**Friday, November 6, 2015**

**Posters on Display: 12:00-1:30 PM**

**T-P-3509**

**Adipocyte Size Contributes for the Heterogeneity of the Adipose Tissue Function**


**Background:** Adipose Tissue is distributed in several depots and the metabolic abilities of these adipocytes seem to be different. The balance between lipolysis and lipogenesis can influence adipocyte volume and seem to influence the functioning of Adipose Tissue. Therefore, we evaluated the possible correlation between the adipocyte metabolic capacities and the mean adipose cell size from different adipose fat pads of rats.

**Methods:** Male Wistar rats ageing 16 weeks were sacrificed, and adipose tissue samples from subcutaneous (SC), peri-epidymal (PE) and retroperitoneal (RP) fat pads were excised and the adipocytes were isolated. These cells were submitted to ex vivo biochemical tests of incorporation of D-[U-14C]-glucose and the adipocytes were isolated. These cells were submitted to ex vivo biochemical tests of incorporation of D-[U-14C]-glucose into triglycerides and into its glycerol moiety.

**Results:** The mean adipocyte volume was statistically different in all fat pads (RP>PE>SC) (N=14; *p<0.05). Adipocytes from RP fat pad incorporated more glucose into neutral lipids and into the glycerol moiety of triglycerides than PE and SC fat pads (N=11; *p<0.05). There was a positive correlation between lipogenesis and the size of adipocytes: Baseline (without insulin) (n=36; r 0.6292; *p=0.0001) and maximally stimulated (10mM insulin) (n=36; r 0.5384; *p<0.0007) glucose incorporation into total lipids; Baseline (n=42; r 0.4359; *p<0.05) and maximal (n=42; r 0.5136; *p<0.05) glucose incorporation into TAG-glycerol.

**Conclusions:** Differences found in the metabolic profile of different fat pads are strongly correlated with their cell sizes which may explain the differential response due to the different anatomical localization of fat deposits.

**T-P-3510**

**Betacryptoxanthin (BCX) reduces visceral fat and ameliorates features of risk factors in Insulin Resistance Induced by High-Fat Diet in Rodents**

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**Background:** The percentage of U.S. adults who are obese continued to trend upward in 2014, reaching 27.7%. Rising obesity rates have significant health consequences such as DM, hypertension, CVD and inflammatory disorders. More than one-quarter of health care costs are now related to obesity. Abdominal fat accumulation is associated with oxidative stress as determined by low levels of serum carotenoids. Betacryptoxanthin (BCX), a provitamin A source, are inversely associated with change of BMD. Lower serum levels were observed with higher BMI. In vitro study findings in different cell lines show that BCX reduced fat accumulation by down-regulating FAS, SCD-1 and C/EBPα in 3T3L1 adipocytes. BCX significantly upregulated fat over control in primary bronchial epithelial cells. To study the effects of BCX on body weight, visceral fat and cardio metabolic health risk factors in insulin resistance induced by high-fat (HF) diet in rodents.

**Methods:** Male Sprague Dawley rats (N=28, age: 8 week, weight: 180 ± 20 g) were housed in a controlled environment and provided with rat chow and water ad libitum. After 2 weeks acclimation, rats were divided into four groups: (1) Control standard diet (C), (2) High Fat Diet (40% of calories as fat, HFD), (3) C + BCX (2.5 mg/kg), (4) HFD + BCX (2.5 mg/kg) administered for 12 weeks. Oxidative stress genes and inflammatory responses were analyzed. CMS risk factors were analyzed. Treatments were compared using ANOVA and student's unpaired t test; P < 0.05 was considered statistically significant.

**Results:** BCX administration significantly reduced body weight, visceral fat and food intake, reduced oxidative stress and cardio-metabolic health markers and decreased inflammatory markers. No gross lesions, no mortality and no adverse events were observed.

**Conclusions:** These observations suggest that BCX may be considered as an adjunct therapy to reduce visceral fat and complications associated with visceral fat and cardio-metabolic health risk factors.

**T-P-3511**

**Continuous Treatment with Liraglutide is the Most Optimal Treatment Regimen in DIO Mice**

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**Background:** Liraglutide, a glucagon-like peptide-1 (GLP-1) receptor agonist, lowers body weight (BW) in individuals with obesity. The aim of the present study was to examine whether periods of no or lower dose treatment followed by return to full dose would increase the resulting BW loss.

**Methods:** Diet induced obese (DIO) mice (n=9) were treated for 5 weeks with liraglutide or vehicle, either continuously at high dose (1 mg/kg s.c. once daily) or with periods (2–6 days) of vehicle or lower doses (0.1–0.6 mg/kg). BW and food intake were recorded daily.

**Results:** Continuous dosing of high dose liraglutide to DIO mice induced a mean weight loss of 23%, which stabilized within the first 2–3 weeks. On discontinuing liraglutide treatment, animals immediately started re-eating, leading to a BW gain of up to 10%, until liraglutide treatment was re-initiated, re-inducing a drop in food intake and resulting in a BW loss of around 7%. Hence, although food intake was lowered every time liraglutide was re-initiated, this short lasting additional lowering of food intake did not lead to a greater BW loss in animals which were discontinued and reintroduced to full-dose liraglutide. Neither did periods of treatment at a lower dose induce additional BW loss than observed in continuously treated mice. Total BW loss was 23% with continuous treatment vs. 18–19% with periods of vehicle or lower dose (ns).

**Conclusions:** The most effective liraglutide treatment regimen for body weight loss seems to be continuous administration.

**T-P-3512**

**Diet-Induced Activation of PPARα Using Cottonseed Oil Improves Liver Metabolic Profiles in Mice**

**Background:** The most effective liraglutide treatment regimen for body weight loss seems to be continuous administration.
**Background:** Peroxisome proliferator activator receptor delta (PPARδ) has been shown to be an effective target to combat obesity and metabolic disease, however non-pharmacological methods of activation have yet to be identified. We tested the ability of various naturally occurring oils to increase PPARδ activity and found that cottonseed oil (CSO) was effective in activating liver expression and activity.

**Methods:** Male C57BL/6 mice were fed a diet supplemented with various oils (50% Kcal from fat-matched for macronutrient and caloric content) for 4 weeks with body weight and food intake measured weekly. Total energy expenditure, glucose tolerance, and tissue protein and mRNA expression was measured after 4-weeks. NMR-based metabolomics was conducted on livers to examine changes in pathways of macronutrient metabolism.

**Results:** There were no differences between chow- and CSO-fed mice in body weight or food intake (Kcal/wk) however total energy expenditure and fat oxidation increased compared to chow-fed groups. Additionally, CSO-fed mice displayed significantly elevated liver PPARδ and Pgc-1 expression that correlated with energy expenditure. Metabolomic analyses revealed that the livers of CSO-fed mice closely matched those of chow-fed and significantly differed from other fat-enriched diet groups using principal component analyses. Fatty acid composition of the diets and livers revealed no significant differences in lipid species between groups, indicating that a non-lipid species is likely responsible for the increased PPARδ expression and enhanced metabolic effects of CSO.

**Conclusions:** Taken together, our observations support the hypothesis that CSO may be useful as a dietary means to increase PPARδ expression with concomitant elevations in total energy expenditure and improved hepatic fatty acid oxidation. A diet containing 50% of total calories from CSO did not cause weight gain (like other dietary fats) and promoted improved molecular adaptations in both liver and skeletal muscle.

**T-P-3514**

**Disruption of the Cβ Subunit of Protein Kinase A in Mice Causes Blunted Response in β3 Adrenergic Receptors and a Paradoxical Decrease in Leptin: Fat Mass Ratio**

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**Background:** Protein kinase A is central to the regulation of cellular metabolism and energy homeostasis as it mediates actions of the second messenger cAMP. Of the two primary PKA catalytic subunits, Cα is expressed ubiquitously, whereas Cβ expression is more restricted. Cβ is expressed highly in brain and moderately in liver and adipose tissue.

**Methods:** 12 week old WT and Cβ KO mice (4-8/sec/group) were assigned to regular chow or high fat diet (HFD) for 14 weeks. BW was measured weekly; body composition, fat depot weights and serum parameters were quantified after week 14. A separate cohort (n=4/group) was subjected to indirect calorimetry and glucose and intolerance tolerance tests after 1 month HFD.

**Results:** As previously shown, PKA Cβ KO mice were lean and resist HFD-induced obesity and dysregulated glucose metabolism: male mutants were leaner regardless of diet whereas female mutants were significantly leaner than WT mice only after HFD feeding. Serum free fatty acids, triglycerides, cholesterol, and leptin were decreased in mutant compared to WT mice after ad libitum HFD feeding. Leptin to fat mass ratio was significantly lower in mutants despite the absence of increased intake. Cβ KO mice had increased VO2 at both ambient (23C) and thermoneutral (30C) conditions. Total energy expenditure (TEE) only appeared elevated if corrected for BW, yet did not differ if corrected for lean mass. CβKO mice exhibited a blunted response to the specific β3 adrenergic receptor agonist CL316,243 (0.1mg/kg, ip). Post – CL TEE was significantly decreased in mutant compared to WT mice.

**Conclusions:** The lean phenotype of Cβ KO mice cannot be explained by TEE or energy intake. We propose that enhanced basal sympathetic tone due to alterations in the regulation of the PKA system may explain the elevated VO2 and the lack of response to β3 AR agonist due to decreased responsiveness to β3 AR stimulation. Investigations into catecholamine levels, sympathetic activity and interplay between leptin and the PKA system are ongoing.

**T-P-3515**

**Does a Lower Resting Metabolic Rate Predict Weight Loss in Bariatric Surgery Weight Loss Patients**


**Background:** Energy intake and energy expenditure are primary components of the energy balance equation. For most adults, resting metabolic rate (RMR) is the principle component of energy expenditure. There are equivocal findings on the role that RMR has in the etiology and treatment of obesity. The purpose of this study was to examine the effect of RMR on weight loss in obese patients undergoing bariatric surgery.

**Methods:** Data were obtained from a chart review of patients from the Wake Forest Baptist Health Weight Management Center who underwent bariatric weight loss surgery. RMR was measured using the MedGem® indirect calorimeter under standard testing conditions. The % total weight loss from presurgery was obtained at 3 and 6 months post-surgery. Patients were separated into 3 groups based on their measured RMR: < 1600 kcal/day (n=29); 1600-2000 kcal/day (n=45); > 2000 kcal/day (n=52). Comparisons between the RMR groups for % weight loss were made by one-way ANOVA.

**Results:** Mean age was similar across the 3 RMR groups (43-49 years) and 80% of patients were women. Mean BMI was 51.2±40.9 kg/m2, and while there was a trend for BMI to highest for the > 2000 kcal RMR category, this did not reach statistical significance (p=0.074). Less weight was lost for the >1600 RMR category (10.9±14.8% at 3 months and 20.0±12.2% at 6 months) compared to the 1600-2000 and > 2000 categories at both 3 (19.6±15.6% for 1600-2000 and 18.6±5.6% for > 2000) and 6 months (25.7±7.6% for 1600-2000 and 27.7±6.0% for >2000) post-surgery.

**Conclusions:** In this analysis of bariatric surgery weight loss patients, having the lowest RMR resulted in less weight loss through at least 6 months post-surgery. Further research is needed for longer follow-up and to examine the role of initial body weight and other factors in this observation.
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Background: Globally the number of people suffering from obesity was 2.1 billion in 2013. It is critical that the biological mechanisms underlyng obesity be identified in order to develop rational strategies for treatment and prevention. Short non-coding micro-RNAs (miRNAs) are known to act as post-transcriptional factors regulating transcriptional factors and gene expression; however, little is known about the role of miRNAs in obesity. Based on our earlier data demonstrating effects on macrophage biology, we have specifically studied the effects of miR-150 on metabolism by generating miR-150 knockout mice.

Methods: Body weight and food intake of single caged WT and miR-150 KO male mice were measured weekly. Tissues were dissected after 10 weeks on high fat diet, and RT-PCR was performed to check gene expression in adipose tissues.

Results: KO mice exhibited lower body weight compared with WT, despite consuming less food. KO mice were also found to have lower fasting glucose levels both on normal chow and after high fat diet. In insulin tolerance tests, KO mice were more insulin sensitive than WT with lower glucose levels following insulin injection. In addition, miR-150 KO were found to have higher leptin gene expression in adipose tissue, and increased gene expression related to insulin signaling, glucose metabolism, and fatty acid turnover indicative of increased synthesis as well as beta-oxidation.

Conclusions: The results indicate that a specific miRNA, miR-150, exerts profound effects on systemic metabolism. When compared with WT, miR-150 KO mice were found to have a lean phenotype despite reduced food intake, and to have enhanced insulin sensitivity and glucose tolerance. These systemic effects were accompanied by changes in adipose tissue gene expression predicting reduced leptin production, enhanced insulin signaling, and augmented lipid metabolism. miR-150 may represent both a biomarker and novel therapeutic target regarding obesity and insulin resistance.

T-P-3516
Loss of Hepatic Aryl Hydrocarbon Receptor Alters the Thermogenic Properties of White Fat and Protects Against Diet Induced Obesity
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Background: The aryl hydrocarbon receptor (AhR) is a ligand activated transcription factor commonly known for its role in xenobiotic metabolism. However, the generation of AhR-null mice has revealed physiological roles for the AhR in lipid metabolism and energy expenditure. The AhR is highly expressed in the liver, which is a major endocrine regulator of lipid homeostasis. To investigate how AhR activity in the mouse liver affects lipid metabolism, we utilized liver specific tamoxifen inducible AhR conditional knockout (AhR-CKO).

Methods: Adult female (8-10 week) AhR-floxed (AhRfx/fx) and AhR-CKO (AhRfx/fx Alb-CreERT) mice were treated with tamoxifen to eliminate hepatocyte AhR expression. Mice were maintained on a normal chow diet for 10 weeks and body weight measured weekly. Mice were also fed a 41 Kcal % high fat diet (HFD) for 3 months and weighed weekly. We analyzed mouse gonadal white adipose tissue (GWAT) morphology using H&E staining and assessed uncoupling protein 1 (UCP1) expression in GWAT by immunohistochemical staining for UCP1. Oil Red O staining was used to analyze the lipid content in mouse livers maintained on a HFD. GWAT mitochondrial respiration was determined at 5 weeks using an oroboros oxygraph-2k high-resolution respirometer.

Results: AhR-CKO mice exhibited markedly reduced body weight gains and increased expression of UCP1 in GWAT depots in mice maintained on both normal chow and the HFD. AhR-CKO mouse GWAT also revealed significant increases in mitochondrial respiration rates compared to controls, consistent with the increased expression of UCP1 and multilocular morphology observed in H&E sections. These changes are indicative of browning of the white adipose tissue.

Conclusions: The results demonstrate that AhR biology in the liver can dramatically affect white adipose tissue homeostasis, where loss of the hepatic AhR culminates in browning of white fat concomitant with reduced weight gain even in animals maintained on a HFD.

T-P-3517
Modeling Plasma Amino Acid Kinetics in Growing Pigs
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Background: Metabolism of amino acids (AAs) can be affected by infectious diseases. Longitudinal in vivo measurements of isotopically-labeled AA concentrations in plasma can be used to estimate aspects of AA metabolism such as AA flux. For data interpretation, models of curvature are typically fit using numerical optimization procedures that are highly sensitive to the initial settings, leading to results that are not robust, particularly when modeling plasma AA kinetics in a single individual.

Methods: Isotopic enrichment of AAs was determined in plasma of pigs following a bolus infusion of [U-13C, U-15N] AA mixture (L-lys, Met, Thr, Trp, Ile, Leu, Val, Phe, Gln) before and 7-d after inoculation with porcine reproductive and respiratory syndrome virus. 13C and 15N enrichments were measured at 2.5, 5, 7.5, 10, 15, 20, 30 and 45 minutes after infusion for each pig and each AA. A double-exponential model was fitted to the data via nonlinear least-squares to calculate plasma fluxes for each of the AA and in each pig. As this procedure is highly sensitive to initial settings and may produce decidedly inferior model fits when used naively, the procedure was made ‘robust’ by randomly selecting 5000 initial model parameter values, locally optimizing from those values, and then selecting the best result as the initial setting for fitting for the globally optimal model.

Results: Using the modified procedure for obtaining initial model parameter values significantly improved the model fits, both for individual pigs (p = 0.0017) in a condition and collections of pigs (p = 9x10^-16) under a common condition, such as the pre-inoculation state; p-values correspond to paired t-tests on the residual sums of squares across all pigs and AAs.

Conclusions: The use of a modified procedure when fitting a nonlinear model, such as the double exponential model, significantly improves the accuracy of the model and makes it more robust. This work was supported by NPB 13-082

T-P-3518
Regular Exercise During Weight Regain Stimulates Hepatic de Novo Lipogenesis
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**Background:** Exercise reduces the rate of weight regain after weight loss. Our previous data indicate that exercise increases energy expenditure beyond the energetic cost of the exercise, which results from adaptations in peripheral tissues. In this study, we investigated exercise-induced molecular adaptations related to insulin signaling and de novo lipogenesis in the liver during weight maintenance and relapse.

**Methods:** Under obesogenic conditions, obesity-prone rats were matured, then weight reduced for 8 weeks with (EX) or without (SED) daily treadmill exercise. Rats were then fed their weight maintenance diet, or allowed to relapse for one day during which we assessed de novo lipogenesis (3H-H2O, ip). An energy gap-matched (GM) group of sedentary, relapsing rats were given a limited diet to match the positive energy imbalance in the EX rats. The expression of metabolic genes and proteins were measured in hepatic tissue via RT-PCR and western blot.

**Results:** EX rats displayed a similar level of de novo hepatic lipid retention as SED rats, but GM under the same energy excess retained less than the EX rats (P<0.08). Qualitative examination of adipophilin staining revealed greater lipid accumulation near the central vein in the SED and EX rats compared to GM. Gene and protein expression analyses support this exercise-induced increase in lipogenic capacity in the liver, with increased FASN and ACC1 RNA and protein (EX vs. GM, P=0.02). Insulin-regulated ACLY protein expression was increased in EX compared to GM (P=0.02).

**Conclusions:** During weight regain, exercise increased hepatic retention of de novo derived lipids and led to transcriptional adaptations in the liver to favor the more energetically expensive de novo lipogenic pathway. Stimulation of this pathway may be partially attributed to an increase in insulin sensitivity. This mechanism describes how hepatic tissue actively contributes to this favorable shift in fuel utilization during exercise in response to excess nutrients.

**T-P-3519**

**Serum GLP-1, PYY, Ghrelin, Amylin and TNFα are Significantly Associated with the Severity of Childhood Obesity**

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**Background:** The gastrointestinal tract and adipose tissue secrete many hormones that are actively involved the regulation of appetite and energy metabolism. The differences between obese and normal weight children are rarely reported. Therefore in the current study we investigated the levels of an adipokine (TNFα) and 9 gut hormones: amylin, ghrelin, leptin, GLP-1, GIP, PP, PYY, C-peptide and insulin and the correlation to obesity measurements in obese and normal weight children.

**Methods:** 120 obese children from the on-going Childhood Obesity Study were compared with 58 normal weight children in the province of Newfoundland (matched with the same F:M). Obesity was evaluated using BMI based on the criteria recommended by The Center for Disease Control. Gut hormones and TNFα were measured using MAGPIX system on fasting serum samples. Body fat percentage (total, trunk, gynoid and android) were determined using Dual-energy X-ray absorptiometry.

**Results:** ANCOVA analysis, controlling for age showed that obese children have significantly lower levels of GLP-1, PYY and TNFα than normal weight group, contrary to the report of PYY and TNFα in obese adults. In obese children TNFα and ghrelin were negatively while amylin was positively correlated with body composition measurements, further suggesting the uniqueness of relationship between these hormones and obesity in children.

**Conclusions:** Our results for the first time demonstrated that the severity of childhood obesity might be associated with the serum concentration of TNFα, PYY, ghrelin and amylin in a different way than adults.

**T-P-3520**

**Ventromedial Hypothalamic Melanocortin Receptor Activation Induces Changes in Mediators of Skeletal Muscle Metabolism**

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**Background:** The ventromedial hypothalamus (VMH) is conceptualized as a part of a pathway regulating energy balance (EB) through its actions on peripheral glucose and lipid allocation, modulating respiratory quotient (RQ) and thermogenesis. The central melanocortin (MC) system also plays a vital role in controlling EB, increasing energy expenditure (EE) and physical activity (PA), and decreasing appetite. We have demonstrated that intra-VMH MC receptor activation increases EE and PA and decreases RQ, switching fuel utilization to fats and lowering work efficiency wherein excess calories are dissipated by skeletal muscle as heat. We have also demonstrated that intra-VMH MC receptor activation increases sympathetic nervous system (SNS) outflow to skeletal muscle. Based on this, we hypothesize that MC receptor activation in the VMH may induce changes in skeletal muscle metabolic pathways.

**Methods:** Male Sprague-Dawley rats (n=16; 8/group) received guide cannulae aimed at the VMH. Rats received intra-VMH microinjections of the MC receptor agonist Melanotan-II (MT-II, 20pmoles/200nl) or vehicle (aCSF, 200nl). We examined mRNA and protein expression of mediators of metabolism in skeletal muscle, brown adipose, white adipose, and liver.

**Results:** Compared to vehicle, intra-VMH-MTI induced significant increases or trends in mRNA expression of mediators of EE (UCPs, PPARs, PGC1a) and a trend toward increased protein expression. There were no significant changes in mediators of energy conservation (K+ATP channels, MED1).

**Conclusions:** These results support the hypothesis that MC acts in the VMH to increase EE by lowering economy of activity through enhanced expression of mediators of EE in skeletal muscle. The data are consistent with the role of MC in the VMH in modulation of skeletal muscle metabolism.

**T-P-3521**

**Whole-Body Metabolic Effects of Dietary Sucrose Consumption in Mice**

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**Background:** High sugar consumption has long been associated with perturbations in whole-body energy metabolism. However, whether chronic sugar consumption at concentrations achievable in a typical human diet can cause the same metabolic perturbations as seen in studies that rely on supraphysiological doses remains unresolved.

**Methods:** 70 d old mixed background male mice were given ad libitum access to standard rodent chow and water (control)
or chow and water containing 10% (w/v) sucrose. Body composition and food/water intake were monitored weekly. After 12 wk, several indices of whole-body metabolism were assessed, including tissue analyses of the liver and adipose tissue.

Results: Compared to the control group, mice consuming sucrose were 11% heavier and had 97% more body fat. VO2 and respiratory exchange ratio were both significantly higher in the sucrose group, whereas ambulatory movement was decreased. Isoproterenol-stimulated whole-body lipolysis was greater in the sucrose group, whereas insulin tolerance remained similar to that of the control group. Elevated triglyceride content was observed in the livers of sucrose mice, and this was associated with increased expression of fatty acid re-esterification genes but not genes of de novo lipogenesis. Larger adipocytes in both visceral (epidymal) and subcutaneous (inguinal) adipose depots were observed.

Conclusions: Chronic sucrose consumption at concentrations achievable in a typical human diet results in alterations to whole-body metabolism, adipose tissue expansion and ectopic lipid deposition. Hepatic lipid deposition is likely to be indirect, due to increased lipolytic activity in the adipose tissue causing increased fatty acid flux into the liver.

T-P.3522
Atorvastin Regulates the Expression of Free Fatty Acid Receptors (FFAR4 and FFAR2) in Visceral and Subcutaneous Adipose Tissue in an Obesity Rat Model Fed with High Sucrose Diet
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Background: Free fatty acid receptors GPR 43 and 120 play an important role in the energetic homeostasis in the adipose cell, and in the lipid fastened intake regulation after digestion and nutrient absorption, especially in pathologies such as dislipidemia comorbid with obesity, where statins (Atorvastatin) have been shown a lipid reductor properties among other pleiotropic effects. The aim of this protocol is to characterize and report the expression of FFAR2 (GPR43) and FFAR4 (GPR120) in abdominal and subcutaneous dysfunctional adipose tissues (obesity) after an administration of Atorvastatin for new pharmacological target in metabolic disorders such as obesity and atherosclerosis.

