.

Methods:

The Multiethnic Cohort Study (MEC) is a cohort that has followed 215,000 Hawaii and Los Angeles residents of African, Japanese, European, Latino, and Native Hawaiian ancestry since 1993. In a subset of 1000 healthy women and men aged 60-77 years with BMIs of 17.1-46.2 kg/m², we measured liver fat using abdominal MRI and total body fatness by DXA. We examined the association between liver fat and the redox active plasma metabolites, assessed using HPLC separations with coulometric electrode array detection.

Results:

In addition to previously identified metabolites, e.g., tyrosine, we report chromatographic identification of three previously unknown metabolites that each associates with liver fat across ethnicities with p values of 10^{-10} to 10^{-21} – much more strongly than tyrosine ($p < 10^{-4}$). Three markers individually outperform BMI ($R^2 \sim 0.01$ in women and 0.09 in men) in R^2 ranging up to 0.21. One metabolite has an

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AUROC of ~0.70 for both women and men, with the other two both ~0.70 in one sex and ~0.65 in the other. AUROCs are essentially equal across liver fat cut-offs (4.0% to 6.5%) near the standard clinical threshold for NAFLD (5.5%), suggesting robustness. We have previously found one of these metabolites to be a marker of caloric restriction. Multi-metabolite modeling is in progress; penalized regression (LASSO) models have $R^2 > 0.3$.

Conclusions:

We report three unidentified plasma metabolites that strongly reflect NAFLD across men and women of five major ethnic groups.

T-P-3152-DT

The Association of the Gut Microbiome and Liver Fat in the Multiethnic Cohort Body Imaging Study

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Background:

Non-alcoholic fatty liver disease (NAFLD) is the most common cause of chronic liver disease worldwide and varies in frequency among ethnic groups in the US. Both genetic and lifestyle factors are important in the development of NAFLD. The liver is one of the most exposed tissues to gut bacterial metabolites due to its blood supply from the intestines. Randomized clinical trials have shown that probiotics may ameliorate liver enzyme levels and fibrosis in NAFLD patients. The gut microbiome (GM) may be a link to NAFLD and may increase risk of more severe forms of liver disease.

Methods:

The Multiethnic Cohort Study (MEC) has followed 215,000 Hawaii and Los Angeles residents of African, Japanese, European, Latino, and Native Hawaiian ancestry since 1993. In a subset of 892 healthy men and women aged 60-77 years with BMIs of 17.1-46.2 kg/m², we examined the association between the GM and liver fat. We measured % liver fat using abdominal MRI and total body fatness by DXA. The GM was measured in stool by sequencing the V1-V3 region of the 16S rRNA gene using MiSeq (Illumina). Alpha diversity was calculated from the sequencing results as a measure of the number of bacterial operational taxonomic units (OTU) and their distribution.

Results:

We found an overall significant negative association between alpha diversity and % liver fat adjusted for sex-ethnicity/race group and total adiposity ($p=0.0015$). More specifically, the diversity of the GM was negatively associated with liver fat in Hawaiian women ($p=0.0002$), Latino men ($p=0.003$) and Latino women ($p=0.03$). The GM explained on average 10% of the variation in liver fat (perMANOVA). There was an inverse correlation of liver fat with Christensenellaceae, a bacterial group associated with leanness, and a positive correlation with Bacteroides.

Conclusions:

Our data is suggestive of a role of the gut microbiome in the development of liver fat that may be linked to the increased chronic liver disease risk observed among Latinos and Native Hawaiians.

T-P-3153

Vigorous Activity Is Associated With Reduced Inflammation Among Adolescents and Young Adults

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Background:

High sensitivity C-reactive protein (CRP) is an inflammatory marker associated with cardiovascular (CV) risk in adults, but it is unknown whether physical activity (PA) is related to CRP or moderates the relationship with weight status. Our objective is to examine the relationship between CRP, physical activity, and obesity in a nationally-representative sample of adolescents and young adults.

Methods:

We used the National Health and Nutrition Examination Survey (NHANES) in years with CRP and reports of physical activity (PA) available (2001-2006) for adolescents and young adults aged 16-29 years ($N=5,843$). Categories of obesity were: underweight (BMI<18.5), healthy weight (BMI 18.5-25), overweight (BMI 25-30), class I obesity (BMI 30-35), and class II obesity (BMI>35). We used two cutoffs for CRP: >1 mg/L and >4 mg/L. Individuals self-reported: any (>10 min) "moderate activity" (light sweating or slight/moderate increase in breathing or heart rate) or "vigorous activity" (heavy sweating or large increase in breathing or heart rate) within the last 30 days. We used chi-square tests for bivariate analyses; and logistic regression to control for class of obesity, sex, race, age, income, and NHANES cycle.

Results:

Mean CRP did not differ based on moderate PA, but was lower for individuals reporting recent vigorous PA compared to those reporting no vigorous PA (0.26 mg/L vs. 0.42 mg/L; $p<0.001$), and those with vigorous PA also were less likely to have CRP >1 mg/L (46% vs. 61%, $p<0.001$) or CRP >4 mg/L (16% vs 27%, $p<0.001$). Even when controlling for obesity class and other covariates, those engaging in vigorous PA had lower odds of CRP >1 mg/L (aOR=0.75, $p=0.002$) or CRP >4 mg/L (aOR=0.71, $p=0.007$).

Conclusions:

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In this nationally representative group of adolescents and young adults, mean CRP and high CRP is inversely related to vigorous PA, even when controlling for obesity. Prospective work is important to determine whether vigorous PA can mitigate the cardiovascular risk of those with obesity.

T-P-3154

A Comparison of Systematic Review Efficiency Between Obesity, Nutrition, Diabetes and CVD Topics

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Background:

Systematic reviews (SRs) are very labor intensive, depending on the topic and scope of literature search. We have previously reported the general efficiency of the process [number of authors required, ratio of papers included to those retrieved in the databases searched (SEff)] in a sample of 195 reviews on a wide variety of human health topics as a mean number of authors = 5 and SEff < 3%. Using recently published SRs, we aimed to compare relative efficiency with these metrics across obesity-related topics to determine whether there are systematic differences between topics that make some areas of literature more burdensome to synthesize than others.

Methods:

We searched PubMed for papers published in 2016 with a title containing "systematic review". Of these, we selected papers that contained any of the following terms in the title: "obesity", "diabetes", "cardiovascular", or "nutrition" to code as categories of the papers. We extracted the following data from each source as available (full text or abstract): Category of review topic, N authors, and the numbers of each literature selection stage reported in the PRISMA diagram (if present): N screened (total found in database searching) and N studies included in the review. Between the categories we compared mean # of authors and SEff using ANOVA.

Results:

Data was available to analyze 519 SRs for at least one outcome. Some with multiple categories of focus were coded as a separate group (N=86). SRs with nutrition focus was the smallest group (N=37). Overall, M authors=5.6 and M SEff = 2.8%. Significant group differences were observed in mean N authors/review, $F(4,518)=3.69, p=.006$. Using a Bonferroni post hoc test, obesity and diabetes SRs were significantly lower in mean # of authors than CVD SRs. For SEff (N=297), there were no group differences, $p=.657$; range=0.03-44.7%.

Conclusions:

SRs of these topics do not greatly differ in efficiency or people required compared to other medical topics. CVD reviews may involve relatively more team members.

T-P-3155

Attrition and Diabetes Remission Rates After Roux-en-Y Gastric Bypass: A Sensitivity Analysis

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Background:

Attrition, or loss to follow-up, is a common problem in studies of diabetes remission following roux-en-Y gastric bypass (RYGB). When attrition is higher among individuals who do not achieve remission, reported rates of remission may be inflated. We investigated the effect of selective attrition on reported diabetes remission rates following RYGB.

Methods:

Using sensitivity analyses, we identified sets of attrition and remission rates that produced simulated outcomes within 95% confidence intervals of the reported outcomes from 3 studies of diabetes remission following RYGB.

Results:

Potential attrition bias varied greatly, yielding possible remission rates of diabetes ranging from 20% to 40%. Only the study with the highest attrition gave remission rates that overlapped with the rates from the other studies. For the 2 studies with the highest attrition, estimates that ignored attrition overestimated diabetes remission. Kaplan-Meier estimates were less affected by attrition.

Conclusions:

Researchers, clinicians, and policymakers can measure potential attrition bias in clinical studies. In the case of remission of diabetes following RYGB, the potential bias in reported remission rates varies considerably among studies, primarily driven by attrition rate and study size.