Methods: Obesity was induced in male Wistar rats, for 20 weeks with a high sucrose diet administered in the drinking water ad libitum at 30% for 20 weeks. In two out of four groups, Atorvastatin was administered (p/o) for 6 weeks. RT-PCR was performed for quantification of the expression, normalized with β-actin

Results: Our results demonstrated that the expression in both adipose tissues had a reduced expression of GPR120 (FFAR4) compared with controls without statistical significance, but compared with the groups that received Atorvastatin for 6 weeks, the expression was reduced with statistical differences. The expression analysis of GPR43 (FFAR2) was markedly higher with statistical difference in both groups treated with Atorvastatin (p<0.001)

Conclusions: The expression from both adipose tissues yields sufficient and significative statistical differences among the groups, showing a modification in the total presence of mRNA of these two receptors in abdominal and subcutaneous dysfunctional adipose after the Atorvastatin administration. Further comparative methods are in process to clarify whether or not obesity or Atorvastatin change the functional receptors in these two tissues for new pharmacological approaches.

T-P.3524
Drug Induced Metabolic Changes by Mice Model of Diet Induced Obesity
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Background: Insulin resistance is the most important underlying condition that contributes to the development of type 2 diabetes mellitus (T2DM). Mice of strain C57BL/6j are susceptible to high-fat diet-induced obesity (DIO). DIO in mice brings about attenuation of physical activity and therefore is a good model of common human obesity based on feeding with high fat diet and sedentary life style. Metformin is a drug of first choice for treatment of T2DM. Moreover, it is usually combined with dipeptidyl peptidase-4 inhibitors. But there are

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only limited information about their impact on metabolism. **Methods:** It was followed influence of mono- and combined therapy by metformin and vildagliptine on DIO by mice of strain C57BL/6J. Forty DIO mice were randomized to 4 groups: 1) metformin, 2) vildagliptin, 3) metformin+vildagliptin, and 4) control. It was applied nuclear magnetic resonance metabolomic approach, which allowed to follow metabolic changes by metabolic profiling of mouse urine. **Results:** It was observed substantial improvement of oral glucose tolerance test, which was followed by substantial changes in metabolomic profile. The response of the organism to the treatment changes remarkably with the duration of the therapy. The PLS analysis allowed us to differentiate between treated and untreated mice but also among therapy used. Among the metabolites which contribute the most to the separation, we can find lactate, acetate, succinate, methyamine, citrate, dimethylamine, taurine, 2-oxoglutarate, glucose, and phenylacetylglycine. **Conclusions:** The data shows, that the metabolism is changing during the course of the therapy. It is influenced mainly tricarboxylic acid cycle and methylamine pathway. The most important changes were observed in acetate level, which raised more than 140% as a response to long-term treatment by vildagliptin and metformin+vildagliptine but not by metformin alone. It can be attributed to an increased beta-oxidation of fatty acids. T-P-3525 **Effect of Exercise and Topical Capsaicin on Body Weight and Metabolic Parameters in Ovariectomized Obese Wistar Rats** Juana María de Lourdes Medina Contreras Mexico City Distrito Federal, Juventino CoIado-Velazquez Mexico Distrito Federal, Patrick Mailloux-Salinas Mexico City Distrito Federal, Maria del Carmen Ortiz-Segura Mexico City Distrito Federal, Fabian Meza-Cuenca Mexico City Distrito Federal, Guadalupe Bravo Mexico Distrito Federal **Background:** Insulin resistance is a metabolic disorder limited to obesity, with higher prevalence in menopausal women. Exercise and capsaicin can increase insulin sensitivity and reduce body weight in males. But it’s unknown whether the combination can improve the individual effects in hypoestrogenic females. **Methods:** 40 Female Wistar rats were ovariectomized and randomized into 8 experimental groups. Half of these animals (Ov) received a 30% sucrose solution as drinking water for 28 weeks ad libitum, while ovariectomized controls (Ov) received water; during this time Ov and OvOb were fed with a solid standard diet. Groups were subjected to the next treatments for six weeks: capsaicin groups were treated with a 0.075% of capsaicin cream to reach a dose of 0.6mg/kg, on shaved abdominal skin daily; exercise groups were subject to a regimen of walking on a treadmill from 9 to 18 m/min during 20 min daily, with speed increases every 10 days; and the combination groups received the capsaicin cream 90 minutes before exercise; sedentary groups served as reference controls. Trunk blood was collected to perform biochemical assays (TG, CHOL, HDL, LDL) and insulin level was measured to calculate HOMA index. **Results:** The combination caused a higher reduction in caloric intake, body weight, abdominal fat and insulin resistance in OvOb, while the effects of exercise and capsaicin were very similar. Capsaicin treatment caused a higher reduction on dyslipidemia. **Conclusions:** Our results suggest that topical capsaicin cream at 0.075% can be used as alternative treatment against complications linked to obesity in hypoestrogenic females. T-P-3526-FT **Effects of 24 Hours of Overfeeding Diets with Varying Macronutrient Content on Human Energy Expenditure and Macronutrient Oxidation** Karyne Vinales Phoenix AZ, Mathias Schloegl Phoenix AZ, Maximilian Hohenadel Phoenix Arizona, Susan Bonfiglio Phoenix AZ, Jonathan Krakoff Phoenix AZ, Marie Thearle Phoenix AZ **Background:** The metabolic effects of overeating may vary depending on the macronutrient content of the diets eaten. **Methods:** Sixty-two subjects (13AA/18C/10H/21NA, 13/49M, 28±10.1% fat, 37±10.3y; mean±SD) with normal glucose regulation and measures of % body fat (DXA) had 24h energy expenditure (EE) and macronutrient oxidation (MO) assessed in an indirect calorimeter during six 24h dietary interventions including energy balance (EB) and, given in random order, 5 different overfeeding (OF) diets with 200% energy needs including: 26% carbohydrates (C), 44% fat (F), 30% protein (P) (HPF); 50% C, 30% F, 20% P (BOF); 75% C, 5% F, 20% P (CNP); 20% C, 60% F, 20% P (FNP); 51% C, 46% F, 3% P (LPF). There was a 3-day washout period between diets. **Results:** Compared to EB, EE increased with OF (BOF: 10.3±5.9%, CNP 14.1±6.0%, LPF 7.8±9.0%, HPF 13.9±7.0% LPF 3.0±4.5%; all p<0.0001). Carbohydrate oxidation (CarbOx) increased in diets with >50% C (BOF: 35.5±34.2%, CNP: 80.0±49.2%, LPF: 50.2±50.7%, all p<0.01); and decreased with high F diets (FNP:-14.2±28.6%, p<0.001; HPF: -6.9±24.2%, p=0.05). Conversely, lipid oxidation (LipOx) increased with FNP (52.9±87.0%) and HPF (38.9±76.4%), and decreased with BOF (-32.3±45.6%, CNP (-94.5±78.8%) and LPF (-30.3±65.7%) (all p<0.01). Despite these large differences, the individual MO rates were more correlated between overfeeding diets (CarbOx: r=0.41, p<0.01; LipOx: r=0.33, p<0.05, except LPF vs. FNP), even after accounting for age, sex, FM and FFM. The %CarbOx changes correlated with increase in EE only during FNP (r=0.37, p=0.005). The mean %increase in EE with OF negatively correlated with %fat (r=-0.30, p=0.01), but none of the changes in CarbOx and LipOx correlated with %fat. **Conclusions:** The average increase in EE with overfeeding is related to body adiposity. Although CarbOx and LipOx are strongly influenced by type of diet ingested, they remain associated across diets indicating intrinsic individual factors may play a role in body fuel preference. T-P-3527 **GPR43-Activation Protect Against Diet-Induced Obesity in Mice by Enhancing Hepatic Fat Oxidation** Yuusuke Murata Toda-Shi Saitama **Background:** Short chain fatty acid (SCFA) is not only an essential nutrient, but also acts as a nutrient signaling molecules. GPR43 has been identified as a SCFA receptor abundantly expressed in L cells and white adipose tissues (WAT). Recent study shows that SCFA decrease fat accumulation and increase oxygen consumption via GPR43. However, some controversial phenotype of GPR43 knockout mice were reported and anti-obesity mechanism of GPR43 remains unclear. Here we investigate the anti-obesity
Mechanism of GPR43 by a selective GPR43 agonist.

**Methods:** Male C57BL/6 mice were fed high fat diet (60% as energy as lipids) for 8 weeks from 4 weeks of age before treatment started. GPR43 agonist was orally administered twice daily for 4 weeks or shorter term (3–5 days) in diet-induced obesity (DIO) mice.

**Results:** Compound A (Cpd.A) was identified as a selective agonist on GPR43, with an EC50 of 165 nM. Cpd.A significantly reduced body weight, WAT weights and cell size in DIO mice. Fat mass was significantly increased in DIO mice treated with Cpd.A, whereas lean mass was not changed.

In addition, hepatic triglyceride levels were decreased and insulin sensitivity evaluated by insulin tolerance test was improved by Cpd.A. SCFA-activated GPR43 has been reported to suppress appetite via GLP-1 secretion, but Cpd.A treatment did not change food intake. At the end of treatment period oxygen consumption and fat oxidation of DIO mice treated with Cpd.A significantly increased. Furthermore, fat oxidation after 3-day-treatment of Cpd.A already increased, when body weight reduction was not yet observed. In agreement of this result, hepatic palmitoyl-carnitine levels were significantly increased at 5 day administration of Cpd.A.

**Conclusions:** Our results suggest that GPR43 activation improve diet-induced obesity via increasing fat oxidation in liver. Most of current anti-obesity agents act centrally to suppress food intake, although GPR43 agonist is expected to be a novel peripheral acting drug without affecting food intake.

T-P-3528

Intermittent fasting improves insulin sensitivity and blood lipids in obese women when coupled with energy restriction only.

Amy Hutchison Adelaide SA, Bo Liu Adelaide SA, Gary Wittert Adelaide South Australia, Leonie Heilbronn Adelaide SA

**Background:** Intermittent fasting (IF) diets are increasingly popular, although few trials have been conducted in humans. In rodents, IF increases lifespan and reduces chronic disease risk, even without significant weight loss. These findings suggest that periodic energy deprivation, rather than weight loss per se, provides the impetus to improve metabolic health. Therefore, we conducted an 8-week randomised controlled feeding trial in women to test whether IF is as effective as daily dietary restriction (DR) to improve insulin sensitivity and metabolic health, and whether weight loss is necessary for these benefits.

**Methods:** 72 overweight and obese sedentary women were randomized to one of 4 groups; 2 were provided with foods at 70% of energy requirements (IF70; 3d/week of fasting for 24-h from 0800h-0800h) or DR70; and 2 were provided with foods at 100% of energy requirements (IF100 or control). Fasting body weight, insulin sensitivity (by hyperinsulinemic euglycemic clamp), blood pressure and blood lipids were assessed at baseline and 8 weeks.

**Results:** At 8 weeks, body weight was unchanged in controls (0.2±0.7 kg), but was modestly reduced in IF100 (-2.7±0.6 kg, P<0.05). DR70 and IF70 groups lost more weight than control and IF100 (P<0.01) but weight loss was not statistically different between IF70 and DR70 (-5.2±0.5 vs -4.0±0.5 kg, P=0.1). Insulin sensitivity was significantly improved from baseline in DR70 and IF70 groups only. Total cholesterol, LDL-cholesterol and triglyceride were also reduced in IF70 and DR70 groups only, and fasting glucose was reduced in IF70 only (all P<0.05). Greater reductions in triglycerides and total cholesterol were observed in IF70 vs DR70 in individuals who had metabolic syndrome at baseline.

**Conclusions:** Energy restriction is required to improve metabolic health during intermittent fasting diets in overweight and obese women. The intermittent fasting diet may be particularly advantageous for women with metabolic syndrome.

T-P-3529

Nanoformulated Copper/Zinc Superoxide Dismutase Reduces Adiposity and Adipose Inflammation in Obesity

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**Background:** An intimate association exists between oxidative stress and inflammation. Increased copper/zinc superoxide dismutase (Cu/ZnSOD) activity is associated with hypermetabolism in mice and humans. Nanoformulated Cu/ZnSOD (NanoSOD) has been shown to efficiently deliver active SOD to cells and tissues. Because oxidative stress is prevalent in obesity and because agents with antioxidant properties can reduce inflammation, we hypothesized that NanoSOD will be effective in reducing AT inflammation and systemic metabolic homeostasis in obesity.

**Methods:** Wild type mice were fed a chow diet (CD) or a high fat diet (HF) for 8 wk. Eight week post-diet, a cohort of high fat (HF) diet-fed mice were injected intraperitoneally (i.p.) with NanoSOD once every other day for a period of 15 days (8 injections total). The mice were divided into 3 groups: 1) CD, 2) HF, and 3) HF+NanoSOD. The mice were continued on respective diets for 2 more wk and sacrificed 24 h after the final injection.

**Results:** The HF+NanoSOD-treated mice showed a significant weight loss compared to HF-fed mice. This was associated with an increase in forskolin-stimulated lipolysis in visceral adipose tissue (VAT) and the mRNA expression of UCP-1, a thermogenic protein, in the brown adipose tissue (BAT). Interestingly, we noted that NanoSOD significantly reduced the expression of inflammatory markers in VAT and macrophage-enriched stromal vascular cells derived from VAT. Importantly, the nitrotyrosine content, a marker of superoxide-induced oxidative stress, was reduced in the VAT of NanoSOD-treated mice. Furthermore, plasma total cholesterol and triglycerides were lower in HF+NanoSOD compared to HF group. Finally, the mice treated with NanoSOD showed a reduction in plasma inflammatory markers such as MCP-1 and E-selectin.

**Conclusions:** Together, our data suggest that NanoSOD is effective in reducing AT oxidative stress and inflammation. It is also effective in reducing weight gain likely via increased BAT activation.

T-P-3530

Omega-3 free fatty acids inhibits tamoxifen-induced cell apoptosis

Zhao He Wuxi Jiangsu

**Background:** Obesity is associated with an increase in risk of postmenopausal breast cancer. The increased frequency of postmenopausal breast cancer is thought to be due to increased levels of estrogen and leptin in obese women. Tamoxifen, an estrogen inhibitor, is used to treat ERalpha positive breast cancer. Fish oil, which contains omega-3 fatty acids mainly in the form of triglycerides, has benefits in reducing risk of breast cancer, similar to tamoxifen effect. However, it remains to be elucidated whether the combination of omega-3 fatty acid (FFA) with tamoxifen leads to improved treatment in ERalpha positive breast cancer.

**Methods:** MCF-7 cells were used to examine the effect of
omega-3 FFA, tamoxifen and omega-3 FFA plus tamoxifen on cell apoptosis and growth. Tamoxifen resistance-related signals were assessed by immunoblotting.

**Results:** In this study, omega-3 FFA induces MCF-7 cell apoptosis to suppress cell growth. However, the treatment of breast cancer cells with omega-3 FFA attenuated tamoxifen-induced cell apoptosis. Omega-3 FFA and tamoxifen significantly increased Erk1/2 and Akt phosphorylation levels in a dose- and time-dependent manner. Compared to ω-3 FFA alone, the combination of tamoxifen with ω-3 FFA significantly increased Erk1/2 and Akt phosphorylation levels.

**Conclusions:** Because Erk1/2 and Akt activation has been linked to tamoxifen-related anti-estrogen resistance in breast cancer patients, these results indicate that omega-3 FFA may interfere with the effects of tamoxifen in the prevention of breast cancer risk.

**T-P.3531**

**Pomegranate extract, ellagic acid, or urolithin acid extended lifespan in Caenorhabditis elegans model organism**

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**Background:** We found that pomegranate juice (PJ) affected lifespan in an inverse J-shaped manner in C. elegans model organism. PJ extract (POMxm) is rich in phenolic acid that provides antioxidant property and healthy benefits. Its main component, ellagic acid (EA), the hydrolysate of polyphenols, is further converted to urolithin acid (UA) by the microflora in the colon. We compared the effects of POMxm, EA, or UA on lifespan and intestinal fat deposition (IFD) using wild type C. elegans (N2) and mutant daf-16(mgDf50)I in liquid culture.

**Methods:** All animals were kept in 96-well plate at 20°C. Control animals received lab standard food E. coli (OP50). Experimental groups were fed with additional POMxm (5, 10, 20, 40, 80, 160, 320 µg/ml), or EA or UA (1, 2, 5, 10, 25, 50 µM) diluted in dimethyl sulfoxide (0.05%). Lifespan was determined every other day by counting numbers of survival animals. Nile Red staining was applied one week after treatment (0.5 mg/ml acetone in glycerol-water 75:25) and the fluorescence intensity of the IFD was determined.

**Results:** POMxm increased lifespan in N2 (P<0.05) but not in the daf-16 mutant (P=0.05). EA extended lifespan in both strains (P<0.05). Higher doses of UA (50 µM) increased the lifespan in N2 (P<0.05). Fluorescent intensity of IFD was reduced by POMxm in daf-16(mgDf50)I mutant. The fluorescent intensity was increased in EA treated animals, while it was reduced in it in daf-16(mgDf50)I (P<0.05).

**Conclusions:** These data suggested that in C. elegans POMxm increases lifespan is daf-16 dependent, which was abolished in the daf-16 mutant. EA is more potent than UA on lifespan extension, which may involve other pathway(s).

**T-P.3532**

**Resveratrol Attenuates Obesity-Related Renal and Systemic Alterations During Acute and Chronic Endoplasmic Reticulum Stress**

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**Background:** Renal lipid accumulation has been associated with chronic renal failure in obese patients. Molecular mechanisms seem to implicate lipotoxicity and induction of endoplasmic reticulum (ER) stress. Resveratrol (R) is a natural bioactive compound that elicits benefits over some obesity-related metabolic disorders.

**Methods:** The objective was to evaluate the effect of R supplementation on a high fat (HF) diet over a chronic and acute induction of ER stress. Male C57BL/6 mice were fed for 28 weeks with four different dietary treatments: Control (C), C+R (CR), HF, and HF+R (HFR). At the end of the study, half of the animals on each group were treated with tunicamycin (T) to induce acute ER stress. Weight gain, glucose tolerance test (GTT), indirect calorimetry and serum biomarkers were analyzed.

**Results:** Compared to HF mice, weight gain was decreased in the HFR group along with a significant increase in O2 consumption and CO2 production during fasting and fed state. Mice in the HF and HFR groups had sustained increase in GTT compared to C and CR. Total- and LDL-cholesterol were lower in HFR group compared to HF group. Mice in the non-T treated groups (CR and HFR) did not show a decrease in glucose, total- and LDL-cholesterol compared to those in the CR+T and HFR+T groups. In contrast, T-treated groups (C+T and HF+T) had lower glucose, total- and LDL-cholesterol compared to C and HF treated animals. No differences were observed in other biomarkers (albumin, creatinine, AST, ALT and triglycerides) in CR+T and HFR+T groups despite the acute ER stress induction.

**Conclusions:** In conclusion, resveratrol supplementation showed beneficial effects over body weight gain, metabolic oxidation rate and biochemical parameters with and without pharmacological induction of ER stress.

**T-P.3533**

**Short-Term High Fat Diet Impairs Postprandial Metabolic Flexibility in Skeletal Muscle**

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**Background:** Obesity, diabetes and the metabolic syndrome are associated with metabolic inflexibility, the inability of skeletal muscle to adapt and respond to various nutrient states. The purpose of this study was to determine the effects of an acute, 5-day, isocaloric high fat diet (HFD) on skeletal muscle postprandial substrate metabolism in healthy, non-obese, male humans.

**Methods:** Eleven subjects (age 22.1 ± 1.7 yrs, BMI 22.3 ± 2.8) were fed an isocaloric control diet (2788 ± 53.03 kcal/d, 30.9% fat, 9.4% of kcal sat fat) for 2 weeks, followed by 5 days of an isocaloric to habitual energy intake HFD (53.8% fat, 24.5% of kcal sat fat). Subjects underwent a high fat meal challenge (kcal ~30% daily energy intake, 64% fat) before and after the HFD. Muscle biopsies were obtained prior to and 4 hours following the meal. Skeletal muscle substrate metabolism was assessed by measuring the oxidation of [1-14C]-glucose and [1-14C]-palmitic acid. Metabolic flexibility was assessed by measuring [1-14C]-pyruvate oxidation +/- palmitate. Insulin sensitivity was assessed prior to and following HFD via I.V. glucose tolerance test. Intestinal permeability was assessed via sugar probe test.
Results: Postprandial glucose oxidation in skeletal muscle increased (+112.6% ± 41.2) before the HFD but not after (-26.3% ± 4.9, p=0.003). Skeletal muscle metabolic flexibility was significantly blunted following HFD (-27.6%). There was no effect on postprandial fatty acid oxidation. Insulin sensitivity, body mass/composition, and intestinal permeability were not affected by HFD.

Conclusions: These findings demonstrate that a short-term HFD results in skeletal muscle metabolic inflexibility independent of weight gain and whole-body insulin resistance.

T-P-3534
The IP6K inhibitor TNP [N2-(m-Trifluorobenzy), N6-(p-nitrobenzyl)purine] protects mice from high fat diet induced insulin resistance and fatty liver

Background: Current anti-obesity/anti-diabetic medications are partly effective and thus, extensive research is ongoing to identify targetable proteins to develop pharmacotherapy. In this regard, enzymes are attractive targets due to their catalytic specificity. We previously discovered that inositol hexakisphosphate kinase-1 (IP6K1), an inositol pyrophosphatase (5-IP7) biosynthetic enzyme is one such target. IP6K1 knockout (IP6K1-KO) mice are protected against high fat diet induced obesity, insulin resistance and fatty liver despite their unaltered food intake (Chakraborty et al. Cell, 2010). 5-IP7 decelerates insulin signaling by inhibiting the protein kinase Akt. Moreover, IP6K1 diminishes adipose tissue browning and energy expenditure via inhibition of the AMP activated kinase (AMPK). The aim of the current project is to test impacts of a pan IP6K inhibitor TNP [N2-(m-Trifluorobenzy), N6-(p-nitrobenzyl)purine] on metabolic parameters of obese and insulin resistant mice.

Methods: Mitochondrial oxygen consumption rate (OCR) was measured using a Seahorse Analyzer whereas fatty acid (β) oxidation and biosynthesis were assessed radio-chemically. C57BL6 mice, fed a high fat diet for two-months, were injected with TNP (20 mg/kg daily; i.p.) for two weeks. Glucose and insulin tolerance tests (GTT/ITT) were performed using standard procedures. Akt/AMPK pathways were monitored by immunoblot analyses.

Results: TNP enhances cellular OCR and decreases fat accumulation in the liver. Furthermore, TNP injection reduces body weight and improves glucose and insulin induced glucose disposal in high fat fed mice. The inhibitor also decreases fat accumulation in the liver. Furthermore, TNP mediated IP6K inhibition stimulates Akt/AMPK pathways.

Conclusions: Thus, pharmacologic inhibition of IP6K is a novel approach to treat obesity and diabetes.

T-P-3535
The Role of Resting Metabolic Rate on Post-Operative Weight Loss Following Bariatric Surgery

Background: The obesity endemic affects >1/3rd of the U.S. population with significant risks of co-morbid conditions. Surgical therapy improves weight loss and associated comorbidities in select patient populations. The influence resting metabolic rate (RMR) has on weight loss in behavioral weight loss therapy has been investigated, but with differing results. Limited studies have examined if lower than predicted RMR influences weight loss in surgery patients. Our purpose was to determine if the difference between measured RMR and RMR predicted from a standard equation was a factor in postoperative weight loss.

Methods: We retrospectively reviewed the charts of 98 (80 females and 18 males) patients at our institution between 2013-2014 who underwent bariatric surgery (laparoscopic Roux en Y gastric bypass or laparoscopic vertical sleeve gastrectomy). RMR was measured under standard conditions using the MEDGem® indirect calorimeter that assesses oxygen consumption with an assumed respiratory quotient of 1.0. Predicted RMR was calculated using the Mifflin St.Jeor equation, which utilizes gender, height, weight, and age to predict RMR. The % difference in measured and predicted RMR was determined and patients were separated into ≥10% (over predicted), ±10%, and ≤10% (under predicted) categories. Weights were recorded at 3 and 6 months post-operatively. One-way ANOVA assessed weight loss differences in groups at each time point.

Results: The percent total body weight lost at 3 and 6 months was 17.2 ± 12.5% and 24.8 ± 8.9%, respectively. Pearson correlations showed no significant relationship between weight loss and difference in measured and predicted RMR (p=0.62 at 3 months and p=0.98 at 6 months). There were no differences in weight loss at 3 and 6 months among the 3 categories (p=0.33 at 3 months and p=0.55 at 6 months).

Conclusions: These results suggest that a lower than predicted RMR does not hinder weight loss for up to 6 months following bariatric surgery.

T-P-3536
Acute Metabolic Responses to High-Fat Meals Before and After a 7-Day High Poly-Unsaturated Fat Diet
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Background: Meals high in poly-unsaturated fatty acids (PUFAs) result in greater metabolism compared to saturated fatty acid (SFA) enriched high-fat (HF) meals. Yet, it is unknown what the long-term effects of PUFAs are on metabolism. Purpose: To determine metabolic responses to SFA-rich HF meals before and after a 7d high PUFa diet.

Methods: 18, normal weight (BMI=18-24.9kg/m2), sedentary adults were randomly assigned to either a PUFA or control diet. Following a 3d lead-in diet, participants reported for the baseline visit where anthropometrics and resting metabolic rate (RMR) were collected and two SFA-rich HF meals (breakfast and lunch) were consumed. Indirect calorimetry was used determine fat oxidation (Fox) and energy expenditure (EE) for 8h. Participants then consumed a high PUFA (50% carbohydrate, 15% protein, 35% fat, of which 21% of total energy was PUFA, 9% MUFA, 5% SFA) or control diet (50% carbohydrate, 15% protein, 35% fat, of which 7% of total energy was PUFA, 15% MUFA, 13% SFA) for the next 7 days. Following the 7d diet, participants completed the post-visit (same procedures as baseline visit).

Results: Following the 7d diets, there was no difference between PUFA vs. control for RMR (16.4±0.8 vs. 16.3±0.8 kcal/20min). Fasting respiratory exchange ratio significantly increased from baseline to post-visit in PUFA only (0.83±0.1 to 0.86±0.1, p<0.05). In response to the SFA-rich HF meals, the change in fat oxidation increased from
baseline to post-visit in PUFA (0.03±0.1g/15min to 0.23±0.1g/15min for cumulative FOx; p<0.05) with no change in controls. No differences in EE between PUFA vs. control were found.

**Conclusions:** After consuming a 7d PUFA diet, participants oxidized more carbohydrate at fasting but oxidized more fat following the SFA-rich HF meals. Thus, consuming a PUFA diet may help individuals metabolize more fat after the occasional high SFA meal and prevent weight gain in the long-term.

**T-P-3537-DT**

**Benefits of Exercise Training on Insulin Sensitivity Differ between European American and African American Women**

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**Background:** African-American (AA) women are at greater risk for type 2 diabetes (T2D) than European-American (EA) women. Exercise is reported to improve insulin sensitivity, thus reducing T2D risk.

**Methods:** A mixed cohort of sedentary, non-diabetic AA (n = 13) and EA (n = 11) women participated in a 12-week supervised aerobic training intervention (cycling at 80% of maximum heart rate 40 min/d, 3 d/week). Data were collected at baseline and after intervention completion. Insulin sensitivity was evaluated at baseline by euglycemic clamp (40 mU/m2/min). Clamp data were expressed as “SI-clamp”: M (mg/kg/min) / (steady-state glucose x change in insulin).

Hepatic insulin resistance (IR) was determined via fasting insulin and glucose values (HOMA-IR). Body composition was evaluated with DXA.

**Results:** At baseline, AA women had a 15% higher BMI (P < 0.05) and 13% greater fat-free mass (FFM; P < 0.05) than EA women; %body fat did not differ. In addition, neither SI-clamp (P = 0.95) nor HOMA-IR (P=0.73) differed between AA and EA women after adjusting for body composition. After 12 weeks of exercise training, SI-clamp increased by 30% in EA women (P = 0.04), but did not change in AA women (P = 0.57). HOMA-IR did not change in either group. Body composition did not change in EA women with exercise training, but FFM increased by 2.4% in AA women (P < 0.05).

**Conclusions:** Exercise has race-specific effects on insulin sensitivity in premenopausal women; however, it is unclear whether this effect translates into differential T2D risk reduction.

**T-P-3538**

**Glucose-induced thermogenesis is decreased after consecutive glucose loading in non-diabetic humans**

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**Background:** Glucose tolerance is improved after consecutive glucose loading (Staub–Traugott effect, STE). Concomitantly, decreased insulinemia, indicative of enhanced insulin sensitivity, is also observed. Insulin sensitivity has been directly related with the thermogenic effect upon glucose stimulation. Then, improved glucose tolerance may relate with higher thermogenesis after consecutive glucose loading. The thermogenic effect of two consecutive oral glucose doses and its relationship with the STE was assessed.

**Methods:** Fifty three (24 males) sedentary, non-diabetic, fasted participants (26.5±3.8 [SD] kg/m2; age 33.9±8.7 y old) received two 75-g oral glucose doses at time 0 and 3 h. Serum glucose, FFA and insulin concentrations, and whole-body gas exchange were determined before glucose ingestion and hourly thereafter for 6 h. Insulin sensitivity was estimated by HOMA and the 3-h OGTT index. Glucose-induced thermogenesis was calculated as the incremental area under the curve (iAUC).

**Results:** After the second vs. first oral glucose dose, postprandial glycemia (63±30 vs. 87±53 mg/mg/dl; p<0.001) and insulinemia (119±71 vs. 169±91 ml/mg/ml; p<0.0001) were reduced, while FFA concentration was suppressed after one hour and remained low throughout the period. In turn, insulin sensitivity (by OGTT) was 1.17±0.19 fold higher (p<0.0001) and glucose-induced thermogenesis lower (11.0±8.5 vs. 12.7±8.3 kcal/min/min; p<0.02) after the second vs. first glucose dose. The extent at which thermogenesis was suppressed did not relate with the STE (r=-0.17; p=0.24), but it correlated with HOMA (r=0.29; p=0.04).

**Conclusions:** As classically reported for glucose tolerance, glucose-induced thermogenesis also decreases after sequentially equivalent oral glucose loading. Interestingly, both phenomena seem determined by independent factors. The association with HOMA, a hepatic insulin resistance surrogate, suggests that hepatic glucose production-related energy expenditure may play a role.

**T-P-3539**

**In vivo Determination of Body Composition in the Zebrafish Danio rerio by Quantitative Magnetic Resonance**

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**Background:** The value of the zebrafish as a model research organism to answer a number of questions regarding nutrition and metabolism in humans has been well-established. Chemical carcass analysis (CCA) is currently considered the gold standard for body composition analysis in zebrafish; yet, the obvious limitations regarding its destructive nature prevent application to longitudinal studies. In this study, we validated the use of quantitative magnetic resonance (QMR) to estimate lean and fat mass in live zebrafish.

**Methods:** Fifty-three anesthetized zebrafish were scanned using the EchoMRI 3-in-1 system, and then subsequently evaluated by CCA. Precision was determined by the calculated coefficient of variation (CV) from three repeated scans. In the validation group (n=26 fish), accuracy was analyzed by comparing QMR and CCA values for each fish using paired t-tests. Prediction equations were generated with linear regression analysis. A cross-validation group (n=25 fish) was used to test the prediction equations.

**Results:** Precision was 10.9% for fat and 3.0% for lean. QMR was significantly correlated with chemical carcass values (fat, p<0.001; lean, p=0.002), although QMR significantly overestimated fat mass (0.011 g; -92%, p<0.0001) and underestimated lean mass (-0.024 g; -15% p<0.0001) relative to CCA. After application of prediction equations to the cross-validation group, there were no significant differences between the corrected QMR values and CCA values for fat mass (p=0.121) or lean mass (p=0.573).

**Conclusions:** Despite some residual bias in predicting fat and lean mass, QMR was found to be a valid non-invasive technique for measuring body composition in the zebrafish. Application of this technique in future studies will expand the
value of this model in areas of biomedical and nutrition research.

**T-P-3540**
A Clinic-Based Multi-Disciplinary Weight Management Program: Efficacy and Treatment Allocation

**Background:** The rising prevalence of obesity represents an enormous clinical burden. Primary care and specialty physicians lack training in effective strategies to address obesity as well as office time to implement them. Innovative and scalable models of obesity treatment covered by third party payers are needed.

**Methods:** In an urban academic medical center we implemented a multi-disciplinary obesity program. Endocrinologists, registered dietitians (RD) and bariatric surgeons evaluated each patient and formulated an individual evidence-based treatment plan – therapies included counseling on diet, physical activity, and behavior change, pharmacotherapy, and bariatric surgery. There were no out-of-pocket patient fees beyond insurance co-payments.

**Results:** In 20 months, 232 patients underwent evaluation (mean weight 253±57.2 lbs, BMI 40.7±7.6 kg/m², age 50.0±14.8 yrs, 68.1% female, 16.4% Black, 14.7% Hispanic). In addition to counseling by MD and RD on diet, physical activity, and behavior change, treatment plans included referral to a weekly hospital lifestyle program (9.5%), to bariatric surgery (16.4%), and prescription weight loss medication(s) (35.8%), including metformin (35.5%), phentermine (27.7%), topiramate (25.3%), phentermine/topiramate ER (21.7%), GLP-1 agonists (18.1%), lorcaserin (7.2%) and wellbutrin/naltrexone (2.4%). Among the 43.5% that returned for ≥1 follow up visit, 33.1% achieved ≥5% weight loss, with mean weight loss 4.2±6.5%, or 4.8±6.7% if on medication for ≥1 follow up visit, 33.1% achieved ≥5% weight loss, with mean weight loss 4.2±6.5%, or 4.8±6.7% if on medication (p<0.0001 compared to starting weight, mean follow up time 7.9±5.1 mos). Clinic no-show rates were high (18.0%) but decreased with telephone reminders (to 5.1%).

**Conclusions:** A ‘real-life’ multi-disciplinary obesity consultation program based on billable clinic visits can result in medically significant weight loss, augmented in those who use medications, and can boost referrals to bariatric surgery for appropriate patients.

**T-P-3541-DT**
A Randomized Controlled Trial of a Gluten-Free Weight Loss Diet in HLA DQ2 or D8 Positive Subjects
Maria Vranceanu Rome Indiana, Keith Grimaldi burnham on sea somerset, David de Lorenzo Barcelona Barcelona

**Background:** We know that the vast majority of people with biopsy-proven celiac disease carry either HLA-DQ2 or HLA-DQ8 genes but these "celiac disease genes" appear in about 35-40% of the overall population. Having the genes does not mean necessarily they develop celiac disease, it simply means they have a genetic potential to do so. Some observations have reported that the presence of DQ2 or DQ8 may be linked to weight, irrespective of the celiac disease status. The HLA DQ2 and 8 proteins are involved in presenting gluten derived peptides to the immune system.

**Methods:** We analyzed 221 patients who were genotyped with NutriGene+. Of 221 patients, 215 were overweight or obese and 69 patients were found to have at least one allele for DQ2 or DQ8. 64 were overweight and were randomly divided into two groups. Both groups were prescribed a 1800 kcal/day diet and one group was gluten free. Patients were monitored, both weight and BIA, at one month, 3 months and 6 months.

**Results:** The differences were significant at 3 months and at 6 months and the gluten-free group showed a significant weight loss compared to patients with gluten included in the diet (at 3m: 14% vs 8% and 6m: 25% vs 14%). Also the rate of loss over the 6 months was significantly greater in the gluten free group.

**Conclusions:** gluten elimination diet in patients with at least one risk allele for gluten sensitivity correlated to a significantly more weight loss in patients with weight problems than a standard diet

**T-P-3542**
Association of Eating Behaviors and Perceived Stress On Weight Cycling History in Middle Aged Women
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**Background:** Unsustainable weight loss attempts are common among adult women. Losses are followed by regain in approximately 90% of attempts and often lead to patterns of weight cycling (WC). WC is associated with increased cardiometabolic risk and impaired psychological well-being. Increased stress and measures of eating behaviors such as cognitive restraint (CR), uncontrolled eating (UE) and emotional eating (EE) may predispose one to weight cycle.

**PURPOSE:** To describe the association of eating behaviors and perceived stress on weight cycling history in middle aged women.

**Methods:** This is a cross sectional observation of women aged 20-60 years who completed the Weight and Lifestyle Inventory (WALI). The WALI has been shown to be reliable for number of cycles (times subjects lost >10 lbs) and the total pounds lost (r²=.87, P<0.001). WC Index (WCI) was computed as number of WC x amount of weight lost per cycle. Women completed a Perceived Stress Scale (PSS) and Three Factor Eating Questionnaire-R18 (TFEQ-R18). Correlations were assessed adjusting for age and fat mass and stepwise multiple regression was executed to determine psychological predictors of WC (SPSS, **v**22).

**Results:** 65 women (age: 39.3 ± 11 yr; BMI: 31.4 ± 7; range 21-51.7 kg/M2; & WCI: 70 ± 60; range= 0-253) completed questionnaires. After controlling for age and body fat, UE and EE were positively associated with WCI (R=0.26 & R=0.27, P<0.05 respectively). UE and EE were also significantly correlated with PSS (R=0.33 & R=0.34, P<0.01 respectively). Only EE emerged as a significant psychological predictor of WCI (Adj, R²=0.134).

**Conclusions:** EE is an important predictor of weight cycling in middle aged women. Increased stress may influence disrupted eating behaviors such as UE and EE independently of body fatness or age predisposing one to weight cycling. Both stress and emotional eating would be important areas to target in women to possibly prevent the negative consequences of weight cycling.

**T-P-3543**
Barriers to Weight Management and Crucial Conversations with Healthcare Providers: Patients’ Perspectives and Experiences

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Poster Abstracts Friday November 6, 2015

**Background:** Due to the sensitive nature of discussing weight management, many healthcare providers avoid these crucial conversations. Patient-centered factors such as perceptions of weight-related discussions, as well as patients' level of internalized weight bias may provide important information to facilitate more effective discussions.

**Methods:** 1000 patients who recently (<3 months) saw their outpatient internal medicine provider for non-weight specific appointments were mailed a survey assessing demographics, self-reported height and weight, perceptions of weight-related discussions during this visit, and the modified Weight Bias Internalization Scale.

**Results:** 224 patients responded (24% response rate; mean BMI = 30.7; range = 18-67). 47% of overweight or obese patients reported that their provider discussed their weight; 82% were motivated to follow related recommendations and 72% felt confident about their ability to do so. Most patients (75%) would like their provider to be “very direct/straightforward” when discussing weight, and 52% who met criteria for obesity would be “not at all offended” if they were diagnosed as “overweight or obese.” Most patients (62%) reported being “extremely comfortable” discussing weight with their provider with the exception of patients at a higher BMI (BMI >30; p < .05). Patients with higher BMI had higher levels of internalized weight bias (p < .001) and wanted their provider to “discuss weight sensitively” (p < .05).

**Conclusions:** Despite initiatives to increase provider-patient discussions about weight management, less than half of overweight and obese patients recall their providers doing so. While discussions about weight management can be challenging, most patients would feel comfortable having these conversations directly, and most would be motivated and feel confident to take action to manage their weight based on these conversations. It appears important for providers to have increased sensitivity in these discussions with patients who are at a higher weight.

**T-P-3544**

**Baseline Traits as Predictors of Weight Loss in the Clinic:**

**Food Insecurity Remains a Major Barrier to Success**
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Lauderdale Minnesota, Tasma Harindhanavudhi 
Minneapolis MN, Tiffany Beckman 
Minneapolis MN, Charles Billington 
Minneapolis Minnesota, Shalamar Sibley 
Minneapolis Minnesota

**Background:** Food insecurity remains a major barrier to success (P=0.01) and 5.6 times more likely to reach 10% success (P=0.03). Among the total 219 individuals, those with only a single clinic visit reported a higher rate of food insecurity (38%) compared to those who returned (27%).

**Conclusions:** Food insecurity was negatively related to weight loss success and retention, suggesting that low socioeconomic status remains a major barrier to successful weight loss. Further research should address barriers to health care that remain for individuals with low socioeconomic status and health care policy changes, potentially including changes to insurance coverage.

**T-P-3545**

**Change in Interpersonal Sensitivity Following Weight Loss in Severely Obese Patients**
Louise Taekker Copenhagen, Eva Pacini Copenhagen, Julie Schmidt Frederiksberg C Frederiksberg C, Mette Nielsen Frederiksberg C Denmark, Anders Sjödin Frederiksberg Denmark, Susanne Lunn Copenhagen Denmark

**Background:** The severely obese (BMI≥ 35) is often regarded as a specific subgroup of the obese population, showing higher levels of psychiatric symptomatology than the obese population in general. The aim of this study is to explore the level of interpersonal sensitivity in a severely obese population before and after weight loss, and to draw attention to the interpersonal burden caused by obesity. The construct "Interpersonal Sensitivity" (IS) describes feelings of inadequacy, inferiority, dissatisfaction with oneself and doubt in oneself, specifically in the company of others. In other words, a high IS score is an expression of explicit discomfort, acute self-consciousness in social settings, as well as negative expectations to social interactions.

**Methods:** Severely obese patients (BMI M = 43.2, SD=7.2 kg/m2) referred to bariatric surgery answered the psychometric self-report questionnaire The Symptom Checklist 90-r (SCL-90-r). Only questions regarding the subscale "Interpersonal Sensitivity" were used in this analysis. The scores were converted from raw scores to norm scores (T-score). T-scores ranging from 40-60 is considered within the standard deviation in a non-clinical sample, whereas scores in clinical sample ranges from 63-80.

**Results:** Preliminary data (N = 11) show clinical levels of IS before weight loss (M = 65.6, SD=12.8). Six months postoperatively (weight loss in BMI units M =11.4, SD=3.2, p <.001) IS has dropped dramatically and to a non-clinical level (M=53, SD=9.1 p<.001).

**Conclusions:** These preliminary results point towards a change in interpersonal sensitivity after weight loss. Updated results from 24 patients will be presented at the conference.

**T-P-3546**

**Examination of the Reliability and Validity of The Mindful Eating Questionnaire in a Sample of Pregnant Women**

**Background:** Mindfulness is theorized to affect the eating behavior and weight of pregnant women, yet no measure has been validated during pregnancy. This study evaluated the food insecurity were 4.1 times more likely to reach 5% weight loss success (P=0.01) and 5.6 times more likely to reach 10% success (P=0.03).
Methods: To qualitatively evaluate the MEQ, 11 participants completed focus groups and 29 completed cognitive interviews. Both were coded for context and content. The MEQ was administered twice to measure test-retest reliability. The Eating Inventory (EI) and Mindful Attention Awareness Scale (MAAS) were administered to assess convergent validity, and the Neighborhood Environment Walkability Scale (NEWS) assessed discriminant validity.

Results: Participants were 20±8 wks gestation (mean±SD), 30±2 y old, and had a BMI of 31.8±4.7 kg/m². The MEQ total score had good test-retest reliability (r=.85). Internal reliability (Cronbach’s α) for the total score was poor (α=.56). The external cues subscale (ECS) was not internally reliable (α=.31). Other subscales ranged from the poor to acceptable range (α=.59-.68). When the ECS was excluded, MEQ total score reliability was acceptable (α=.62). Convergent validity was supported by the MEQ and NEWS total scores and subscales not being significantly correlated. The reliability of most subscales in pregnant women was more robust than the original sample of healthy adults. Overall, the MEQ can be used to determine mindful eating in overweight and obese pregnant women.

Conclusions: With the exception of the ECS, the MEQ’s reliability and validity was supported in pregnant women. The reliability of most subscales in pregnant women was more robust than the original sample of healthy adults. Overall, the MEQ can be used to determine mindful eating in overweight and obese pregnant women.

Feasibility of a SSB Consumption Survey in an Underserved Pregnant Cohort at a Community Health Center

Background: SSB consumption is being increasingly reported as having adverse cardiometabolic effects. The Hispanic population has one of the highest incidences of adverse effects from metabolic syndrome, particularly, diabetes and fatty liver. Pregnancy is a critical period for the developing fetus. There is sparse literature available on the use of timely assessment tools for beverage consumption in the clinical setting without the aid of outside resources.

Methods: The BEVQ-15 is a validated tool compatible with lower literacy levels, up to the fourth grade level. No translated version was available. Search of the literature for tools specific to SSB consumption determined only two surveys.

Results: The One World Community Health Center that serves a predominantly underserved population was selected. The BEVQ-15 was translated into Spanish and printed on the reverse side of the English version and consisted of a single sheet. One research assistant with bilingual skills proposed a straightforward assessment tool for beverage consumption determined only two surveys.

Conclusions: Using the BEVQ-15 to assess consumption of SSBs in a Community Health Center was feasible, in a cohort of pregnant patients. Hence further essential research and targeted intervention can be conducted in this high risk population.

T-P-3548

Gastric Banding: A Single-Center Analysis of Morbidity Outcomes and Indications for Revisional Bariatric Surgery


Background: The complications of adjustable gastric band (AGB) placement increase over time and removal/revision has become a common reasons for revisional bariatric surgery. We describe our experience with AGB placement and revisional bariatric surgery.

Methods: We retrospectively reviewed a series of 68 patients who underwent AGB placement between 1999 and 2012 and required revisional bariatric surgery. Preoperative and perioperative, and revisional data were recorded and analyzed.

Results: Mean ±SD age and BMI at the time of AGB placement were 42±13.2 years & 45±6.4 kg/m², respectively. Incidences of diabetes mellitus, hypertension, hyperlipidemia, and obstructive sleep apnea were 24%, 50%, 38%, & 22%, respectively. Intraoperative and postoperative complication rates for AGB revisional surgery were 4% & 10%, respectively. The 90-day readmission rate of 4%. Median number of AGB adjustments and time to AGB removal were 6 (range: 0-32) & 44 months (range 0-212), respectively. Mean total weight loss (TWL) at 3, 6, 12, 18, 24, 36, 48, and 60 months were -8.1%, -10.6%, -13.4%, -14%, -13.3%, -15%, -16.5%, -14.9%, & -12.5%, respectively. There was no significant difference in TWL at 6 months compared to any subsequent time point (p>0.05). AGB removal was performed in 76% of patients and revision in 24%. Two AGBs were removed within 1 week of placement. Indications for removal included dysphagia (40%), slippage/erosion (25%), and poor weight loss (17%). Most common indication for AGB revision was port access issues (50%). One-stage conversion to another bariatric procedure occurred in 13% of patients. Intraoperative and postoperative complication rates for AGB revisional surgery were 0% and 7%, respectively. Median follow-up was 59 months (range 0-231 months).

Conclusions: Revisional bariatric surgery following AGB placement are safe, typically resulting in AGB removal due to dysphagia, slippage, or inadequate weight loss. Additional studies are required to fully assess the long-term consequences of AGB placement.

T-P-3549

Identifying subtypes of obesity among severely obese adults

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Background: Although bariatric surgery is the most successful obesity treatment, there is still a wide range of weight loss associated with the procedures, which likely reflects biological, surgical, medical, and behavioral heterogeneity in the population. A better understanding of such heterogeneity may lead to insights regarding the optimal strategy for weight loss and weight loss maintenance.

Methods: Using baseline data from the 2458 obese adults in the Longitudinal Assessment of Bariatric Surgery (LABS) study we conducted a latent class analysis to identify
subgroups of obesity. Included were measures of binge eating and other eating for reasons other than hunger, substance use, markers of cardiovascular health (HDL, LDL, and triglyceride levels), glucose and hormones related to glucose metabolism (leptin, ghrelin, and insulin), and age at onset of obesity. Mplus was used for all analyses.

**Results:** We found evidence of 4 classes (subtypes) of obesity. Class I (n=140) had moderate levels of eating for reasons other than hunger, class 2 (n=987) had low rates of binge eating but moderate levels of frequently eating when not hungry. In Class 3 (n=632) almost all people reported binge eating and frequently eating when not hungry, whereas, Class 4 (n=699) had extremely low rates of eating for reasons other than hunger. Classes 2-4 were similar in terms of median glucose and hormones related to glucose metabolism and triglyceride levels, but class I had higher glucose (median =215 mg/dL) and triglyceride (median=245 mg/dL) levels and lower leptin (median=42.9 ng/ml) despite a similar median BMI in Classes 1-3.