T-P-3156 - WITHDRAWN

T-P-3157

Incident Obesity and Drivers of Remission in the U.S. Adult Population

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Tuesday, October 31, 2017

Poster Abstracts

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Background:

Despite the attention given to the prevalence of obesity, surprisingly little is known about the incidence of obesity. Longitudinal trends from the 1950's through 2000 have captured the changing dynamic of obesity over time, but do not depict recent trends. This paucity of knowledge limits treatment paradigms, since individuals may gain or lose weight; even when, on a national level, prevalence has plateaued. Understanding characteristics associated with incidence or remission of obesity rates may suggest foci for support and resources.

Methods:

Individuals from MEPS panel 17 were classified into standard obesity categories at enrollment and one year later. Incidence rates were calculated by age. We used logistic regression to model incidence and remission of obesity as a function of demographic variables.

Results:

Although overall prevalence of obesity remained nearly constant, remission rates from obesity (stratified by age) ranged from 11-27% while incidence rates ranged from 6-16%. Considering BMI, 36% of adults lost at least 2.5 kg/m² in the one-year period; only 8% gained 2.5 kg/m² or more. In our models of incidence and remission, the primary modifiable variable associated with change in obesity category was baseline BMI ($P < 0.01$), where participants near the border of an obesity category were more likely to change.

Conclusions:

Despite a plateau in overall obesity prevalence, individuals can and do lose weight. Further research is needed to identify interventions that can facilitate weight loss.

T-P-3158

Low Incidence of Sarcopenic Obesity in Chilean Older People

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Background:

Sarcopenia is a syndrome characterized by a progressive loss of skeletal muscle mass and function, associated with serious consequences on older people's health. The frequency of obesity and the presence of sarcopenia in this population, demands the study of the association of both conditions (sarcopenic obesity). The objective was to determine the risk of sarcopenia according obesity in Chilean older people.

Methods:

Follow-up (5-15 years) of 1052 community-dwelling people 60 years and older (mean \pm SD: 66.5 \pm 4.3 y; 95%CI: 66.2-66.7 y), from ISAMayor and ALEXANDROS cohorts, designed to study sarcopenia and disability associated with obesity. Sarcopenia was defined according the algorithm of European Group on Sarcopenia in Older People (EWGSOP). Muscle mass was estimated with a Chilean anthropometric-equation; skeletal muscle mass index and muscle strength were defined with Chilean cut-off points. For physical performance was used the cut-off point defined by EWGSOP. Obesity was defined according to WHO. In 700 subjects with DXA, multivariable regression analyses were performed to determine association between obesity and sarcopenia, adjusting by lean/fat mass ratio to avoid biased interpretations.

Results:

After 6268 persons years of follow-up (median follow-up 5.5 years), 146 new cases of sarcopenia were identified (incidence 2.3 per 100 persons/years). The risk of sarcopenia in obese people was 0.26 (95%CI: 0.17-0.40). Logistic regression, adjusted by age and sex, shows that the incidence of sarcopenia was inversely associated with obesity (RR=0.21; 95%CI: 0.13-0.24). When adjusting by lean/fat mass ratio persisted the negative association of obesity with sarcopenia (RR=0.15; 95%CI: 0.07-0.32).

Conclusions:

The results show that the obesity is mainly non-sarcopenic in Chilean older population. Obesity is an important protect factor for incidence of sarcopenia in Chilean older people, meaning that in these cohorts, obese people are not sarcopenic. Funded by FONDEF 15110053 and Fondecyt 1130947

T-P-3159

Measured vs. Self-Reported Height and Weight Among Adolescents and Young Adults

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Background:

Self-reported height and weight are commonly used in surveys to assess obesity, despite evidence of misreporting. Our objective was to assess the magnitude of inaccurate reporting of height and weight, and impact on estimate of obesity prevalence in a nationally representative sample.

Methods:

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We used the National Health and Nutrition Examination Survey, 1999-2014 to examine individuals aged 16-29 years (n=12,106). Individuals had height and weight measured as part of a physical examination, and self-reported height and weight in a survey component. We calculated the difference between self-reported and measured height and weight. We also classified weight status using each as: underweight (BMI<18.5), healthy weight (BMI 18.5-25), overweight (BMI 25-30), class I obesity (BMI 30-35), and class II obesity (BMI>35). We used descriptive statistics and logistic regression to examine the effect of race, sex, income, and age on misreporting.