**Conclusions:** Obesity is heterogeneous with regard to glucose metabolism, cardiovascular risk, and eating behaviors. Research is needed to ascertain if risk factors for and optimal treatment of obesity vary by subtype.

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**T-P.3550**

**Influence of the 5A’s Counseling Strategy on Weight Gain During Pregnancy: An Observational Study**

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**Background:** Obesity and excessive gestational weight gain are associated with poor health outcomes for pregnant women and infants. We examined clinicians’ use of the 5A’s (Assess, Advise, Agree, Assist, Arrange) framework during prenatal care and evaluated the effect of this approach on gestational weight gain.

**Methods:** We examined audiotapes of prenatal visits between 23 clinicians and 130 of their patients. We coded encounters for clinicians’ use of the 5A’s. The relationship between the 5A’s and gestational weight gain was evaluated using mixed effects models to account for patient clustering within clinician and adjusted for patient age, race, body mass index (BMI), comorbidities, and gestational age at the recorded encounter.

**Results:** Overall, 55% of the prenatal encounters included use of at least one of the 5A’s. Counseling conversations lasted an average of 65 seconds (range: 3 seconds – 219 seconds). Assess and Advise were the most commonly used strategies, observed in 47% and 84% of counseling conversations, respectively. Agree, Assist and Arrange were used less frequently (3%, 3% and 10% of counseling conversations, respectively). No encounters used all 5A’s. Among patients achieving at least the minimum recommended weight gain in full term pregnancies (≥27 weeks; n = 81), there was no significant difference in weight gain comparing those who were counseled with only one of the 5A’s compared to patients who did not receive any counseling (p = 0.32). However, women who received counseling that included two or more of the 5A’s gained an average of 13.2 fewer pounds than patients who received no counseling (p = 0.06).

**Conclusions:** In our sample, no clinicians used all 5A’s when counseling women on nutrition, physical activity and appropriate weight gain during pregnancy. However, using at least two of the 5A’s was associated with less weight gain in pregnancy. Promoting use of the 5A’s may be an effective and efficient tool for weight-related counseling in pregnancy.

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**T-P.3551**

**Nutritional Status of Vitamin D and its Relationship with Metabolic Syndrome in Obese Class III in Pre-Operative of Sleeve Gastrectomy**


**Background:** The vast majority of obese class III individuals have significant associated metabolic diseases, including the Metabolic Syndrome (MS). And these individuals the presence of nutritional deficiencies are common, especially micronutrients, mainly vitamin D, since obesity and deficiency of this vitamin have been considered as a major public health problems in recent times. The clinical treatment of obesity is generally ineffective in these individuals and bariatric surgery is justified as means of control, mainly in correction of associated diseases, improving the quality of life and reducing mortality.

**Methods:** A descriptive cross-sectional study with individuals of both sexes aged between 21 and 58 years, BMI ≥ 40.0 kg/m². Was obtained blood pressure measurement and weight data, height, BMI, waist circumference (WC), blood glucose, glycated hemoglobin, HDL-C, triglycerides (TG) and vitamin D. The cutoff points for vitamin D deficiency (25(OH)D) were ≤ 20 ng/ml. The diagnosis of MS was carried out at the discretion of the National Cholesterol Education Program / Adult Treatment Panel III (NCEP / ATP III).

**Results:** Of the 50 individuals, 100% were female and the average age was 39.9 ± 12.1 years. Mean BMI was 44.6 ± 2.2 kg/m² and the weight was 119.6 ± 13.6 kg. The distribution of the sample according to the serum 25OH D, showed that 40% had disabilities and 40% lack of this vitamin, with average 22.3 ± 6.4 ng/ml. The diagnosis of MS was confirmed in 84% of the sample and was found lower average vitamin D concentrations in patients with MS(18.2±4.3 ng/ml; r=-0.039). Among MS components, WC and TG were significantly negatively correlated with serum 25(OH)D, r=-0.645 and r=-0.583/p=0.036, respectively.

**Conclusions:** Was observed high prevalence of reduced serum vitamin D(25(OH)D) in obese class III in the preoperative bariatric surgery associated with the diagnosis of MS. Important to monitor the nutritional status of vitamin D in controlling obesity and metabolic disorders.

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**T-P.3552**

**Self-Weighing is Associated with Prevention of Weight Gain and Body Fat Over Two Years**


**Background:** Self-weighing has been suggested as an important factor for weight loss maintenance and prevention of weight regain among samples with obesity (Pacanowski, Bertz & Levitsky, 2014). Self-weighing has not been tested as an obesity prevention strategy among young adults who fit a profile of vulnerability for weight gain. This study examined the change in self-weighing frequency over time in association with weight and body composition outcomes.

**Methods:** Women (N = 294) were recruited from two...
Background: Recent investigations provide initial support demonstrating that emotion regulation strategies influence overeating patterns, such that those who employ maladaptive strategies to cope may use comfort foods to manage negative affect. However, these studies are typically conducted in clinical samples and little is known regarding emotional eating and emotion regulation in a normative population and its relation to food consumption.

Methods: Undergraduate students (n=857) completed an online survey including self-reported height and weight, emotional eating (Emotional Eating Scale), weight related experiential avoidance (Acceptance and Action Questionnaire for Weight-Related Problems), distress tolerance (Distress Tolerance Scale), and emotion regulation (Emotion Regulation Questionnaire). Of those who met the inclusion criteria, 60 undergraduate women participated in an experimental phase involving a stress induction procedure and bogus taste test. Participants were randomized to an emotional suppression intervention (n=30) and control condition (n=30). ANOVAs and t-tests were conducted to explore group differences in trait variables and food consumption.

Results: Obese individuals reported significantly higher levels of weight-related experiential avoidance when compared to overweight, normal weight, and underweight participants (p<.001), yet no significant differences were found in emotional eating, distress tolerance, or emotion regulation. Contrary to our hypotheses, no differences in food consumption were found between the suppression and control groups (t(58)=-.474, p=.637), and consumption did not differ as a function of weight status.

Conclusions: Findings suggest that weight-related experiential avoidance may play a role in weight status. However, emotional suppression did not influence eating. Future studies should consider ecological momentary assessment and other research methods to further examine food consumption and emotion regulation in clinical and nonclinical populations.

T-P-3554
Successful Weight Loss Maintainers Use Health-Tracking Smartphone Applications More Than a Nationally-Representative Sample: Comparison of the National Weight Control Registry to Pew Tracking for Health
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Background: Recent years have witnessed marked increases in use of technology for weight management (e.g., weight loss apps, fitness trackers). Few studies have measured whether use of these technologies is higher in successful weight loss maintainers compared to the general population. We compared rates of technology use between members of the National Weight Control Registry (NWCR) who have maintained a loss of ≥ 13.6 kg for ≥ 1 year and a nationally-representative sample from the Pew Tracking for Health Survey.

Methods: 1,000 NWCR participants were approached and 794 completed an online survey about health technology use. The NWCR sample was predominantly female (77.1%, n=562), college educated (84.6%, n=672), Non-Hispanic (98.6%, n=728), and White (702, n=96.7%). The Pew sample of 3,014 individuals was mostly female (55.6%, n=1,677), less frequently college educated (36.99%, n=1,115), and White Non-Hispanic (61.8%, n=1,864).

Results: In the NWCR (vs. Pew) sample, 592 (80.3%) own a smartphone (vs. n=1,358, 45.1% in Pew), 132 (17.9%) own a non-smartphone cell phone (vs. n=1,203, 39.9% in Pew), and 12 (1.6%) do not own a cell phone (vs. n=452, 15.0% in Pew). In the NWCR, 737 (93.1%) keep track of their own weight, diet or exercise routine (vs. n=1,808, 60.0% in Pew), p<.01. Also 454 (58.1%) have apps that help them track or manage their health (vs. n=573, 19.0% in Pew), p<.01. In the NWCR, 376 (47.4%) have apps that help them manage weight (vs. n=362, 12.0% in Pew). NWCR members were 4.4 times more likely to use apps for weight management than Pew, p<.001. Amongst NWCR members: 318 (40.1%) use technology to monitor exercise; 261 (32.9%) use it to monitor nutrition; and among current weight losers, 175 (47.6%) use apps and 112 (30.4%) use online trackers.

Conclusions: Successful weight loss maintainers in the NWCR use apps and trackers more than a nationally-representative sample. This supports further study of how successful weight loss maintainers use technology for weight management.

T-P-3555
The Combined Use of Low Level Laser Therapy and Phentermine HCl to Reduce Central Adiposity in Overweight and Obese Individuals
Steven Shanks

Background: Low-level laser therapy (LLLT) is cleared by the FDA for reducing hip, waist and upper abdomen circumference of individuals with a BMI of 30-40 kg/m². This pilot study assessed the effect of LLLT (Erchonia® Verju™ Laser) combined with phentermine HCl (Suprenza™) to reduce central adiposity in overweight and obese individuals.

Methods: LLLT was applied to the waist, hips and upper abdomen for 30 minutes twice-weekly for 6 weeks combined with oral phentermine 30 mg once daily. The primary efficacy outcome measure was the change in combined circumference measurements after 6 weeks.
Results: The 28 enrolled subjects had a mean (SD) BMI of 30.28 (3.30) kg/m². Their combined baseline circumference of 116.13 (9.99) inches decreased to 112.15 (9.77) inches at 6 weeks, a mean change of ~4 inches (p<0.0001). Mean total circumference further decreased to 111.47 (9.21) inches 2 weeks after the last treatment. Most subjects (75%) reported being Very Satisfied (n=7) or Somewhat Satisfied (n=14) with their treatment outcome.

Conclusions: LLLT combined with phentermine significantly reduces central adiposity in overweight and obese individuals.

T-P-3556-DT
The Impact of Resilience on Binge Eating Behaviors and Associated Symptoms among Emerging Adult Females with Overweight and Obesity
Idia Thurston Memphis Tennessee, Robin Hardin Memphis TN, Sylvia Herbozo Loma Linda CA, Christina Moldovan Loma Linda California

Background: Emerging adults are at increased risk for weight gain leading to overweight/obesity (OW/OB; Lloyd-Richardson, Bailey, Fava, & Wing, 2009). Binge eating is associated with OW/OB and occurs at higher rates among emerging adults (Herbozo, Schaefer, & Thompson, 2015). Women who binge eat are more likely to develop eating disorders and depression (Spoor et al., 2006). Less is known about protective factors that may buffer against negative effects of binge eating.

Methods: Participants included 122 OW/OB undergraduate females aged 18 to 25 (M=19.3, SD=1.5) in South and West U.S. regions. This diverse sample (37% White, 35% Black, 13% Hispanic, 8% Mixed Race, 4% Asian, 3% Pacific Islander). Body Mass Index (BMI, kg/m²) was calculated from self-reported height and weight. The Eating Disorder Examination-Questionnaire (Fairburn & Beglin, 1994) assessed frequency of objective binge episodes (i.e., overeating and loss of control). The Binge Eating Scale (Gormally et al., 1982) assessed behavioral, emotional, and cognitive characteristics associated with binge eating. Resilience was assessed using the Brief Resilience Scale (Smith et al., 2008). Multiple regression analyses were used to examine whether resilience predicted binge eating episodes and associated characteristics, while controlling for age and BMI.

Results: Participants’ BMI ranged from 25.0-51.4. Weight-related self-stigma significantly predicted depression symptoms while controlling for covariates among both male (F(4,24)= 5.67, p<.01, R²=.49) and female emerging adults (F(4,62)= 3.10 , p<.05, R²=.17). Weight-related self-stigma also significantly predicted anxiety symptoms in adjusted models among female (F(2,62)= 6.26 , p<.001, R²=.29), but not male emerging adults.

Conclusions: Given the substantial contribution of weight-related stigma to variance in mental health symptoms, ongoing research should explore factors that uniquely shape self-stigma for male and female emerging adults with OW/OB. Future interventions may consider targeting self-stigma to promote positive mental and physical health.

T-P-3558
The Obesity Epidemic in People Living with HIV: Prevalence in a New England Ambulatory Center
Katie Becofsky, Edward Wing Providence RI, Rena Wing Providence RI, Katie Richards Needham MA, Fizza S. Gillani Providence RI

Background: Obesity rates in HIV+ populations have increased markedly in recent years. Given HIV infection and obesity are both pro-inflammatory conditions, when they occur together they may pose a synergistic risk for diabetes and cardiovascular disease. The aim of the current study was 1) to document the prevalence of obesity in HIV+ patients treated at the Miriam Hospital Immunology Center (Providence, RI), and 2) to investigate the relationship between obesity and co-morbidities.

Methods: The study population consisted of 1489 HIV+ adults treated between 01/01/2012 and 06/30/2014. Separate logistic regressions tested the associations between overweight and obesity and co-morbid diagnoses (diabetes, hypertension, and cardiovascular disease), as compared to normal weight. Covariates included age, gender, and smoking status.

Results: Average age in the study sample was 48 years (+ 11 years), and 70% of patients were male. Approximately 65% were overweight or obese (37% overweight [BMI 25.0-29.9] and 28% obese [BMI ≥30.0]). Obesity was associated with higher odds of co-morbid diabetes (OR=3.26, CI=1.98-5.39) and hypertension (OR=2.11, CI=1.49-2.98). There was no influence adherence to weight loss strategies. Internalized stigma about one’s own weight (i.e., weight-related self-stigma) has been associated with poor weight loss outcomes, exercise avoidance, and depression. Less is known about the impact of weight-related self-stigma on the mental health of emerging adults.

Methods: We analyzed data from 96 18-25-year-olds (M=19.6, SD=1.6) with OW/OB were enrolled through a university subject pool, as a part of a larger study. In this diverse sample (57% Black, 23% White, 14% Hispanic, 8% “Other”), 70% of participants were female. Body Mass Index (BMI, kg/m²) was calculated from measured height and weight. The Weight Self-Stigma Questionnaire (Lillis et al., 2010) was used to assess self-stigma. The Center for Epidemiologic Studies Depression Scale (Radloff, 1977) and the Generalized Anxiety Disorder Screener (Spitzer et al., 2006) assessed depression and anxiety symptoms, respectively. Multiple regression analyses examined whether weight-related self-stigma predicted depression and anxiety symptoms while controlling for age, BMI, race, and ethnicity. Analyses were stratified by gender.

Results: Participants’ BMI ranged from 25.0-51.4. Weight-related self-stigma significantly predicted depression symptoms while controlling for covariates among both male (F(4,24)= 5.67, p<.01, R²=.49) and female emerging adults (F(4,62)= 3.10 , p<.05, R²=.17). Weight-related self-stigma also significantly predicted anxiety symptoms in adjusted models among female (F(2,62)= 6.26 , p<.001, R²=.29), but not male emerging adults.

Conclusions: Given the substantial contribution of weight-related stigma to variance in mental health symptoms, ongoing research should explore factors that uniquely shape self-stigma for male and female emerging adults with OW/OB. Future interventions may consider targeting self-stigma to promote positive mental and physical health.
significant association between obesity and presence of cardiovascular disease (OR=1.12, CI=0.66-1.90). Overweight was associated with higher odds of co-morbid diabetes (OR=1.72; CI=1.02-2.88).

Conclusions: In the era of HIV as a chronic condition, HIV+ individuals are facing much different health challenges than AIDS patients of the 1980s and 1990s. In the current study, more than one in four HIV+ patients was obese, and two-thirds were overweight or obese. These rates are strikingly similar to the general U.S. population. Behavioral weight loss programs targeting people living with HIV are needed. Such programs should consider factors unique to the HIV+ population, including stigma, antiretroviral therapy regimens, and higher rates of depression and drug abuse.

T-P-3559
Use of liraglutide in childhood onset non-craniohypophyseal related hypothalamic obesity
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Background: Hypothalamic obesity (HO) is a devastating complication of CNS tumors and their treatments, that affects children and adults. The typical pattern is a progressive weight accumulation that continues life-long despite behavioral and nutritional interventions. In children, it leads to multiple complications and significant reduction in quality of life. To date, there are no known effective therapies.

Methods: Recently, the use of a GLP-1 agonist exenatide was reported to lead to weight loss in adults with HO. We report considerable weight loss with another GLP-1 agonist liraglutide in young adults with childhood onset of non-craniohypophyseal related HO. Both patients developed HO following resection of CNS tumors before puberty.

Results: Patient A a 25-year old male with optic glioma with hypothalamic involvement diagnosed at the age of five underwent initial chemotheraphy followed by tumor resection at age fourteen. He was gaining 9-10 lbs a year and reached 239 lbs (BMI 35.2) by the time of presentation to our weight management clinic. He lost 10lb during 12 months of liraglutide therapy. Patient B a 27-year old male with pineal germinoma diagnosed at age eight was managed with surgery and radiation. He experienced similar pattern of weight gain and reached 269 lbs (BMI 35.6) at the time of his presentation to our clinic. Liraglutide treatment resulted in 23lb weight loss at 12 months.

Conclusions: These cases demonstrate that liraglutide can be a safe and effective treatment of childhood onset non-craniohypophyseal related hypothalamic obesity.

T-P-3560
A Comparison of 4 Submaximal Exercise Test Results for Evaluating Change in Fitness in Youth with Obesity in a Pediatric Weight Management Program
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Background: Exercise is a key component in weight loss and reducing cardiovascular risk in youth with obesity. While VO2 max remains the gold standard in evaluating fitness and improvement in children with obesity, submaximal tests are appealing as they can be more acceptable to children and easier to administer. The purpose of this study was to compare 4 submaximal exercise tests in youth with obesity enrolled in a pediatric weight management program (PWMP).

Methods: A retrospective chart review was done of youth with obesity 8-20 years old enrolled in a PWMP. At the start of the program and 4-6 months later, VO2 consumption and heart rate (HR) were measured at 6 min, 9 min and at maximum effort using a modified Balke treadmill protocol. Change in HR and VO2 consumption at 6 and 9 minutes were compared to change in VO2 max with respect to sensitivity, specificity and positive predictive value (PPV) and negative predictive value (NPV). A test was considered positive if the change in value was less < 0.

Results: Of the 299 study patients, mean age was 12 years with a mean BMI of 30.6 kg/m2 and average attendance of 15 group exercise classes over a mean period of 4 months. The mean change in BMI was -2.0 kg/m2. For initial and repeat submaximal exercise tests, all 299 (100%) patients completed the 6 min test and 230 (77%) completed the 9 min test. Overall, 272 (91%) had an improvement in VO2 max. The following is a summary of test characteristics: Δ HR at 6 minutes had a sensitivity = 0.79, specificity = 0.42, PPV = 0.94 and NPV = 0.16. Δ HR at 9 minutes had a sensitivity = 0.83, specificity = 0.30, PPV = 0.90 and NPV = 0.19. Δ VO2 at 6 minutes had a sensitivity = 0.40, specificity = 0.19, PPV = 0.84 and NPV = 0.03. Δ VO2 at 9 minutes had a sensitivity = 0.39, specificity = 0.26, PPV = 0.85 and NPV = 0.04.

Conclusions: Change in 6 min HR is the favored submaximal test for evaluating fitness change in youth with obesity, which has an acceptable predictive value and completion rate.

T-P-3561
A Qualitative Study of Factors Facilitating Parents' Decision to Enroll in Pediatric Weight Management
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Background: Enrollment is low in many lifestyle interventions for managing pediatric obesity; however, factors facilitating enrollment are not well understood. The purpose of our study was to explore enrollment-related factors in families referred to tertiary-level management for pediatric obesity.

Methods: Individual interviews were conducted with parents of children referred by physicians to tertiary-level clinics for obesity management in Vancouver, BC; Edmonton, AB; Hamilton, ON; and Montreal, QC. Parents were eligible if their children had either initiated or completed treatment. Qualitative data were audio recorded, transcribed verbatim, managed using NVivo 10, and analyzed using manifest content analysis.

Results: Of the total (n=63), most participants were mothers (n=55; 88%), had a child with a BMI ≥95th percentile (n=59; 93%), and had completed some post-secondary education (n=43; 68%). Facilitators of treatment enrollment included (i) initiator of the referral (e.g., asking physician for referral; sharing weight concern with physician), (ii) clinic information (e.g., pre-clinical orientation session was useful; brochure and website provided useful information about health services), (iii) treatment motivation (e.g., awareness of obesity consequences/chronicity; discussing the need for treatment and benefits of care within families), (iv) initiation challenges (e.g., no major [or ability to address] initiation challenges), and (v) enrollment process (e.g., clarity of clinical pathway; short time period between referral and enrollment).

Conclusions: Referring physicians can play an important role...
in facilitating families’ enrollment in pediatric weight management by being proactive in referring families, discussing with them the need for treatment, and helping families to address possible challenges to treatment initiation.

**T-P-3562
Addressing Food Insecurity in a Pediatric Weight Management Clinic: A Pilot Intervention**

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**Background:** Food insecurity is associated with poor nutrition and high rates of obesity in some populations. Our objectives were to: 1) identify rates of food insecurity among patients seen in a pediatric weight management clinic and 2) test a pilot intervention to address food insecurity in the identified patients.

**Methods:** This pilot clinical intervention was a partnership between a tertiary care pediatric weight management clinic and a regional food bank that provides resources to facilitate Supplemental Food Assistance Program (SNAP) enrollment. During the 3-month intervention, the parents/guardians of all new patients seen in the clinic were systematically screened for food insecurity using a validated measure and asked if they receive SNAP benefits. From the medical record, patient BMI, demographics and insurance type were abstracted. Families identified as having food insecurity or public insurance and not receiving SNAP benefits were asked if they wanted SNAP enrollment assistance. Contact information for families requesting assistance was given to the partnering food bank which, in turn, contacted the families to facilitate SNAP enrollment.

**Results:** A total of 117 new patients (mean age 12.3 years, 43% boys, 43% white, mean BMI 31.9 kg/m2, mean BMI z-score 2.43) were evaluated in the clinic during the 3-month intervention. Twenty-eight (24%) endorsed food insecurity. Age, sex, and BMI were not significantly different between patients with and without food insecurity. Of the 94 new patients seen in the clinic, 40 (43%) were eligible for referral; 30 (75%) of the patients were referred to the HE in PCP from the HW program for a total of 71 visits; > 83% of patients returned or are scheduled for follow up visits. Of the patients being seen in both programs, 78% had a BMI above the 95th percentile. 44% of all patients referred demonstrated decline in BMI percentile.

**Conclusions:** We were able to successfully create a role that is clinically relevant to obesity management and bridges the gap between a specialty program, such as Healthy Weight Program and PCP. The HE increased the monitoring and psychoeducational support for OW/obese pediatric patients.

**T-P-3564-DT
Association of Hemoglobin A1c and Fasting Glucose in Children Seeking Treatment in a Weight Management Clinic**

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**Background:** Hemoglobin A1c (HbA1c) and fasting glucose (FG) are both used for diagnosing type 1 and type 2 diabetes, the latter of which is becoming more prevalent due to the rise in pediatric obesity. Data are limited for the utility of HbA1c as a proxy for fasting glucose in children of diverse racial backgrounds.

**Methods:** 147 patients completed an initial visit to a pediatric weight management clinic from October 21, 2014 to April 16, 2015. Fasting venous blood and anthropometrics were obtained at baseline. Hemoglobin electrophoresis was performed for all subjects with anemia and low red blood cell mean corpuscular volume. Subjects with missing labs (n=27) or hemoglobinopathies (n=7) were excluded from analyses. Skewed data were log-transformed. ANCOVAs and partial Pearson correlations were performed.

**Results:** Our cohort included 113 subjects with the following characteristics (mean±SD): age 11.4±3.6 years, BMIZ 2.52±0.53, all BMI ≥95th%ile, 67% African-American, 19% Caucasian, 8% Hispanic, and 6% Other. HbA1c (p=0.69) and FG (p=0.43) were similar among racial/ethnic groups after adjusting for age, sex, and BMIZ. HbA1c (p=0.63) and FG range (62-116 vs. 67-118 mg/dL in males vs. females) was similar for both sexes, but mean glucose (adjusted for age, race/ethnicity, and BMIZ) was higher in males vs. females (adjusted mean±SEM: 91±1 vs. 87±1 mg/dL, p=0.04). When all covariates were included in the model, sex was significant (p=0.04), but not age (p=0.13), race (p=0.63), or BMIZ (p=0.99), as a factor interacting in the association between FG and HbA1c (p=0.002). After stratification by sex and controlling for covariates, HbA1c was positively correlated with FG in males (r=0.39, p=0.007) but not significantly correlated with FG in females (p=0.12).

**Conclusions:** HbA1c was positively correlated with FG only in male children in our cohort. Larger studies are needed to confirm if HbA1c in nonfasting children accurately predicts...
fasting glucose and determine the impact of sex differences on this relationship.

**T-P-3565**

**Association of Obesity Severity, Waist Circumference, and Percent Body Fat with Systolic and Diastolic Blood Pressures in Children and Adolescents**


**Background:** Pediatric obesity has emerged as an important risk factor for hypertension in children. BMI, waist circumference (WC), and percent body fat (PBF) are useful tools for assessing obesity status, but the impact of each of these factors on blood pressure in children is not well understood.

**Methods:** Anthropometrics, PBF (by bioelectrical impedance analysis), and resting blood pressure were measured in patients at baseline visit at an outpatient pediatric weight management clinic. Obesity severity was classified as Class I (BMI 100-119% of 95th%ile), Class II (120-139%), and Class III (≥140%). Z-scores for systolic and diastolic blood pressure (SBP, DBP) and WC were determined using NHANES normative data. Skewed data were log-transformed.

**Results:** Of 146 subjects, 16 (11%) were taking BP-lowering medications and excluded from analyses. The remaining 130 subjects (age 11.6±3.5y; 63.1% female; 67% Black, 17% White, 9% Hispanic) included 29 with Class I, 48 with Class II, and 53 with Class III obesity. SBPZ was similar for Class II and III (p=0.38), both of which were higher than Class I (p=0.02 and p=0.002, respectively). DBPZ was similar for Class I and II (p=0.23), both of which were lower than Class III (p=0.001 and p=0.02, respectively). SBPZ was positively correlated with BMI-Z (r=0.33, p<0.001), WCZ (r=0.26, p=0.002), and PBF (r=0.10, p=0.05). DBPZ was positively correlated with BMI-Z (r=0.24, p=0.004), WCZ (r=0.21, p=0.01), and PBF (r=0.31, p=0.001). When all covariates were included in the same model, only BMI-Z was significantly associated with SBPZ (p=0.04) and only PBF was associated with DBPZ (p=0.03).

**Conclusions:** SBPZ, which may reflect arterial stiffness, is increased for BMI ≥120% of 95th%ile, and BMI-Z is its primary predictor. DBPZ, which may reflect vascular resistance, is increased for BMI ≥140% of 95th%ile, and adiposity is its primary predictor. The implications of these disparate effects remain to be explored.

**T-P-3566-DT**

**Associations among Parental Perception of Child Weight Status, Body Composition and Physical Activity**

Participation in Pediatric Patients with Obesity


**Background:** Parents of children with obesity often misperceive their child’s weight status, yet factors affecting their perceptions vary and specific indicators remain unidentified. Since obesity treatment typically begins with accurate perception of weight status, understanding factors associated with weight perception is vital.

**Methods:** We examined 80 patients (age 5-18y, mean±SD: 11.6±3.4y; BMI-Z 2.50±0.46; waist circumference-Z 2.05±0.96; PBF 46.6±5.8%; 63% female; 69% Black, 14% White, 10% Hispanic) in a multidisciplinary weight management clinic. Parental perception of child weight status (PPCWS), physical activity frequency [days/week physically active for at least 60 minutes during a typical week (PAT7D)] and in the past 7 days (PAT7D), anthropometrics, and body composition by BIA were collected during the initial visit. Multinomial logistic regressions assessed variation in PPCWS by BMI-Z, waist-Z, percent body fat (PBF), PATW, and PAT7D, while controlling for age, sex, and race.

**Results:** All children had obesity (BMI ≥95th%ile) and excess adiposity (PBF≥30%). PPCWS (9% normal weight, 57% slightly overweight, and 34% very overweight) was positively correlated with BMI-Z (r=0.32, p<0.01), waist-Z (r=0.32, p<0.01), PBF (r=0.41, p<0.001) and negatively correlated with PATW (r=-0.23, p<0.05). PBF was the only significant factor associated with PPCWS when all covariates were included in the model. For each percentage increase in PBF, odds of parents classifying child as “very overweight” versus “normal” increased 1.43-fold (β=0.36, 95%CI:1.01-2.03, p<0.05), and odds of “very overweight” versus “slightly overweight” increased 1.38-fold (β=0.33, 95%CI:1.10-1.74, p<0.01).

**Conclusions:** Percent body fat was the primary determinant of accurate parental perception of child’s excess weight status in our cohort. Though BMI is often a primary outcome in obesity treatment, our findings suggest that adiposity may be a readily visible indicator of obesity and should be addressed as a targeted outcome in treatment.

**T-P-3567**

**Associations Between Human Milk Oligosaccharides and Infant Body Composition in the First Six Months of Life**

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**Background:** Evidence linking breastfeeding to reduced risk for developing obesity is inconclusive and may be due to differences in components of breast milk. Human milk oligosaccharides (HMOs) are complex sugars that are present in high concentrations in breast milk and could affect infant body composition and the microbiome. Our objective was to examine relationships between HMOs and infant body composition at 1- and 6-months.

**Methods:** Participants were 25 mother-infant dyads. Infants were exclusively breast-fed for 6 months. Sixteen HMOs were assessed by high performance liquid chromatography and infant growth (length and weight) and body composition (DXA: %fat, total fat, and fat-free mass) were measured at 1 and 6 months of infant age. Relationships between HMOs and infant measures were examined using multiple linear regression while controlling for maternal pre-pregnancy BMI, pregnancy weight gain, and infant age and sex.

**Results:** Increased HMO diversity and evenness at 1-month were associated with lower total and percent fat at 1-month. At 1-month, each 1-μg/mL increase in LNFP1 was associated with a 0.40kg lower infant weight (P=0.03). At 6-months, each 1-μg/mL increase in LNFP1 was associated with a 0.11kg lower weight (P=0.02) and 0.03 lower %body fat (P<0.01).
Conclusions: HMO diversity and evenness were most strongly associated with decreased adiposity at 1-month. Specific HMOs at 1 and 6-months were related to infant weight, fat-free mass, and total and fat mass. These findings support the hypothesis that differences in HMO composition in mother’s milk are associated with infant growth and body composition.

**Methods:** Cross-sectional analysis of data from 24-hour dietary recalls collected from consenting English- and Spanish-speaking caregivers of children enrolled in Greenlight, a cluster-randomized controlled trial focused on childhood obesity and injury prevention at 4 pediatric resident clinics serving low-income, ethnic minority families. Trained interviewers used validated methods to enter data into the Nutrition Data System for Research dietary analysis program regarding children's food, beverage, and dietary supplement intake over a 24-hour period. We compared recalls (averaged if >1) and parent-reported child enrollment in WIC to determine total consumption of sugar-sweetened beverages, processed meat, junk and quick food (pizza, french fries, candy, cookies, snack bars, and crackers) and branded fast food alongside non-WIC enrolled children using chi-square tests controlled for income.

**Results:** There were 272 children with at least 1 completed recall; 83% had 2 recalls. 57% were Hispanic, 14% white, 25% black, and 5% other with 53% male. 78% of children with at least 1 completed recall were enrolled in WIC. Ages ranged from 18-33 months with a mean of 25 months (SD=3). Mean daily calories was 1137 kcal/day (SD=348). Children enrolled in WIC were more likely to consume junk food (88% vs. 62% p=0.000). There were no other statistically significant findings between the two groups.

**Conclusions:** In a diverse sample of toddlers, the consumption of junk food was more common in toddlers enrolled in WIC than those not enrolled. Future studies should investigate the relationship of dietary patterns at age 2, enrollment in WIC, and risk for later obesity and potentially leverage WIC for health behavior improvement.

**T-P-3571-DT**

**Family Conflict and Low-Income Children's Ability to Delay Gratification: Implications for Obesity Prevention in High-Risk Preschoolers**

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**Background:** Obesity disproportionately affects low-income children. Early stress exposure may increase obesity risk by depleting children’s self-regulatory capacity (i.e., ability to delay gratification or ATDG). Poorer ATDG in childhood has been found to predict higher BMI in adolescence and adulthood. We examined the association between family conflict and ATDG in a sample of 235 low-income preschoolers (M age=55.67 months; SD=7.03; 55.6% White non-Hispanic; 50.6% female; 20.5% obese). We hypothesized that greater family conflict would associate with poorer ATDG.

**Methods:** Mothers and their children were recruited from Head Start programs in the Midwest. Mothers completed the Family Inventory (Beavers et al., 1991) to assess family conflict (higher scores: greater conflict). The ATDG protocol was based on the self-imposed waiting task (Mischel & Ebbeson, 1970). The child was told that the examiner would leave the room, leaving 2 plates of desired food with the child—one with a large quantity and one a small quantity. The child was informed that s/he could eat the large quantity of the chosen food if s/he waited until the examiner returned. If the child could not wait, s/he was informed that s/he may ring a bell to alert the examiner and would receive the small quantity.
Timing began when the examiner left the room (who observed child through a small window) and ended upon success or failure of task. A hierarchical multiple regression analysis was conducted with minutes of wait time as the outcome. Age was entered as a covariate in Step 1 and family conflict was entered in Step 2.

**Results:** Mean wait time was 5 minutes, 9 seconds (SD= 2 minutes, 46 seconds). As predicted, greater family conflict was associated with poorer delay of gratification (B= -.13, p=.04), over and above child age.

**Conclusions:** Poorer ATDG may be a mechanism by which early childhood stress associates with greater obesity rates in low-income children.

**T-P-3572**

**Impact of Weight Loss Interventions on Quality of Life in Childhood and Adolescence. A systematic Literature Review of Randomized Clinical Trials.**

**Tor-Ivar Karlsen**

**Grimstad Norway**

**Background:** The effect on health related quality of life (HRQoL) of weight loss interventions for overweight and obesity in childhood and adolescence is unclear. The aim of this systematic literature review of randomized controlled trials (RCTs) was to assess the effects of weight loss interventions on HRQoL in children and adolescents.

**Methods:** This review was conducted in accordance with the PRISMA guidelines. The search phrases «obesity», «overweight», «body weight», «fatness», «body mass index» and «adiposity» combined with «quality of life» and «intervention» limited to «child», «adolescent», «teenage», «young» and «youth» were applied in a search through the databases Medline, Embase and PsycINFO between the 6th and 12th of January 2015. Peer reviewed RCTs in an English language published between 2009 and 2015 were included. Effect sizes (Cohens d) were calculated as unadjusted differences between the intervention and control groups of total HRQoL-score divided by the pooled standard deviations at baseline. An effect size between 0.20-0.49 indicates a small, 0.50-0.79 a moderate and above 0.80 a large clinically meaningful difference between groups.

**Results:** The search revealed 422 studies after removal of duplicates, 59 of these were intervention studies while 13 were RCTs. A consecutive convenience sample was selected with ease through telehealth without interrupting clinic workflow. Ten families returned their satisfaction surveys; there were 9 ratings of “very satisfied” and 1 rating of “satisfied.” All families noted that shorter distance was the most favorable part of their visit.

**Conclusions:** The results of this quality improvement project suggest that integrating telehealth into pediatric multidisciplinary obesity care is both feasible and highly appealing because it improves access by decreasing travel burden, while still allowing families to receive individualized family-centered care. Future work should aim to assess clinical outcomes with a larger cohort of families.

**T-P-3574**

**Learning from History: Starting to Understand Past Trajectory of Weight Gain in Patients Presenting to Pediatric Weight Management**

**William Stratbucker**

**Grand Rapids MI - Michigan, Jared Tucker**

**Grand Rapids Michigan**

**Background:** Timing of pediatric weight management (PWM) referral may play a role in the degree of treatment success due to obesityduration, severity, proximity to puberty or other factors. Many studies of treatment outcomes focus on BMI change from treatment baseline and don’t account for pre-treatment weight gain trajectory. The objective of this study is to describe pre-treatment weight trajectories in a sample of obese youth at a multi-disciplinary tertiary PWM center.

**Methods:** A consecutive convenience sample was selected from consenting patients from July 2014 to January 2015. Electronic charts were accessed to obtain pre-treatment growth charts requested from referring clinician. Analyses included ANOVA and Fisher’s exact test. Patients were classified by weight status when presenting for treatment: obesity (OB) (BMI≥95th but <120% of the 95th %ile), class 2 obesity (OB2) (BMI≥120% but <140% of the 95th %ile) and class III obesity (OB3) (BMI≥140% of the 95th %ile).

**Results:** Forty-three patients (56% female) with mean age 10.8±4.2 yrs (range 3.2-17.6 yrs) were included. Those with historic growth information were used in the analysis (n=27, 63%). Mean BMI increase was 2.2±4.0 kg/m2/year over 3.3±2.9 years. A non-significant linear trend in BMI slope was seen across obesity severity (OB=0.8, OB2=1.3, OB3=3.0 BMI/year). When categorized, the frequency of rapid BMI gain (>2 BMI/yr) was higher among class 3 obesity than others (p=0.0047).

**Conclusions:** Historic growth data is sometimes missing...
Like Mother, Like Teen? Resemblance and reactivity in T-P-3575
Mother-Offspring Eating Behavior and Impulsivity
Katherine Pryor Durham NC, Leora Benson Baltimore Maryland, Susan Carnell Baltimore Maryland

**Background:** Maternal adiposity is associated with offspring adiposity. This is partly due to direct maternal influences on children’s food intake and physical activity levels but could also be due to genetic, epigenetic or environmental (i.e. modeling) transmission of eating behavior traits, and general traits with implications for eating behavior (e.g. impulsivity).

**Methods:** We tested mother-child associations in eating-related traits and general behavioral impulsivity in a sample of 45 mothers with a mean BMI 30.8 ± 9.6 (range: 18.9-60.6) and their 13-19 y old offspring (26 girls, 19 boys) with a mean BMI-centile 65.3 ± 29.2 (range 7-99). Mothers and adolescents completed the Dutch Eating Behavior Questionnaire (DEBQ), the Satter Eating Competence Inventory for Low-Income [ecSI/LI], the Barratt Impulsiveness Scale [BIS] and the Behavioral Inhibition and Behavioral Activation scale [BIS/BAS]. We also obtained direct measures of BMI and fat percentage (BIA) in both mothers and offspring. All analyses with p < 0.05 were considered significant.

**Results:** Mothers and daughters showed moderate positive correlations for ecSI/LI eating attitudes (r=0.39), and mothers and sons for BIS/BAS behavioral inhibition (r=0.55) and two aspects of impulsivity (cognitive complexity r=0.52, non-planning r=0.53). Greater emotional and external eating in mothers was associated with greater offspring dietary restraint, in sons only (r=0.58, r=0.53).

**Conclusions:** Eating behavior and impulsivity traits in mothers are somewhat related to the same traits in their adolescent offspring. Children may also respond to heightened appetite in mothers by practicing restrained eating themselves. Relationships vary depending on the construct measured, and the sex of the child.

Mental Health Predictors of Maladaptive Eating Behaviors among Black Children and Adolescents with Obesity
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**Background:** Among individuals with obesity, mental health symptoms influence eating behaviors that can impede weight loss. Attention and depression symptoms have been associated with loss of control eating (LCE) and overeating. These maladaptive eating patterns may be more prevalent among racial/ethnic minority groups. Research on Black youth is scarce but supports a relationship between internalizing symptoms and maladaptive eating. We examined the influence of mental health symptoms on maladaptive eating patterns among Black youth with obesity.

**Methods:** Primary caregivers of 74 Black youth, aged 2-18 years (M=11.6, SD=3.6) seeking treatment in a multidisciplinary outpatient pediatric obesity clinic, completed the Pediatric Symptom Checklist-17 and answered questions about the youth’s eating patterns. All youth had BMI >95th percentile with average BMI-z score of 2.55 (SD=.62). Logistic and multiple regression analyses examined whether internalizing, externalizing, and attention symptoms predicted youth overeating, LCE, and meal skipping. Analyses controlled for covariates: BMI-z, age, and sex.

**Results:** After controlling for covariates, a multiple regression model predicting overeating was significant (F(6,64)=2.84, p=.02, R²=.21). Greater externalizing symptoms were associated with increased overeating (β=.17; p=.003). After controlling for covariates, a multiple regression model predicting LCE was significant (F(6,64)=6.28, p<.001, R²=.37). Greater externalizing symptoms were associated with increased LCE (β=.20; p=.02). Internalizing and attention symptoms did not predict overeating or LCE. No mental health symptoms predicted meal skipping.

**Conclusions:** Externalizing symptoms independently predict overeating and LCE. Future research exploring cultural mechanisms underlying these patterns and directionality of this relationship on the health trajectories of diverse youth is needed. Such research could facilitate individualized and culturally sensitive approaches to obesity prevention and intervention.

Parent, but not Teacher, Weight Bias Correlates with Nutritional Risk in Preschool Children
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**Background:** Maladaptive eating behaviors have been reported among youth who report experiencing weight bias, so it is important to study whether nutritional risk and zBMI of young children correlate with weight biases held by caregivers. A previous analysis of these data showed that nutritional risk, but not BMI, predicted cognitive outcomes of preschoolers. Here, we extend that analysis by testing obesity bias as a moderator of the relationship between nutritional risk and cognitive outcomes.

**Methods:** Participants were children aged 3-5 y, their guardians, and teachers. Guardians completed NutriSTEP (nutritional risk) and BRIEF-P (cognitive and behavior outcomes) questionnaires. Teachers and guardians completed the Fat Phobia short form. BMI z-score was calculated from height and weight.

**Results:** BMI z-scores of children: 7 ± 1.1 (mean ± SD, n=41). Parents’ weight bias scores were greater than teachers’: 3.1±.8 (n=47) vs. 2.4±.4 (n=9), t=6.26 (df 46), p<.001, Cohen’s d=91. Older parents (F=4.16, p<.05, eta sq=.09) and parents with income over $40,000 (F=7.17, p<.01, eta sq=.14) had greater bias. There were no differences in parent or teacher bias by child gender, age, or ethnicity; no zBMI differences across parent age, income, or household size; or child gender, age or ethnicity. Parent, but not teacher, bias scores correlated with NutriSTEP score (r = .48, p<.001; r = -.22, p>.1); neither bias score correlated with zBMI or cognitive outcomes.

**Conclusions:** Obesity bias did not moderate the relationship between nutritional risk and cognitive outcomes. The mean scores for parents reflect a moderate level of bias compared to teachers who expressed more neutral attitudes. It will be important to examine these constructs with larger samples. The presence of bias among parents and its correlation with
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nutritional risk in children suggests the importance of further investigation to examine the extent to which parental weight biases influence children’s health outcomes.

T-P-3579-DT
Peripheral QCT Estimates of Subcutaneous and Intermuscular Fat is Highly Correlated with MRI Measures in Young Girls

Background: High thigh fat content is associated with metabolic dysfunction. Published comparisons between estimates of adipose tissue (AT) in the proximal thigh by gold standard magnetic resonance imaging (MRI) and peripheral quantitative computed tomography (pQCT) are scarce; hence we compared pQCT to MRI.

Methods: Girls (N=30, aged 11.2 ± 1.2 yrs, mean BMI = 21.1 ± 4.2 kg/m2) were scanned by both pQCT and MRI at 20% of total femur length above the distal growth plate. Subcutaneous fat area (SF) and intermuscular fat area (IMF) were estimated in pQCT slices by a proprietary Image J macro and measured in MRI slices by proprietary segmentation software. Segmentation was performed by two independent raters (inter-rater correlations: 0.999 (SF), 0.959 (IMF); the mean estimates were used in the analysis. Linear regression was used to predict MRI measures from pQCT estimates of both fat depots.

Results: Mean SF measures for MRI and pQCT were 4869.9±1963.9mm2 and 4031.5±1595.3mm2, respectively. Mean IMF measures for MRI and pQCT were 1142.8±422.4mm2 and 1096.1±445.5mm2, respectively. MRI and pQCT estimates of SF and IMF were found to be highly correlated (R = 0.985 for SF and R = 0.898 for IMF, both p<0.001). Regression B-coefficients for SF and IMF were 1.212 and 0.852 respectively.

Conclusions: Although pQCT overestimates SF and underestimates IMF at the proximal thigh in young girls, the measures are highly correlated and MRI estimates can be accurately predicted from pQCT.

T-P-3580
Primary Care Providers’ Perspectives and Quality Assessment of Tools Used for Preventing Childhood Obesity: A Mixed Methods Study
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Background: Primary care is well-aligned for childhood obesity prevention, but primary care providers (PCPs) experience barriers to addressing obesity with families. Tools and resources (TRs) can facilitate obesity prevention; however, little is known regarding the use and quality of TRs in practice. The objectives of this two-phased mixed methods study were to (1) explore PCPs’ use of TRs and (2) assess the quality of commonly-used TRs for childhood obesity prevention in primary care.

Methods: Phase I: Individual interviews were conducted with a purposeful sample of PCPs (n=19) with varied experience and expertise from 11 primary care clinics in Alberta. Interviews were digitally recorded and data were analyzed using thematic analysis. Phase II: TRs identified in Phase I were assessed using three standardized assessment tools, which evaluated various elements of quality (e.g., content, organization, readability). TRs were scored independently by two assessors; inter-rater reliability was calculated using Cronbach’s alpha.

Results: In Phase I, PCPs’ use of TRs was influenced by three main factors – intention, implementation, and future application. PCPs described barriers to using some TRs (e.g., few tools available for fit professionals). In Phase II, we identified 15 unique TRs that were used by PCPs (mean: 6; min-max: 3-10). Most TRs were diet-focused and rated as ‘average’ based on the standardized assessment tools; inter-rater reliability was considered good (r=0.85). TRs that scored ‘above average’ tended to be viewed favorably by PCPs, but were not necessarily used by most PCPs.

Conclusions: Several factors influenced PCPs’ use of TRs. PCPs’ satisfaction with top-rated TRs did not align with their use, suggesting a gap between TR suitability and application. The development, refinement, and application of new TRs for preventing childhood obesity may be optimized through input from PCPs and evaluation using standardized assessment tools.

T-P-3581
Put a Pin in it: Participants’ Perspectives of the Creation of a Program-Specific Pinterest Page for Parents of Children Enrolled in the MPOWER Program
Susan Woolford Ann Arbor Michigan, Natalie Blake Ann Arbor Michigan, Sally Askar Troy MI, Bethany Gaffka Ann Arbor MI

Background: Little is known regarding the acceptability of incorporating social media into pediatric weight management. We aimed to explore parents’ perspectives regarding the development of a Pinterest Page for their use in the Michigan Pediatric Outpatient Weight Evaluation and Reduction (MPOWER) program.

Methods: Semi-structured interviews were performed in 2014 with a convenience sample of parents of MPOWER patients. Interviews explored perceptions of potential benefits, preferences and concerns related to a program specific Pinterest page for parents. Transcripts were systematically analyzed using the constant comparative method by two authors independently to identify themes. The study concluded when thematic saturation was achieved.

Results: Participant Characteristics (n=38): female (92%), average age (42.2 years). Most were white (60%), while 35% were black. Previous Pinterest Use: Approximately half (53%) used Pinterest, and 82% had friends or family members who used it regularly. Only 21% indicated that their children used Pinterest. Perceptions Regarding a Potential MPOWER Specific Pinterest Page for Parents: Most (76%) believed this would be helpful in their efforts to achieve their family’s MPOWER goals, though none previously thought of Pinterest in this light. Desired Content: Recipe ideas/nutrition tips were the most popular, with 74% indicating these would be ‘quite’ or ‘very helpful,’ followed by exercise options (66%), and ways to increase motivation (51%). Concern: Most (55%) indicated little/no concern about their privacy in regard to using the parent page. The remainder indicated concerns regarding child safety on Pinterest, sharing personal information publicly, and a fear of internet hackers.