Results:

On average, self-reported height was 0.75 cm (SE=0.04) higher than measured height and self-reported weight was 1.03 kg (SE=0.07) lower than measured height. These differences resulted in a lower prevalence of obesity when using self-report vs. measured values (class I obesity: 12.0% vs. 13.2%; class II obesity: 7.9 vs 10.2%; p<0.001). Male sex was most strongly associated with height over-reporting (0.47 cm, p<0.001); higher income was also associated with height over-reporting. For weight, older age (-0.03 kg per year, p=0.014) and female sex (-1.84kg compared to males, p<0.001) were associated with greater under-reporting. There were no differences by race in reporting of height or weight.

Conclusions:

Significant over-reporting of height and under-reporting of weight occur in adolescents and young adults, which affect population-level estimates of obesity. Predictable demographic factors contributing to misreporting may allow for adjustment in research where measured height and weight are impracticable.

T-P-3160 - WITHDRAWN

T-P-3161

Predicting the Outcome of User-Defined Weight Goals Using Data From Consumer-Grade Connected Devices

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Background:

Activity level, sleep behavior and weigh-in routine are known to be associated with weight goal achievement. The aim of this study is to investigate the use of pure end-to-end deep learning on raw data coming from consumer-grade digital health devices to predict weight goal achievement.

Methods:

Anonymized data from 1.5 million users of Withings connected scales and sleep and activity trackers was analysed. We considered a binary discriminative formulation of the learning problem: given a user-defined weight goal and time series of activity, sleep, and weight measurements, we want to know if the user will succeed in losing (or gaining) the weight needed to achieve his goal.

Results:

The results of our systematic exploration into a broad range of machine learning methods for this weight goal prediction task show that a novel application of deep long short-term memory (LSTM) models is capable of reliable and accurate prediction. With this model, areas-under-ROC of 88% and accuracies of 80% after 10-fold cross-validation were reached – performance metrics that significantly outperform three “shallow” baseline approaches to sequence classification (GHMM, SVM and RF with 75%, 77%, 80% of areas-under-ROC respectively), as well as a common variation of deep neural networks (79%).

Conclusions:

We can accurately predict if the user will achieve his weight goal based on activity level, sleep behavior and weigh-in routine. This is one of the first time that such quantities of longitudinal health data have been investigated, allowed by the advent of connected devices. While pure end-to-end deep learning approaches are routinely used within time-series domains like speech recognition, they are rarely applied to the emerging domain of digital health. We believe that the research presented here will be an informative step forward towards broader application of such techniques to other health domains.

T-P-3162

Validation of an Electronic Health Record Algorithm to Identify Post-Gastric Bypass Hypoglycemia

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Background:

The electronic health record (EHR) is becoming an increasingly important research tool to identify cohorts of patients for study. We sought to validate an algorithm through clinician chart review in order to identify patients with post-gastric bypass hypoglycemia (PGBH).

Methods:

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We conducted a chart review study of nondiabetic patients who underwent Roux-en-Y gastric bypass (RYGB) or sleeve gastrectomy (SG) at Geisinger Medical Center from 2004 to 2013. The EHR algorithm identified 158 patients with PGBH (cases) and 1048 without PGBH (controls). Two clinicians independently reviewed a random selection of 75 case and 75 control charts. Using a standard abstraction form, each reviewer determined the presence or absence of PGBH by searching the chart using keywords including “hypoglycemia” or “low blood glucose”, reviewing medical and surgical history, labs, medications and clinic notes. PGBH was identified using an EHR algorithm based on any post-operative glucose <60 mg/dl, diagnosis of hypoglycemia, or any medication use for treatment of PGBH.

Results:

Of the 150 charts reviewed, the EHR algorithm agreed with the chart review for 129 (accuracy=86.0%, 95% CI=79.4-91.1). Of the 70 that had PGBH based on chart review, 62 were positive and 8 falsely negative for PGBH from the EHR algorithm (sensitivity=88.6%, 95% CI=78.7-94.9). Of the remaining 80 patients that did not have PGBH based on chart review, there were 67 that were negative and 13 falsely positive for PGBH from the EHR algorithm (specificity=83.8%, 95% CI=73.8-91.1).

Conclusions:

The EHR algorithm has high sensitivity and specificity and may be helpful in identifying patients with PGBH for future studies.