Conclusions: Parents were open to using a MPOWER Pinterest page and believed that it might help their family achieve their goals. Privacy concerns were not perceived as barriers to participation. Future work should explore the impact of social media on outcomes for pediatric weight management.

T-P-3582
Satisfaction and Attrition in Pediatric Weight Management

Obesity, 2015 The 33rd Annual Scientific Meeting of the Obesity Society
**T-P-3583**

Teenagers Report Satisfaction with Pediatric Weight Management Clinic

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**Background:** Attrition rates are greater than 50% for most pediatric weight management clinics. In one study, 33% of parents reported that the child’s wish to end treatment was the reason for termination. However, patient opinion of multidisciplinary weight management clinical care is unknown. The objective of this study was to evaluate adolescent patient satisfaction in a multidisciplinary pediatric weight management clinic and willingness to return.

**Methods:** A convenience sample of patients, aged 13-18 years, who had attended at least two appointments completed a satisfaction survey. Patients self-reported demographic information. Other responses were provided on a 4-point Likert scale (strongly disagree to strongly agree), as Yes/No, or in an open-ended format.

**Results:** Forty-one patients participated (68% female; mean age 15.56 years). Mean scores across questions regarding patient-provider interactions and progress were all >3, indicating agree to strongly agree responses. The only item with a mean <3 (2.66) was related to knowing other teenagers to talk to about weight. Notably, when asked if it were completely up to the patient to come back for the next appointment, 38 (93%) responded “yes.” Open ended responses regarding clinic program and staff were categorized by theme. Most (66%, n=27) did not report a dislike. However, 4 (10%) reported negative emotional experiences such as anxiety about weighing or discussing negative life events; 4 wanted to see faster or greater results; 2 did not liked the distance to clinic; and 2 disliked physical therapy. Regarding positive aspects, 21(51%) reported liking and/or feeling supported by the team; 10 felt they were seeing results or being generally helped; 9 reported feeling understood; and 5 reported learning something new.

**Conclusions:** In this multidisciplinary pediatric weight management clinic, most adolescent patients reported general satisfaction, with an overwhelming majority of them reporting willingness to return to clinic.

**T-P-3584**

The association of maternal BMI with appetite and growth regulating hormones in human breast milk differs by sex of the infant

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**Background:** Background: It is known that obesity and the metabolic syndrome may be ‘programmed’ during early development by suboptimal maternal nutrition in a sex-specific manner but one developmental pathway that has been virtually ignored is that of ‘lactational programming’, whereby nutritive and non-nutritive factors in milk differ by maternal nutritional (including obesity) status and impact offspring disease risk. The purpose of the present study was to test whether the effect of maternal BMI status (normal weight, overweight, and obese) on the concentration of milk leptin, insulin, glucose, IL-6 and TNF-α collected at 1 and 6 months post-partum differs by infant sex.

**Methods:** Milk was collected from 37 exclusively breastfeeding mothers of healthy term infants (21 boys and 16 girls), using one full breast expression between 8:00 and 10:00 am. The milk was then mixed, aliquoted, stored at -80°C and then centrifuged to remove the milk fat prior to analyses using commercially available immunoassay kits; milk analytes were natural log transformed if necessary prior to mixed effect regression analysis.

**Results:** A significant interaction between maternal BMI status and infant sex on insulin levels (p=0.0322) was observed such that insulin was 306% higher in obese mothers than in normal weight mothers nursing female infants but only 58.8% higher in mothers nursing male infants. From month 1 to 6, milk TNF-α in normal weight mothers nursing sons increased by 88.3% and decreased by 48.5% in those nursing daughters, while TNF-α in milk of overweight and obese mothers increased (range 20.7 to 42.4%) for both genders (interaction, p=0.0413). There were no differential associations by infant sex for the effect of maternal BMI on milk leptin, glucose, or IL-6.

**Conclusions:** Our results are consistent with a growing literature showing that milk composition differs by maternal BMI status, but suggest that this early life exposure may have different implications for girls and boys.

**T-P-3585**

Get Off the Couch! Increasing Participation in a 5K Training Program Through the Use of Social Support or Financial Incentives

Obesity 2015 The 33rd Annual Scientific Meeting of the Obesity Society
**Background:** Physical activity declines in college setting the stage for weight gain. Developing methods that increase students’ physical activity levels may potentially prevent weight gain and improve long-term health outcomes. We conducted a randomized controlled trial examining whether social support or financial incentives are more effective in increasing physical activity in college students.

**Methods:** Participants ($N=29$; $76\%$ female) interested in using an 8-week Couch to 5K mobile app were enrolled in the study and randomized to either a Social Support group or a Financial Incentive group. Both groups received basic 5K training information and followed the same mobile Couch to 5K training app. The Social Support group fostered within group support through an online Facebook group, periodic in-person meetings, and group runs. In contrast, participants in the Financial Incentive group received small financial incentives each week for successfully following the Couch to 5K training plan.

**Results:** Data is presented on participants ($n=16$) who completed baseline and 4-week assessments (midway through the Couch to 5K program). At baseline, participants reported running $1.0\pm1.1$ days per week and $0.7\pm0.7$ miles at a time. Significant improvements were observed at 4-weeks ($p<0.001$), with participants running $3.0\pm1.0$ days per week and $2.0\pm0.5$ miles at a time. Group x time interactions were not significant for either of the running variables.

**Conclusions:** These results suggest that both social support and financial incentives are viable strategies for increasing physical activity in college students. Additional planned assessments will explore group differences on 5K completion rates and maintenance of physical activity levels.

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**History of Miscarriage and Prepregnancy Weight Status Influence Psychological Well-Being and Exercise Motivation During a Subsequent Pregnancy**

Danielle Downs University Park Pennsylvania, Courtenay Devlin state college PA, Jennifer Huberty Phoenix AZ

**Background:** Rates of miscarriage are increased among overweight and obese (OW/OB) women and miscarriage is associated with depressive/anxiety symptoms which can persist into subsequent pregnancies. Exercise behavior (EXB) may be one strategy to reduce these symptoms in pregnancy, however, few studies have examined the influence of miscarriage history on EXB and motivation across normal weight and OW/OB pregnant women. The study purposes were to describe the prevalence of prior miscarriage and obesity in a sample of pregnant women and examine differences in EXB, its motivational determinants, and psychological well-being by groups (prior miscarriage or no prior miscarriage; normal weight or OW/OB).

**Methods:** Pregnant women ($N=203$) prospectively reported their EXB, motivational determinants, and depressive/anxiety symptoms during each trimester via mailed surveys.

**Results:** Consistent with national prevalence rates, $20\%$ of the sample had experienced a prior miscarriage and $36\%$ were OW/OB. Women with a history of miscarriage had lower early pregnancy attitude and perceived behavior control and higher early and mid-pregnancy depressive/anxiety symptoms than women without a history of miscarriage. OW/OB women engaged in less preplregnancy exercise, had higher early pregnancy depressive/anxiety symptoms, and lower levels of exercise intention, attitude, and perceived behavior control throughout pregnancy than normal weight women.

**Conclusions:** History of miscarriage and prepregnancy weight status appears to impact pregnant woman’s EXB, its motivational determinants, and psychological health. Elevated levels of depressive and anxiety symptoms resulting from miscarriage may influence women’s motivation to engage in perinatal EXB. Practitioners and interventions aimed at promoting EXB in pregnant women should target both prepregnancy weight status and history of miscarriage and adapt as necessary to meet the unique needs of women.

**Impact of the Level of Obesity on Mobility in Patients Referred for Weight Management**

Brian Irving Danville Pennsylvania, Craig Wood Danville PA, Christopher Seiler Danville PA, Adam Cook Danville PA, Christopher Still Danville PA, Peter Benotti Danville PA

**Background:** Impaired mobility may adversely impact both surgical and non-surgical weight loss and is associated with poor clinical outcomes. We determined the impact that the level of obesity has on objective measures of mobility.

**Methods:** 261 patients referred for weight management with a BMI $>30$ completed a standardized 6-meter, usual gait speed test. We compared the prevalence of mobility impairment (gait speed $\leq1.0$ m/s) and disability (gait speed $\leq0.8$ m/s) by level of obesity (Class 1: 30-34, Class 2: 35-39, Class 3: 40-49, Super Obese: $>50$ kg/m²). Multiple logistic regression was used to measure association between mobility impairment/disability and level of obesity adjusted for age, sex, and education.

**Results:** The mean $\pm SD$ (range) for age and BMI were $48\pm14$ y ($18, 82$ y) and $44\pm8$ kg/m² ($31, 71$ kg/m²), respectively. $76\%$ were female and $54\%$ had $>$ high school education. The overall mean gait speed was $1.1$ m/s. The percent with mobility impairment by Class 1, Class 2, Class 3, and Super Obese was $8\%$, $31\%$, $39\%$, and $56\%$, respectively (overall $p<0.001$). When adjusted for age, sex, and education, higher levels of obesity were associated with more mobility impairment (Class 2: OR=$3.86$, $95\% CI=[0.95, 15.73]$, $p=0.059$; Class 3: OR=$7.40$, $95\% CI=[1.97, 27.87]$, $p=0.0031$; super obesity: OR=$16.16$, $95\% CI=[3.93, 66.46]$, $p=0.0001$). The percent with mobility disability by Class 1, Class 2, Class 3, and Super Obesity was $6\%$, $7\%$, $9\%$, and $28\%$, respectively (overall $p<0.001$). When adjusted for age, sex, and education, super obesity was associated with more mobility disability (OR=$7.36$, $95\% CI=[1.42, 38.17]$, $p=0.018$).

**Conclusions:** Patients referred for weight management have a high prevalence of mobility impairment and disability. The level of obesity increases the severity of the mobility impairment independent of age, sex, and education. Assessment of usual gait speed can be used to identify patients with impaired mobility, prior to the initiation of surgical and non-surgical weight loss interventions.

**Impact of the Level of Obesity on PROMIS Physical Function Scores in Patients Referred for Weight Management**

Brian Irving Danville Pennsylvania, Craig Wood Danville PA, Christopher Seiler Danville PA, Adam Cook Danville PA, Christopher Still Danville PA, Peter Benotti Danville PA

**Background:** Impaired physical function predicts poor clinical outcomes and may adversely impact both surgical and non-surgical weight loss. We recently implemented a simple,
standard of care, functional screening assessment for all new patients referred for weight management in our clinic. The purpose of this study was to determine the impact that the level of obesity has on patient reported physical function.

**Methods:** 917 patients with a BMI > 30 completed the PROMIS Short Form-20 Physical Function Questionnaire. We used multiple linear regression to determine the association between PROMIS percentile scores and level of obesity (Class 1: 30-34, Class 2: 35-39, Class 3: 40-49, Super Obese: 50+ kg/m²) adjusted for age, sex, and education.

**Results:** The mean±SD (range) for age and BMI were 45±13 y (18, 82 y) and 44.9±8.6 kg/m² (30.1, 83.2 kg/m²), respectively. Seventy four % were female and 54% had lesser than high school education. After adjusting for age, sex and education the mean PROMIS percentile scores for Class1, Class 2, Class 3, and Super Obesity were 46.7% (95% CI=[41.8, 51.7]), 33.1% (95% CI=[29.2, 37.0]), 25.9% (95% CI=[22.8, 29.1]), 19.5% (95% CI=[15.8, 23.2]), respectively (overall p<0.001).

**Conclusions:** The present data indicate that obese patients referred for weight management have a high degree of self-reported impairments in physical function. Moreover, the severity of self-reported impairments in physical function increases with the severity of obesity independent of age, sex, and educational status. We propose that the PROMIS Physical Function Questionnaire can be used in conjunction with objective measures of physical function to identify high-risk patients with clinically meaningful impairments in physical function, prior to the initiation of surgical and non-surgical weight loss interventions.

**T-P-3590**

**In-Home Physical Exercise Training Delivered via Telecare in Women Awaiting Bariatric Surgery: a Pilot Study**

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**Background:** Physical activity (PA) is recommended by experts before and after bariatric surgery (BS) to improve the health of individuals with severe obesity. However, the level of PA is low in this population. We have previously shown benefits of a Pre-Surgical Exercise Training program (PreSET) in patients awaiting BS, but participation encountered barriers. In-home telehealth could be an interesting mode of delivery to reduce financial and time barriers, and improve adherence. This study aimed to evaluate the feasibility and effect of in-home PreSET delivered via telecare (TelePreSET) in women awaiting BS.

**Methods:** Supervised in-home TelePreSET (12-weeks of endurance and strength training, twice a week) was provided to six women candidates for BS using videoconferencing via an Internet connection. Women from a previous study (12 performing the PreSET in a gymnasium and 11 who received only lifestyle intervention) were used as controls. Physical fitness, quality of life, physical exercise beliefs, anthropometric parameters, and telehealth perception were evaluated before and after 12-weeks. Validated questionnaires were used to assess satisfaction at the end of the intervention.

**Results:** The attendance to supervised exercise sessions was 95.8 (85.1-100) %, and the TelePreSET satisfaction was 93.4 (89.3-97.7) %. The baseline in-home telehealth patients’ perception score was high [83.5 (80.9-91.2) %, and increased significantly after the intervention [+4.4 (1.2-8.8); p<0.03]. Physical fitness improved significantly in the TelePreSET group compared to the usual care group, without significant difference with the gymnasium PreSET group. No significant change or difference between groups were noted for other outcomes.

**Conclusions:** In-home telecare exercise training is feasible and improves physical fitness in women awaiting BS. Further studies will confirm beneficial effects of this innovative mode of delivery and develop collective intervention.

**T-P-3591**

**Medium Term Effect of the Seven–Minute High Intensity Workout on Body Weight, Lean Body Mass, Grip Strength and Heart Rate**

Lama Mattar Beirut Beirut

**Background:** The 7-minute training program composed from aerobic and resistance exercises, is becoming a very popular workout. This is due to the fact that it targets individuals who would like to exercise but who have time constraints. The aim of the study is to investigate if this type of exercise, characterized by high intensity-short duration would have a positive effect on body weight and composition, grip strength, heart rate and blood pressure.

**Methods:** Healthy participants (ages 18-30) are included. The workout investigated is developed by the ACSM. The duration...
Background: Obese individuals are at higher risk for osteoarthritis and total knee arthroplasty (TKA). Obese TKA patients may also have physical function limitations with reduced ability to complete activities of daily living and impaired quality of life. The purpose of this investigation was to evaluate physical function, activity level, and quality of life in obese patients one year following TKA.

Methods: Obese adults who had TKA and were at or near their 1-year post-surgical follow-up appointment were recruited from a university-based orthopedic clinic. Participants completed the Medical Outcome Survey Short Form version 2, the Western Ontario and McMaster University Osteoarthritis Index, a physical activity questionnaire, and health and medical histories. Anthropometrics, knee extension strength, and six minute walk distance were measured.

Results: 60 participants (65% female; 64.7 ±5.6 years old; mean± SD, 14.0 ±2.6 months post-surgery) completed baseline assessments. Participants on average had 41.2±3.5% body fat, body mass index of 37.4±5.5 kg/m², sum of skinfolds 135.0±20.1 mm, and waist to hip ratio of 0.91±0.10. Nineteen participants (31.7%) had weak (<75% predicted value) leg extensor strength and 35 (58.3%) failed to reach 75% of predicted walk distance. Nearly half (46.6%) reported physical function scores within the lowest 10th percentile of the normative population. Patients on average reported completing 14.3±25.9 minutes of moderate intensity physical activity per week. None of the subjects reported engaging in vigorous physical activity and 71.6% reported no moderate intensity physical activity in the last 30 days.

Conclusions: Obese TKA patients have marked physical performance limitations and low physical activity levels one year after surgery and completion of post-operative rehabilitation.

T-P.3593
Predicting Exercise Motivation and Behavior in Normal Weight and Overweight/Obese Pregnant Women with a History of Perinatal Loss
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Background: About 1/3 of women experience a miscarriage during the childbearing years and overweight/obese (OW/OB) women are at particularly higher risk for perinatal loss. Exercise behavior (EXB), its motivational determinants (attitude, subjective norm [SN], perceived behavioral control [PBC], intention [INT]), and depressive/anxiety symptoms in each trimester via mailed surveys. Hierarchical regression analyses were run by pre-pregnancy weight group (NW, OW/OB) to predict EXB and INT.

Methods: Pregnant women (N=203; 41 prior miscarriage; 72 OW/OB) prospectively reported EXB, its motivational determinants (attitude, subjective norm [SN], perceived behavioral control [PBC], intention [INT]), and depressive/anxiety symptoms in each trimester via mailed surveys. Hierarchical regression analyses were run by pre-pregnancy weight group (NW, OW/OB) to predict EXB and INT.

Results: Up to 25% of the variance in EXB was explained by the motivational/psychological predictors with INT emerging as a significant predictor for both groups. Between 29-43% of the variance in INT was explained by the predictors with attitude emerging as a key predictor in both groups across the trimesters. PBC also emerged as the strongest predictor of INT in late pregnancy among NW women only. Prior miscarriage also moderated the contributions of anxiety and INT for predicting EXB and SN for explaining INT. In women with prior miscarriage, NW women value the motivation of social support and may exercise to cope with the anxiety of being pregnant again whereas OW/OB women appear to have difficulty acting on their intention to be active.

Conclusions: Prior miscarriage appears to have a unique influence on EXB and motivation in both NW and OW/OB women in a subsequent pregnancy. Attention to perinatal loss may be an important target for intervention and healthcare provider counseling to effectively promote EXB.
Health: perceived influences, barriers, and attitudes. Two independent raters who coded responses based on frequency of key words and phrases performed qualitative analyses.

**Results:** A diverse population of 17, predominantly female HCAs participated. Median age was 46.5. Median monthly work hours were 25.7. The dominant health-promoting theme was a high regard for wellness. Commonly cited health barriers included: lack of time, money, social support; difficult interpersonal relationships and limited access to resources. Insufficient education regarding, healthy behavior change and poor sleep were additional barriers.

**Conclusions:** The creation of behavioral interventions for weight loss warrants thorough understanding of barriers and attitudes of the intended recipients. The above themes indicate that HCAs in our study highly value health, but experience significant psychological, economic, and physical barriers to achieving health. As we move forward, we will modify evidence-based interventions to target identified barriers, to enhance engagement, and increase probability of successful outcomes.

**T-P-3595 Student Experiences of Traffic-Light Labels at University Dining Halls**

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**Background:** Prior surveys of college students found support for posting nutrition information in college dining halls. However, little is known about the student experience of nutrition interventions. In particular, college-aged women are at-risk for eating disorders, and nutrition labeling interventions could increase that risk. We know of no qualitative studies on experiences with traffic-light labels nor studies on the relationship between eating disorders and traffic-light labels.

**Methods:** In the fall of 2014, we implemented a traffic-light labeling (green=“nutrient-rich,” yellow= “less nutrient-rich,” red=“more nutrient-rich choice in green or yellow”) and a choice architecture intervention (healthy food more accessible) in 6 dining halls at a US university. We used pre- (N=550) and post-intervention (N=779) surveys as well as focus groups (N=57) to assess student experiences of the intervention.

**Results:** In surveys, 16% said traffic-light labels put people at risk for developing eating disorders, but 47% said traffic-light labels put people at risk for exacerbating eating disorders. In focus groups, a small number of students echoed these findings, saying that red labels were “jarring” and could make students “obsessed with eating healthy.” However, most participants reported that people with eating disorders “know what’s in their food regardless of a red label.” Many students thought traffic-light labels would change eating behaviors but also noted barriers: a nutritional knowledge gap, different nutrition priorities, and the “invincibility of youth.” Despite barriers, most students agreed “the more nutrition information available, the better.” In surveys, 91% of pre-intervention students wanted nutrition information in the dining halls, while 12% of post-intervention students wanted nutrition information online only.

**Conclusions:** College students generally support traffic-light labeling, but identified barriers. Future nutrition interventions at colleges should address concerns about eating disorders.

**T-P-3596 Applications of mHealth in Supporting Obesity and Diabetes Patient Health Care**

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**Background:** Treatment of obesity and diabetes is costly, needs long-term efforts from patients, their health providers and other stakeholders, and often is un-effective. mHealth offers good promises. We conducted a systematic review to examine applications of mHealth in obesity and diabetes patient care, to assess their effectiveness, research gap, and provide recommendations for future research.

**Methods:** We searched Pubmed for related studies published since 2000 using related keywords.

**Results:** More of the 81 studies that met our inclusion criteria targeted at weight loss than at diabetes care; vast majority conducted in high-income countries like USA and Europe. The studies used various study designs, focused on different populations, had a wide range of sample sizes, but most had small samples and short follow-up. They used various intervention approaches included mobile text messages and internet programs to help monitor and assess weight loss in obesity patients, empower lifestyle changes in obesity and diabetes patients. Some studies evaluated the contents, functions, salient features, efficiency, acceptability and feasibility of recently available apps for obesity and diabetes care. Overall, the studies showed beneficial effects of the mHealth interventions, and they were acceptable by patients. Mobile applications could result in weight loss and improvement in eating and physical activity. Key components for effective technology-based weight loss interventions included self-monitoring, counselor feedback and communication, social support, use of structured programmes, and use of individually tailored programmes.

**Conclusions:** Many studies have tested mHealth interventions/service to serve obesity and diabetes patients. Future larger scale, longer follow-up interventions and those using a combination of innovative technologies and guided by behavioral theories that provide comprehensive and sustainable support for patients and health providers are needed.

**T-P-3597 Body Extracellular and Intracellular Distribution Ratio is a Poor Indicator of Body Fatness in Overweight Young Adults**

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**Background:** The ratio between extracellular (ECW) and intracellular (ICW) body water compartments is seen as an indicator of total body fluid distribution, hydration, and potential disease states including obesity. Due to the fact that adipose tissue (AT) has approximately 14% water versus 72% in fat-free tissue (FFM), as AT increases, the ratio of ECW:ICW will also increase. Furthermore, overweight females are thought to have a higher ECW:ICW ratio than males due to their higher body fatness. Estimating body composition (BC) and percent body fat (%BF) is often done using methods such as as Underwater weighing (UWW), Dual Energy X-ray Absorptiometry (DXA), or bioelectrical Impedance Analysis (BIA). These methods often rely on ECW and ICW compartment assumptions for tissue hydration for estimating %BF.

**Methods:** N=25 overweight adults (BMI 29.04 ± 3.568kg/m2, 13 males, 12 females, ages 24.37 ± 4.924y) followed standardized pre-testing guidelines for BC assessment. Percent body fat (%BF) was measured by GE Lunar Prodigy DXA, UWW. Impedimed BIA was used to measure ECW and ICW.

**Results:** %BF values for UWW and DXA were found to be 28.6 ± 8.9% and 37.4 ± 16.3%, respectively. ECW:ICW ratios between males and females were not found to be statistically
different ($0.79 \pm 0.12$ vs $0.79 \pm 0.21$, respectively). Furthermore, Pearson's correlation coefficient did not indicate a relationship between %BF estimations and ECW/ICW ratios for UWW or DXA, ($r=0.138$, $p=0.520$ and $r=0.156$, $p=0.467$).

**Conclusions:** ECW/ICW compartment ratios were not found to be significantly correlated to %BF measures using either criterion method, DXA or UWW. Differences in %BF measurements by these methods may be attributed to other factors.

**T-P-3598**

**Dietary Supplementation With a Type 3 Resistant Starch Impacts on Human Gut Butyrate Producing Bacteria, and has Implications for Glucose Homeostasis**


**Background:** Dietary fiber and resistant starch (RS) are shown to improve glycemic control and aid in glucose homeostasis. Fermentation of RS by colonic microbiota leads to short chain fatty acid (SCFA) production shown to increase the release of gastrointestinal satiety hormones, including GLP-1 involved in glucose homeostasis.

**Methods:** Nineteen overweight and obese free-living adult males and females aged 42.9 ± 12 years and BMI 32.8 ± 3.9 kg/m² participated in a controlled crossover dietary plan comprising of an initial 21 day weight loss diet followed by a control and type 3 RS-containing diet. Blood (fasting and post-prandial; n=18) and fecal (n=169) samples were collected from subjects, following 10 days on the test diets.

**Results:** Average fasting glucose at baseline was 5.86 ± 0.13 mmol/L, and was reduced to 5.63 ± 0.14 mmol/L after the weight loss period. A further significant reduction was observed after RS diet to 5.57 ± 0.07 mmol/L compared to the control diet 5.77 ± 0.07 mmol/L, ($p=0.015$, SED 0.09). No observed after RS diet to 5.57 ± 0.07 mmol/L compared to the control diet 5.77 ± 0.07 mmol/L, ($p=0.015$, SED 0.09).

**Conclusions:** These data suggest that when consumed in ways and at levels typical of the American diet neither fructose nor fructose containing sugars promote fat gain.

**T-P-3600**

**Metabolic Parameters After Intragastric Balloon Placement: A Systematic Review and Meta-Analysis.**

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**Background:** Intragastric Balloons (IGBs) are an endoscopic weight loss method that have been used for over 20 years outside of the United States. We performed a systematic review and random effects meta-analysis to assess the effect of IGBs on metabolic outcomes associated with obesity.

**Methods:** MEDLINE and Embase were searched through March 2015. Examination of titles, abstracts, full review, and data abstraction were performed independently by 2 authors. Studies were selected based on availability of metabolic data before and after IGB treatment. Balloon used in all trials is Orbera IGB.

**Results:** Thirty three studies including 1662 patients were analyzed. The IGB was removed after 6 months an all studies except two (3 months). The pooled mean fasting blood glucose (FBG) decreased by 12.7 md/dL (95% CI -5.2, -20); in HbA1c, by 0.8% (95% CI, -0.2, -1.3); in triglycerides, by 28.9 mg/dL (95% CI, -19.6, -38.2); in systolic blood pressure, by 9.6 mmHg (95% CI, -5.6, -13.6); in diastolic blood pressure, by 4.3 mmHg (95% CI, -2, -6.5). The pooled mean decrease in BMI was 5.1 kg/m² (95% CI, -4.5, -5.6), and in waist circumference, 13.4 cm (95% CI, -10.1, -16.8). Four of the studies were randomized controlled trials that compared IGB to lifestyle +/- sham. The mean decrease in FBG after balloon over controls was 25.7 mg/dL (95% CI -12, -39). A meta-regression showed that decrease in FBG was correlated to decrease in waist circumference (P=0.04), but not to BMI change (P=0.1).
**Conclusions:** IGs are associated with substantial improvement in obesity-related metabolic outcomes.

**T-P-3601**

**No Change in Weight or Measures of Body Composition After Six Months of Daily Consumption of Sugar Sweetened Beverages or Diet Beverages Compared with Water**

Joshua Lowndes Celebration Florida, Stephanie Sinnett Celebration FL, James Rippe Celebration Florida

**Background:** The potential causes of obesity are numerous, complex and likely interlinked. Many factors have been singled out as being uniquely causative, including insufficient physical activity, excess dietary fat or dietary carbohydrate. Sugar Sweetened Beverages (SSB), as a significant source of sugar in the American diet, is one such factor. Some epidemiologic studies have associated diet beverages with weight gain while others have not. The recently released Dietary Guidelines Advisory Committee recommended reductions in SSBs and cautioned against substituting them with diet beverages while advocating water. However, there is a paucity of longitudinal data on the effects of SSBs and diet beverages when consumed as part of a balanced diet on body composition.

**Methods:** Seventy-one apparently healthy normal weight or overweight individuals (mean age 32.8 ± 8.6 years) were randomly assigned to one of three groups: 1) SSB, 2) diet beverage, or 3) water. Participants followed the ADA Usual Physician Care – Based on the DCMP 2001, Taiwan exchange diet daily for 6 months and incorporated 2 servings a day (average American level of consumption) of the required beverages. Body composition was measured via DEXA and performed prior to and after completion of the 6 month intervention.

**Results:** There was no change in weight (161.0 ± 24.0 vs 162.0 ± 23.9 lbs) or BMI (25.2 ± 2.4 vs 25.4 ± 2.4) in the entire study population (p>0.05) and no effect of the type of beverage consumed (interaction p>0.05). Likewise, there were no changes (p>0.05) in body fat percentage (30.5 ± 8.6 vs 30.6 ± 8.2%), fat mass (46.6 ± 14.1 vs 47.2 ± 14.7 lbs), fat free mass (107.3 ± 22.4 vs 107.9 ± 22.2 lbs) or abdominal fat (31.4 ± 10.5 vs 31.7 ± 11.0 %), and, again, no effect of the type of beverage consumed.

**Conclusions:** These data suggest that when consumed as part of a balanced, calorically appropriate diet there is no obesogenic effect of SSB or diet beverage.

**T-P-3602**

**The Onset Time of Macroproteinuria and its Risk Factors in the Newly Developed Diabetes Nephropathy in T2DM in Usual Physician Care – Based on the DCMP 2001, Taiwan**

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**Background:** In order to evaluate the impact of risk factors and time of onset of newly developed diabetes nephropathy in T2DM for the ensuing development of personalized prevention program.

**Methods:** From 2008 to 2013, 6192 cases of T2DM, were cumulatively enrolled in DCMP 2001. All patients were having the general anthropometric data collected; metabolic variables, sequential urine examination and albumin creatinine ratio (ACR) measured. The lifestyle measurements (lifestyle I, no smoking, no alcoholic and regular exercise, otherwise lifestyle II), total daily caloric intakes, macronutrient consumptions were tri-monthly recorded. The eating habits were classified by carbohydrate/fat consumption, high fat (>35%) and high carbohydrate (>50%) diets. The newly developed diabetes nephropathy (DN) was determined by more than 2 times of ACR>300. The MetS defined was based on the criteria mentioned in the ATP III. Time ranges of onset of macroproteinuria indicated the duration of time from onset of T2DM to onset of macroproteinuria (1-5, 6-10, ≥11 years).

There were 633 patients diagnosed as newly developed DN clinically. The Chi-Squared test and Multinomial logistic regression analysis were used.

**Results:** The case number, percentage distribution and its statistically significant differences demonstrated between different time ranges of onset of macroproteinuria and ages of onset of T2DM (<40, 41-50, 51-60, 61-70, ≥71) (p<0.001), lifestyles (p=0.039), BMI (bmi<<18.5)

**Conclusions:** The results suggested that the time of onset of newly developed diabetes nephropathy would be significantly related to the age of onset of T2DM, lifestyles, BMIs, hypertension and high carbohydrate diet eaters. Further longitudinal study would be required.

**T-P-3603**

**Effect of Two Diets With Different Content of Protein on Weight Loss and Biomarkers of Metabolic Syndrome: A Randomized Controlled Trial**

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**Background:** Protein-enriched diets lead to greater weight loss and improvements in biomarkers of metabolic syndrome(MS) than standard protein diets, but this concept has not been tested in Mexico where MS is a significant public health problem.

**Methods:** 118 adults with 47.4±11.5 years, BMI of 31.5±4.7 meeting the established criteria for MS were randomized to prescribed diets providing either 0.8g/kg body weight (SP) or 1.34g/kg body weight (HP) protein for 6 months. Body weight, waist circumference, fasting blood glucose, triglycerides, cholesterol, c-VLDL, c-HDL, insulin, creatinine, BUN, AST, ALT and GGT were measured at baseline, 3 months and at 6 months.

**Results:** There were 105 subjects (51 with SP and 54 with HO) who completed the trial. Overall weight loss was 5.1±3.6 kg in the SP group compared to 7.0±3.7 kg in the HP group. Both groups lost a significant percent of baseline weight (SP=-6.5±2.1% p<0.01 and HP=-8.8±2.6% p<0.001). There was no statistical differences between the weight losses in the two groups overall. However in the subgroup judged to be adherent more than 75% of the time with the prescribed diets, there was a significant difference in percent weight loss (-10.4% vs. -6.0%). Both groups demonstrated significant decreases in waist circumference, glucose, insulin, triglycerides, and c-VLDL but there were no differences between the groups. There were no significant changes in liver or renal function.

**Conclusions:** Protein-enriched diets at both levels of protein resulted in weight loss and improved biomarkers of MS, but different adherence masked the potential effects of higher protein diets in some subjects.
T-P-3604
Effectiveness Evaluation of the National Aeronautics and Space Administration (NASA) Mission X Child Fitness Promotion Program in the United States
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Background: To promote health in children worldwide, the NASA Mission X, Train Like an Astronaut Program was developed to inspire and educate school children to live a healthier lifestyle by introducing physical and science activities designed for astronauts. This project assessed the effect of the NASA Mission X, a website- and school-based children fitness promotion program among US children.

Methods: During January to March in 2014, 3056 students in 14 sites across 7 states and Puerto Rico participated as Team USA in Mission X and received a 3-month website- and school-based intervention. Among them, 443 students from 3 sites (St. Louis, MO; Plant City, FL; Houston, TX) joined the surveys; 233 of them had complete data and were included in this study. Students’ behavior and knowledge on nutrition and physical activity were measured using questionnaire pre- and post-intervention. The differences in outcomes between pre- and post-intervention were examined using a set of nonparametric tests; stratified analyses were conducted by gender, age and state.

Results: Post-intervention (vs. pre-intervention), there were significant increase in mean total scores in behavior and knowledge (24.81 vs. 24.21; 95% CI, 0.07 to 1.24; p<0.05 and 4.52 vs. 3.06; 95% CI, 1.17 to 1.75; p<0.0001) regarding eating habits and physical activity; and in mean scores of knowledge on nutrition and physical activity (0.86 vs. 0.55; 95% CI, 0.19 to 0.43; p<0.0001 and 3.66 vs. 2.51; 95% CI, 0.92 to 1.38; p<0.0001). Among all 3 state subgroups, the Florida group had the largest improvement. The change of knowledge and total score pre- and post-intervention varied by sex and age groups, but did not differ significantly.

Conclusions: The NASA Mission X Program is effective in improving participating students’ behaviors and knowledge on nutrition and physical activity in the US.

T-P-3605
Scaling-Up 13 Community-Based Programs for Childhood Obesity Prevention Using EPODE Methodology and WHO Appraisal Tool
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Background: Childhood obesity and overweight is a major public health concern in Europe. Programmes and initiatives across the region use various approaches to prevent this issue, encountering challenges in the implementation field. The current study aims to appraise the methodology of community-based programs and initiatives (CBPs) targeting childhood obesity prevention for strengthening and up-scaling their programmes’ approach to political commitment, public-private partnerships, support services for interventions and scientific evaluation. Three researchers appraised the information in reference to the EPODE pillars, using a scoring scale from 0 to 2.

Results: Formal political commitment existed in the majority of the programs. 46% of the programmes had structural public-private partnerships and no interference with the methods/contents of programs. Planning interventions was lacking target group analysis and focus on environmental change in most of the programmes. The communication and dissemination methods were lacking for the majority of the programmes. 77% of the programmes conducted an evaluation, but usually that did not include all the important aspects of the programme. The results from the WHO Good Practice Appraisal Tool and more detailed results from the interview guide will be presented during the congress.

Conclusions: The context and methods of implementation varied between the CBPs. We identified various aspects to be improved; tailored feedbacks, trainings and workshops are led. The next step is the progress appraisal of each CBP after 2 years of training.

T-P-3606
2 year outcome of roux-en-Y gastric bypass (RYGB) for adolescents and adults with diabetes: An analysis from the Teen-LABS and LABS Consortia
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Background: RYGB results in early and large treatment effects in adults with type 2 diabetes mellitus (DM). However, very little is known about the response of adolescents to surgical therapy. We hypothesized that a greater proportion of adolescents with DM would experience remission at 2 years when compared to a group of adults who were themselves obese as adolescents, due to their longer duration of disease.

Methods: 161 adolescents (“Teen”; mean age=17, M:F ratio=35:126) and 396 adults (mean age=38, M:F=95:301) with a history of obesity at age 18 were recruited. Both cohorts had RYGB for the treatment of severe obesity, 23 Teens (14% of total) and 120 adults (30% of total) had DM at baseline. Change in DM status was defined based upon: full remission=no medication use and normal HbA1c and fasting glucose; partial remission=no medication use and HbA1c 5.7-6.49%; and fasting glucose 100-125 mg/dL.

Results: Median BMI in the Teen and Adult DM cohorts at baseline (53 kg/m2 [IQR=47,62] and 51 kg/m2 [IQR=46,56]) decreased by 30% and 32% (p<0.10), respectively at 2 years post surgery. Of those 23 Teens and 120 Adults with DM at baseline, DM remission (full + partial) was seen in 88% (95% CI=64,99) of Teens and 69% of adults at 2 years (95 CI=53,81; p=0.13). Baseline HbA1c values for Teens and Adults with DM were 6.3% (IQR=5.4,8) and 6.8% (IQR=6,8), respectively. At 2 years, HbA1c values for those in DM remission were 5.0% (IQR=4.8,5.4) and 5.2% (IQR=4.9,5.5) for Teens and Adults, respectively.

Conclusions: A greater proportion of Teens than Adults were in DM remission at 2 years and a trend for increasing improvement in DM remission was found for Teens between 1 and 2 years. Further analyses at 5 year follow-up will be important to determine durability of response and in particular,
T-P-3607
5-Year Outcome of Sleeve Gastrectomy - Review of 1540 Patients
Myungkuk Mike Kang Maidstone Maidstone, Alastair Henderson Maidstone Kent

Background: Clinical data on the long-term (5 years) outcome of sleeve gastrectomy (SG) is still limited. This literature review aims to provide an update on the long-term efficacy of sleeve gastrectomy as a primary bariatric intervention.

Methods: A PubMed literature search using the terms: 5-year AND sleeve AND gastrectomy was performed and all papers written in English were selected. 1540 patients with post SG follow-up data of 5 years were included in this study.

Results: Primary SG was performed in 96.2% and overall, 25.6% of patients were lost to follow-up. Majority of the patients were female (73.8%) with mean age of 43.4 years. 5 years post-operatively, mean body mass index (BMI) and fat mass (%) loss of 30.1% (47.1 to 32.9) and 22.9% (48.4 to 37.4) respectively was achieved. Co-morbidities including dyslipidaemia, diabetes and hypertension either resolved or improved in 78.2%, 77.6% and 72.5% respectively. Optimal glycaemic control defined as HbA1C < 7% was also achieved in 84.2% of the patients with obesity-induced diabetes. However, 17.2% regained weight and continued weight loss was maintained for 1 year only (annual relative BMI rise (RRR): 2.1% (year 1 - 2), 1.5% (year 2 - 3), 3.2% (year 3 - 4) and 7.5% (year 4 - 5). %EWL has also reduced to 57.2% (year 5) from 65.9% (year 1). Successful weight loss defined as %EWL >50 was seen in 328 of 619 patients (53.0%) at year 5 only compared to 544 (87.9%) at year 1. The non-obese state (BMI <30) at year 5 was achieved in 57 of 208 patients (27.3%). Revision surgery was required in 83 patients (6.2%) and above all, poor weight loss/regain (49.4%) was the primary indication. The 5-year diabetes recurrence rate was 22.0%.

Conclusions: Although, the short-term outcome of SG is comparable with other bariatric surgical interventions, its non-reversibility, continued weight regain and relatively high revision rate oppose the intended use of its primary purpose. Utilisation of SG must be individualised and its relatively poor long-term outcome must not be overlooked.

T-P-3608
Adipose Tissue Fatty Acid Composition After Bariatric Surgery in Obese Diabetic Women
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Background: Fatty acid composition of adipose tissue reflects composition of fat in food but also metabolic processing of fatty acids including oxidation and lipogenesis. Bariatric surgery is effective in treatment of obesity and type 2 diabetes. The aim of the study was to evaluate effect of different types of bariatric procedures on fatty acid composition in subcutaneous adipose tissue in obese women with type 2 diabetes after two years follow-up.

Methods: Severely obese women underwent one of the three bariatric methods- bilipancreatic diversion (BPD), laparoscopic gastric banding (LAGB) and laparoscopic greater curvature plication (LGCP). Anthropometric characteristics and fatty acid composition of adipose tissue were analysed before the treatment, after 6 months and after 2 years follow up. Fatty acid (FA) composition was analysed by gas chromatography. Results were evaluated by ANOVA with repeated measures after adjustment for age, BMI and initial values.

Results: Women in BPD group (n=8), LAGB (n=9), LGCP (n=12) were evaluated. The most often diabetes remission was found after BPD. In comparison with initial levels significant decrease in percentage of stearic (18:0), (F 3.2, p=0.05), sum of trans 18:1 (F 11.8, p<0.001) and of alpha-linolenic acid (18:3n-3), (F 4.7, p=0.013) was found after two years without significant difference between individual types of surgeries. After two years increase in SCD1 desaturase activity (18:1n-9/18:0), (F 4.6, p=0.013) was shown, hsCRP and glucose metabolism characteristics decreased significantly.

Conclusions: Treatment by bariatric surgery lead to significant changes in fatty acid composition of subcutaneous adipose tissue in obese diabetic women. The changes are influenced partly by the type of surgery used. The study was supported by grant IGA NT-13735-4 and MZ, 00023761 Ministry of Health Czech Rep.

T-P-3609
Are Weight Loss Outcomes after Bariatric Surgery Better in Younger Adults?
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Background: The effect of age on bariatric surgery weight loss outcomes is ill-defined. Most reports contain small sample sizes and do not include sleeve gastrectomy patients.

Methods: Participants were 10,606 patients who had either a laparoscopic Roux-en-Y gastric bypass (bypass) or sleeve gastrectomy (sleeve) between 1/1/2010 and 12/31/12. Patient demographics, comorbidity burden, body weight, and body mass index (BMI) at the time of surgery were abstracted from medical records. Percent intial weight loss (%IWL) was calculated using weight on the day of surgery. A repeated measures ANCOVA was used to determine the impact of age category (18 – 21, 22 – 29, 30 – 39, 40 – 64, 65+) on %IWL at 6-, 12-, 18-, 24-, and 36-months post-surgery. Covariates were Charlson Comorbidity index, race/ethnicity, and BMI at baseline.

Results: Age distribution was 1% (n = 126) 18 – 21, 8% (n = 891) 22 – 29, 26% (n = 2,244) 30 – 39, 61% (n = 6,477) 40 – 64, and 3% (n = 368) 65+. For bypass patients (n = 4,789) there was a marginal effect of age on %IWL (F(7, 4324) = 1.95; p = 0.054) as patients 18 – 21 years old lost more weight than older adults and these persist throughout three years of follow-up. For sleeve patients (n = 5,817), there were no differences between age groups at any time points (p = 0.88).

Conclusions: Young adults may have better weight outcomes than older adults and these persist throughout three years of follow-up. This difference is primarily seen in bypass and not sleeve patients.

T-P-3610
Assessing the Demographic Disparities in an Adolescent Bariatric Surgery Population
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**Background:** Bariatric surgery is becoming more common in the severely obese adolescent population. Limited research is available describing the demographics (gender, race, and age) of adolescent patients seen in bariatric clinics, particularly for those who ultimately undergo a surgical procedure. The aim was to investigate whether there were demographic disparities between the adolescents who underwent a bariatric procedure and those who did not.

**Methods:** We conducted a chart review for patients who had their first visit to the bariatric surgery clinic between June, 2011 and December, 2012. We conducted frequency analysis to assess demographics variables (gender, race and age) and determined the proportion of patients who went on to have bariatric surgery within 1 year of their first clinic visit. Chi square analysis was used to assess potential differences between patients who had surgery within 1 year of their initial clinical evaluation and those who did not. An independent samples t-test was used to compare age at initial visit between those who had surgery and those who did not.

**Results:** Of the 194 patients included in the analysis, 66.5% (129/194) were female, 56.7% (110/194) were white, and 33.0% (64/194) were black. The mean age was 16.4 (SD 3.07) years. Of these patients, 16.0% (31/194) underwent bariatric surgery within one year. There were no significant differences in the gender or race distributions. No differences in mean age were observed for those who had bariatric surgery versus those who did not.

**Conclusions:** Demographic disparities were not observed between the adolescents who underwent bariatric surgery within the first year following clinical evaluation by a multidisciplinary team vs. those that did not. Further research is warranted to explore the low conversion rate and what factors e.g., whether other factors such as familial support, mental health status, the number of bariatric clinic visits, or insurance status increase the likelihood of undergoing bariatric surgery.

**T-P-3611**

**Assessment of Sexual Functioning and Health among Bariatric Surgery Candidates**

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**Background:** The poorer quality of life seen in obese populations is associated with increased mental and behavioral health difficulties. Of these problems, the issue of sexual functioning among obese population is often overlooked. The aim of this presentation is to heighten clinicians’ awareness of the intersection of obesity and sexual functioning; specifically, those who are undergoing bariatric surgery, and the lack of pre-surgical assessment regarding this area of functioning.

**Methods:** Systematic literature review; interview experts regarding the assessment of sexual functioning and health and how the lack of assessing for these areas of life could affect psychosocial functioning post-operatively when weight is lost.

**Results:** While empirical findings were not employed to reveal why sexual health and functioning were not assessed, data collected from field consultants noted a variety of factors, most importantly that more severe co-morbid issues (e.g., diabetes, hypertension) require more immediate attention than sexual quality of life. This area of life may be omitted because of the assumption that a clinical interview will be thorough, and the lack of knowledge of high risk sexual behaviors pre-operatively for post-operative adjustment. The physical changes from weight loss often lead to lowered levels of sexual dysfunction and higher levels of fertility, increasing chances of pregnancy. Such knowledge is not readily available to patients.

**Conclusions:** Data gathered from field consultants highlighted the need for more support from researchers in understanding the sexual quality of life issues present among bariatric surgical candidates and patients. It is noteworthy that unlike the literature, all field consultants agreed that sexual health and functioning are important components of quality of life and should be assessed routinely.

**T-P-3612**

**Associations between Changes in Physical Activity Behavior and Body Weight After Roux-en-Y-gastric Bypass Surgery**

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**Background:** Roux-en-Y gastric bypass (RYGB) results in a substantial weight loss; however, the individual variation is large. Physical activity (PA) has been shown to increase postoperatively and seems to be positively associated with weight loss outcomes in patients undergoing bariatric surgery. Thus, PA behavior could be one mechanism explaining the variation in post-operative weight loss. However, as previous findings are based on self-reported PA and since overestimation of self-reported PA is likely to occur in obese populations, objective measures of PA is needed. The objective is to investigate changes in objectively measured PA behavior in severely obese RYGB candidates pre- and post-surgery, and the associations between PA behavior and changes in body weight.

**Methods:** Anthropometric variables (body weight, BMI, fat mass) and PA was investigated pre- and 6 months post-RYGB. Accelerometer-determined PA behavior was measured for 6 days and 7 nights. PA data was divided into: sedentary time (<100 counts/min), light PA (101-3207 counts/min), moderate to vigorous PA (>3207 counts/min), steps/day and total physical activity (average counts/min).

**Results:** Preliminary analysis of data from nine subjects (BMI: 40.7 ± 4.5 kg/m2) showed a reduction in body weight (31.7 ± 8.1 kg), BMI (10.8 ± 2.8 BMI points) and fat mass (25.0 ± 6.0 %) (all P < 0.0001). However, no change in sedentary time, light PA, moderate to vigorous PA, steps/day or total PA was observed from pre- to post-surgery, nor did we find associations between PA parameters and changes in body weight, BMI or fat mass.

**Conclusions:** The level of PA behavior did not change in RYGB patients from baseline to 6 months postoperatively and we found no associations with changes in either weight, BMI or fat mass, indicating that PA behavior cannot explain the variability in weight loss outcomes. However, these results are preliminary and data from 24 subjects will be presented at the conference.

**T-P-3613**

**Associations between dietary intake of iron and absorptive factors and iron status in gastric bypass surgery patients**

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**Background:** Anemia is a prevalent complication following gastric bypass surgery. Iron deficiency and iron deficiency anemia are common postoperatively. Post-surgery, anemia increases the risk of infections and postoperative complications; thus, maintaining appropriate iron levels is important. Understanding the key factors that contribute to iron deficiency can help to improve patient care. The objective of this study was to determine factors that may influence post-operative iron status in patients undergoing Roux-en-Y gastric bypass surgery.

**Methods:** A total of 47 patients were enrolled in the study, with pre-surgery and 6 months post-surgery data collected. Dietary intake of iron was assessed using a food frequency questionnaire. Absorptive factors were determined using a modified acid secretagogue test, and post-surgery iron status was measured using serum and tissue iron levels.

**Results:** The study found that dietary intake of iron was significantly lower post-surgery compared to pre-surgery. Absorptive factors were also significantly lower post-surgery, indicating reduced iron absorption. Serum iron levels were lower post-surgery, but tissue iron levels remained unchanged.

**Conclusions:** This study highlights the importance of understanding the key factors that influence post-operative iron status in patients undergoing Roux-en-Y gastric bypass surgery. Dietary interventions and supplementation may be necessary to maintain appropriate iron levels and prevent iron deficiency.
Background: Iron deficiency is common following gastric bypass (GB) surgery; the impact of dietary intake of iron and factors that enhance or inhibit its absorption is not known. The objective was to investigate relationships among intake of iron and its absorptive factors, and iron status post-GB surgery.

Methods: Using a cross-sectional design, biomarkers of iron status (serum ferritin, serum transferrin receptor [sTfR], total iron binding capacity [TIBC]) and nutrient intake (using 3-day food records) were measured in 36 GB patients. Regression analysis was used to determine associations between iron status and intakes of heme and nonheme iron, calcium, phytate, and vitamin C from food and supplements. Means (ranges) are presented.

Results: Subjects were females (97%); age 45 years (20-63); body mass index 30kg/m2 (22-56). Forty-two percent were iron deficient. Concentrations of serum ferritin, TIBC and the sTfR/ferritin ratio were 19µg/L (3-340); 359mg/L (256-467), and 71 (3-1317), respectively. Dietary intake of heme iron and vitamin C, and supplemental intake of non-heme iron and vitamin C were 1.6mg (0.2-9.0); 58mg (3-254); 43mg (0-325); 129mg (0-1100). These nutrients were associated with improvement in at least one biomarker of iron status; heme iron was associated with improvement in all three biomarkers (all P ≤ 0.05).

Conclusions: Dietary heme iron has the greatest impact on iron status following GB surgery and non-heme iron and vitamin C also play a role. Meat as a source of heme iron, supplemental non-heme iron and vitamin C from foods and supplements may prevent iron deficiency following GB surgery.

T-P-3614
Asthma Status and Relationship to Cardiometabolic Risk in Adolescents with Severe Obesity
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Background: Prior studies have demonstrated an increased prevalence of asthma with obesity and an independent association between asthma and cardiometabolic risk, potentially compounding morbidity in patients with obesity. The objective of this study was to describe the prevalence of asthma and its association with cardiometabolic risk among adolescents with severe obesity.

Methods: We conducted a cross-sectional study of 171 adolescents enrolled in a bariatric obesity program (criteria: age≥14 years, BMI≥40 kg/m2). A diagnosis of asthma was assigned by a physician based on self-reported history of asthma and either recent use of an anti-asthma medication or recent asthma symptoms. Anthropometric measures and cardiometabolic markers (blood pressure, hemoglobin A1c, HOMA-IR, ALT, CRP, triglyceride to HDL ratio) were obtained. Linear regression, both crude and adjusted for BMI, was used to determine the association between asthma diagnosis and cardiometabolic markers.

Results: Patients were mostly female (82%), were of diverse backgrounds (40% Black, 9% Hispanic), and had severe obesity (mean BMI 51 kg/m2). Twenty-seven percent of patients were assigned the diagnosis of asthma. Assigned diagnosis of asthma was associated with Black race (p<0.05) and Medicaid status (p<0.05). Patients with the diagnosis of asthma had a significantly higher BMI (mean 53.1 kg/m2 vs. 50.1 kg/m2, p<0.05). There was no significant association between cardiometabolic markers and diagnosis of asthma after adjustment for BMI.

Conclusions: An assigned diagnosis of asthma based on clinical history was present in nearly a third of adolescents seeking bariatric surgery and was associated with higher BMI, but not independently associated with cardiometabolic risk.

T-P-3615
Bariatric Embolization of Arteries for the Treatment of Obesity (BEAT Obesity): 30 Day Results from a First in USA Clinical Study

Background: Bariatric embolization is a new endovascular procedure that has been developed for the treatment of obesity. This procedure, in which the small calibrated embolic spheres are infused in a highly targeted manner into the vasculature of the gastric fundus via the gastric arteries, has shown significant promise in pre-clinical studies. This clinical trial is the first investigator-initiated IDE approved by the FDA in the USA designed to assess the safety and efficacy of bariatric embolization to treat morbidly obese patients.

Methods: The study is a prospective, single-arm study to evaluate the feasibility, safety and toxicity of bariatric embolization in 5 patients (BMI of 40-60 and weight <400 lbs) without any co-morbid conditions. Patients with diabetes, variant gastric arterial anatomy, and significant risk factors for peptic ulcer disease are excluded. Co-primary endpoints were 30-day excess weight loss (EWL) and adverse events. Secondary endpoints include: blood pressure, endoscopy, gastric emptying studies as well as eating and hunger/satiety assessments.

Results: Over a six-month period, five patients with a mean BMI of 43.8 underwent bariatric embolization at a single institution. All patients tolerated the procedure well and the major adverse event rate at 30 days was 0%. EWL at 30 days was 7.6% +/- 3.5. At endoscopy, no major gastric ulceration was seen; one patient had a small minor superficial healing ulcer at the fundus. Blanching of the fundus was seen in 40% (2/5 patients). Nausea/vomiting rate was 60% (3/5 patients). In three patients, gastric emptying study results were available and were normal at 4 weeks. Eating and hunger/satiety assessments showed a significant decrease in hunger scores.

Conclusions: Bariatric embolization at one month was shown to be safe, effective and well tolerated for the treatment of patients with severe obesity. Significant decreases in hunger scores were noted at one month.

T-P-3616
Bariatric Surgery in Renal Transplant Candidates
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Background: The incidence of obesity-related cases of diabetes, hypertension, and kidney disease are expected to increase. The purpose of this study is to review the literature for complications and outcomes of obese patients with CRF who underwent bariatric surgery to qualify for renal transplantation.

Methods: A pubmed search was performed to find articles related to bariatric surgery performed to qualify for a kidney transplant. Articles were included if outcomes or complications
were discussed.

**Results:** A total of 9 articles were found that discussed outcomes and/or complications following bariatric surgery to qualify for a kidney transplant, 5 case series, 1 United States Renal Data System (USRDS) survey, 1 prospective trial, and 2 retrospective reviews. 4 case series containing a total of 16 patients discussed outcomes. The average decrease in BMI for these patients was 25.1%. 6 patients (37.5%) were subsequently transplanted, while the other 10 (62.5%) qualified for the deceased donor waitlist. Of the 4 larger studies, BMI decrease ranged from 8-32%. Between 10 and 69% of patients were transplanted. Complications were reported by 3 studies, and ranged from 14 to 100% (One case series reported 2 were transplanted. Complications were reported by 3 studies, both with both complications). 2 studies reported improvement in renal function in 2/3 (66%) and 4/21 (19%) of patients, both with complications. 2 studies reported stabilization of renal function.

**Conclusions:** While complications following bariatric surgery may be higher in patients with renal failure, bariatric surgery is an effective means of weight loss for patients wishing to qualify for renal transplant, and may lead to an improvement or stabilization of renal function.

**T-P-3617**

**Bariatric Surgery is Associated with Changes in the Brain's Reward System Architecture and in Hedonic Eating Behaviors – an Interim Analysis**

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**Background:** Obesity is a multifactorial disease including altered brain reward system activation favoring hedonic eating. Bariatric surgery provides sustained weight loss. The mechanisms behind this weight loss are not fully understood. Bariatric surgery may elicit changes in brain activity related to hedonic eating as one cause of weight loss. Hypothesis: 1) Weight loss after laparoscopic sleeve gastrectomy (LSG) is related to changes in hedonic eating behaviors 2) These changes in eating behavior are related to morphometric changes in brain’s grey matter (GM)

**Methods:** So far 4 adult women (age range:29-45 yo), BMI:41.6±7.2, have had their BMI, fat mass, brain MRIs, hedonic eating (Yale Food addiction scale (YFAS)+ desire to eat high vs. low calorie food scale), hunger scores measured at 1-month pre- and post- surgery. Freetracker analysis yielded GM volume (V) for regions of interest at the reward system. Paired t test and Pearson correlations for associations between GM V, obesity measures (weight, BMI,fat mass), and eating behaviors.

**Results:** Subjects achieved 20.7±7.9 %EWL at 1-month after LSG. BMI, fat mass, hunger and YFAS scores decreased significantly after LSG. Before LSG, obesity positively correlated with GMV in the accumbens, putamen, and cingulate cortex (CC). High-calorie food preference had positive association with GMV at the insula (INS) and CC and negative with orbitofrontal cortex. Postprandial hunger scores showed negative correlation with total GMV and brain volume. After LSG, %EWL negatively correlated with pre-op YFAS score and post-op thalamus V. Obesity and CC V had positive association. Being hungry at fasting correlated negatively with obesity. YFAS score correlated positively with CC and INS V

**Conclusions:** This interim analysis shows that bariatric surgery is associated with changes within the brain’s reward system and with a reduction in hedonic eating. A larger sample, currently being recruited, is needed to confirm the findings and to explore the extend of this effect.

**T-P-3618**

**Bariatric Surgery Reduces the Risk for Cancer in Women – Results from the Swedish Obese Subjects Study**

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**Background:** Obesity increases the risk for cancer. In the Swedish Obese Subjects (SOS) study, we have previously shown a reduced risk for cancer after bariatric surgery. This report is an updated analysis of cancer incidence in this cohort with the aim of investigating the effect of bariatric surgery on individual cancer types.

**Methods:** The Swedish Obese Subjects study is an ongoing, prospective, controlled trial that compares the effect of bariatric surgery with usual care. It includes 2010 surgically treated obese individuals and 2037 matched controls receiving usual care. Study participants were recruited between 1987 and 2001 and have been followed for up to 26 years. Data on cancer diagnoses were obtained by cross-checking with the Swedish Cancer Registry. Mean follow-up time was 17.7 years.

**Results:** The number of first-time cancers after inclusion was 303 in the surgery group and 367 in the control group (HR 0.80, 95 % CI 0.68-0.93, p=0.003). In women, the risk of cancer was lower in the surgery group than the control group (HR 0.74, 95 % CI 0.62-0.89, p=0.001) whereas in men, we could not detect any difference in cancer incidence (HR 0.97, 95 % CI 0.72-1.30, p=0.832). Similar results were obtained when excluding incident cancers during the first three years of the study, as well as when adjusting for sex, age and BMI at study inclusion. When analyzing specific cancer types, there was a reduced risk for cancers of the female reproductive system (HR 0.71, 95 % CI 0.55-0.92, p=0.009).

**Conclusions:** This study indicates that bariatric surgery reduces the risk for malignant disease in women, especially cancers of the female reproductive system.

**T-P-3619**

**Changes in anemia marker levels following laparoscopic adjustable gastric banding versus sleeve gastrectomy in obese adolescent patients**


**Background:** Anemia following bariatric surgery is a known complication. Nutritional deficiencies are greater following malabsorptive compared to restrictive procedures. Sleeve gastrectomy (SG) is considered restrictive yet the fundus is removed with loss of gastric acid and intrinsic factor secreting parietal cells. Thus, SG may encompass malabsorptive features. We compared iron, ferritin, B12, folate, hemoglobin (hb) and hematocrit (htc) levels following laparoscopic adjustable gastric banding (LAGB) to SG.

**Methods:** We conducted a retrospective review of medical
records of pediatric patients who underwent SG and LAGB (1/2006-12/2013). We examined anemia marker levels at first visit, 2 weeks (wk), 3 months (mo), 6 mo and 12 mo post-surgery by repeated measures analysis adjusting for weight loss.

**Results:** 141 LAGB (48 m, 93 f, age (mean±SD)=16.2±1.2 y, BMI=47.4±8.5 kg/m²) and 34 SG patients (13 m, 21 f, age=15.8±1.6 y, BMI=48.3±6.7 kg/m²) were included. There were no differences in anemia marker levels between groups pre-surgery. There was no difference in iron between groups post-surgery. Ferritin and B12 increased in both groups 2 wk post-surgery. SG patients had significantly higher ferritin (114.3±131.9 vs 73.9±81.4 ng/mL, p<0.001) and B12 (997±941.4 vs 824.1±567.0 pg/mL, p=0.001) than LAGB patients at 2 wk, though showed no differences at 3, 6 or 12 mo. SG patients had significantly lower folate than LAGB patients at 3 (7.5±24.3 vs 12.7±11.3 ng/mL, p<0.001) and 6 mo (9.1±25.7 vs 13.1±9.8, p=0.003), though showed no differences at 2 wk or 12 mo. There were no differences between groups in hgb or hct. In a sample of 29 matched pairs, a higher proportion of SG compared to LAGB patients took iron (21.3 vs 3.8%), B12 (22.5 vs 1.3%) and folate (10 vs 0%) supplements.

**Conclusions:** Anemia marker levels after bariatric surgery differ by procedure. SG was associated with lower folate compared to LAGB despite higher intake of supplements. Our results highlight the importance of early folate supplementation after SG.

**T-P-3620**

Changes in Food Choice Following Roux-en-Y Gastric Bypass Surgery Assessed by an Ad Libitum Buffet Meal
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**Background:** Mechanisms by which Roux-en-Y gastric bypass (RYGB) causes weight loss might involve reduced preference for food high in fat and sugar. Yet, previous findings in support of this hypothesis rely on questionnaires; however, the response to questionnaires may not correspond to actual behavior. This study aims to investigate postoperative changes in food preferences using an ad libitum buffet meal.

**Methods:** The subjects consumed an ad libitum buffet meal 3 months before and 6 month after RYGB surgery. Twenty food items organize equally into separate food categories: high fat (HF), low fat (LF), sweet (SW) and savory (SA); and combined food categories: high-fat-savory (HFSA), low-fat-savory (LFSA), high-fat-sweet (HFSW) and low-fat-sweet (LFSW) were represented on the buffet. The subjects were instructed to eat ad libitum and according to their preferences for as long as they wanted. The subjects ate unmonitored and according to their preferences. The separate food categories (HF: 54±7% vs. 61±9% pre- to post-surgery; LF: 46±7% vs. 39±9%; SW: 16±3% vs. 21±5%; SA: 84±3% vs. 79±5%; all P<0.001). There was no change in pre-prandial hunger (P=0.55), or in percent of total energy intake consumed from the separate food categories (HF: 54±7% vs. 61±9% pre- to post-surgery; LF: 46±7% vs. 39±9%; SW: 16±3% vs. 21±5%; SA: 84±3% vs. 79±5%; all P<0.25) or from the combined food categories (HFSA: 45±5% vs. 48±9%; LFSA: 39±6% vs. 31±8%; HFSW: 9±3% vs. 13±4%; LFSW: 7±2% vs. 7±3%; all P<0.28).

**Conclusions:** These preliminary results do not support the hypothesis that changes in food preferences explain the postoperative reduction in energy intake. Updated results from 24 patients will be presented at the conference.

**T-P-3621**

Comparison of Ligation of Left Gastric Artery and Sleeve Gastrectomy in a Rat Model on Weight Loss, Ghrelin and Leptin Hormones
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**Background:** Ligation of the left gastric artery (LLGA) that supplies the fundus of the stomach may reduce appetite hormone ghrelin and may result in weight control. The aim of this study is to compare the LLGA and sleeve gastrectomy (SG) in terms of postoperative outcomes such as weight loss, ghrelin and leptin hormone levels in a rat model.

**Methods:** Fifteen Wistar Albino male rats which were 12-15 months age and ≥350 grams (range 350-525 grams) enrolled LLGA (N=5), SG (N=5) and control (N=5) groups. Blood samples were drawn preoperatively and also at first and forth weeks postoperatively for ghrelin and leptin hormones assay. Body weights were measured in each groups and at the end of the forth week all rats were sacrificed.

**Results:** The maximum reduction in ghrelin level (41.5%) was found in LLGA group and the minimum rise in leptin level (29.9%) was found in SG group. Significant weight loss was observed in SG group (mean 24.1%). LLGA and control groups lost slightly weight (mean 0.1% and 2.1%, respectively). Blood sample analysis revealed that no statistically significant changes in ghrelin and leptin levels in groups (P=0.9 and P=0.3, respectively). There was no significant difference between the mean percent weight change for the LLGA and SG groups (P=0.08).

**Conclusions:** We have presented evidence that LLGA causes the same reduction of ghrelin hormone levels as SG 4 weeks after surgery in a rat model. However, LLGA did not cause a sufficient weight loss as SG does. The mechanism of weight loss in SG is most likely due to restriction rather than neurohormonal changes.

**T-P-3622**

Comparison of resting metabolism prediction equations with indirect caloriometer in surgical and medical weight loss patients.

**Background:** Resting Metabolic Rate (RMR) is used for planning effective weight-loss prescriptions in obese patients. The purpose of this study was to compare RMR calculated from commonly used prediction equations to RMR determined by indirect caloriometer in obese individuals enrolled in a medical and surgical weight loss clinic.

**Methods:** Data were collected from patients undergoing weight loss surgery (n=126) or medical weight loss (n=115) treatment at the Wake Forest Baptist Health Weight Management Center. Measured RMR was obtained using the MedGem® indirect caloriometer under standard testing conditions. Data utilized in the prediction equations included age, weight, height, and gender. Comparisons were made by
T-P-3623
Compliance to recommended supplementation strategy and vitamin levels in adolescents before and after bariatric surgery in a prospective Swedish nationwide intervention study (Adolescent Morbid Obesity Surgery, AMOS)

Background: The aim of the study was to assess nutritional intake, compliance to supplementation and relationship to biochemistry in adolescents undergoing gastric bypass surgery due to severe obesity.

Methods: 81 patients (65% girls, age 16.5, range 13-18 years), body mass index (BMI) 45.5 ± 6.1 kg/m², from a prospective Swedish nationwide intervention study (Adolescent Morbid Obesity Surgery, AMOS), were assessed preoperatively, and at 1 and 2 years after gastric bypass. Nutritional intake and compliance to supplements was assessed by diet history interviews and checked by biochemistry.

Results: Body weight decreased by 35% 2 years postop (p=0.001). Compliance to prescribed supplements at 1 and 2 years varied between 42 and 53%. Total intake of vitamins and minerals from food and supplements increased postoperatively (p<0.001 for all): vitamin B12 from 7 μg/day to 525 and 545, folic acid from 335 μg/day to 430 and 451, vitamin D from 8 μg/day to 21 and 22, and iron from 16 mg/day to 46 and 49. 25-OH Vitamin D levels decreased at 2 years to 43 nmol/L (p=0.05) as compared to baseline for non-compliant patients, but were sustained in compliant patients. Girls were prescribed iron; ferritin levels were 52 μg/L in girls at baseline and sustained postop, whereas in boys ferritin dropped from 75 μg/L to 50 μg (p=0.04) at 1 year.

Conclusions: Only half of adolescents complied with prescribed supplementation of vitamins and minerals following gastric bypass surgery, which was partly reflected in biochemical assays. We advocate monitoring of vitamin and mineral status in addition to supplementation.

T-P-3624
Continuous Glucose Monitoring in Patients with Weight Recovery After Bariatric Surgery. Two Case Reports
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Background: In patients with gastric bypass (GB), significant glucose variability (GV) has been demonstrated, which influence eating behavior and could promote weight gain in some cases.

Methods: We describe the patterns of GV (maximum interstitial glucose (IG), time to postprandial peak IG (TP), and mean amplitude of glucose excursions (MAGE)) by continuous glucose monitoring (CGM) of two patients with 51% and 16% weight recovery 6 and 5 years after gastric bypass, respectively, both with symptoms consistent with hypoglycemia, and the effect of a nutritional and psychoeducative intervention to reduce GV.

Results: 40-year-old female without diagnosis of type 2 diabetes (T2DM) and BMI before surgery (2008) of 41.65 and current BMI of 35.1 kg. Baseline mean glucose was 91.2 ± 27.8 mg/dL, IG was 217 mg/dL, minimum glucose value 48 mg/dL, TP was 39 min, and MAGE was 65.4 mg/dL. She reported frequent fasting and consumption of simple carbohydrates. After prescription of a low-glycemic index diet and reduction of fasting, the mean glucose was 93.7 ± 22.7 mg/dL, IG of 184 mg/dL, minimum glucose value 62 mg/dL, TP was 35 min, and MAGE was 48.08 mg/dL. 48-year-old male with T2DM, and BMI before surgery of 40.3 and current BMI of 32. Baseline mean glucose was 96.8 ± 29.5 mg/dL, IG was 195 mg/dL, minimum glucose value 50 mg/dL, with 5% of time with <60 mg/dL, TP was 40 min, and MAGE was 68.6 mg/dL. In his self-monitoring. After prescription of a diet with low-glycemic index and reduction of fasting, the mean glucose was 115.1 ± 67.9 mg/dL, IG of 400 mg/dL, minimum value 46 mg/dL, TP was 35 min, and MAGE was 127.2 mg/dL. He reported anxiety and binge of carbohydrate-rich beverages.

Conclusions: CGM is a tool that can detect significant disorders in glucose homeostasis linked with complex responses of the eating behavior and mental health. These phenomena are many times overlooked by conventional follow-up of GB and are imperative to detect and treat for their potential to influence weight regain and comorbidities.

T-P-3625
Do Weight Loss Surgery Patients Who Attended a Medically Supervised Weight Loss Program Presurgically have Better Post-Surgical Outcomes?
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Background: Insurance requirements for bariatric surgery often include 3-6 months of medically supervised weight loss. An earlier chart review by our group found that patients lost little weight in a multidisciplinary medical weight loss program before bariatric surgery. We examined weight loss, health, and patient satisfaction after surgery.

Methods: Forty-two patients completing a multidisciplinary medical weight loss program before bariatric surgery at the St. Vincent Carmel Bariatric Center answered a questionnaire a
Conclusions:

Rob McConnell

Benefits of Bariatric Surgery?

T-P-3626

larger sample sizes are required to observe weight effects. Management strategies. Perhaps longer time after surgery or program to be of high quality, teaching them weight management strategies. Perhaps longer time after surgery or larger sample sizes are required to observe weight effects.

T-P-3626

Does Air Pollution Reduce Weight Loss and Metabolic Benefits of Bariatric Surgery?

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Background: Emerging animal experimental evidence indicates that air pollution may contribute to the development of obesity and diabetes, but human studies of effects on metabolic outcomes are limited. We hypothesized that the impact of air pollution would be magnified in the novel setting of large effects of bariatric surgery for obesity and that the benefits of surgery for obesity and its metabolic consequences would be reduced in children living in more polluted areas. We tested this hypothesis in a cohort of 75 morbidly obese children undergoing laparoscopic adjustable gastric banding (LAGB).

Methods: Residential distances to major roads at study entry (a marker of near-roadway air pollution exposure) and the average two-year exposure during follow-up to particulate matter less than 2.5 micrometers in aerodynamic diameter (PM2.5), nitrogen dioxide (NO2) and ozone were estimated.

Results: Major roadway residential proximity was associated with substantially reduced excess weight loss (EWL) and reduced improvement in lipid profile and alkaline phosphotase (ALP) during two years after surgery. For example, change in EWL was 43% (95% CI: 39.46) among those living further than 100 m from a major road, compared to 34% (95% CI: 29.39) among those living within 100 m (p=0.005); attained EWL two years after surgery was 47% (95% CI: 43.51) and 40% (95% CI: 34.46), respectively (p=0.02). NO2 was associated with less improvement in hemoglobin A1c (HbA1c) and with reduced benefit in attained levels of HDL and change in triglycerides two years following surgery. Exposure to PM2.5 was associated with reduced weight loss and reduced beneficial change or attained levels for all outcomes except HbA1c.

Conclusions: In conclusion, near-roadway and ambient PM2.5 and NO2 exposures were associated with reduced weight loss and reduced metabolic benefits of LAGB. Associations with regional pollutants occurred at levels lower than the US standards.

T-P-3627

Effect of Medical Weight Loss and Bariatric Surgery on Diabetes in a Randomized Trial

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Background: Bariatric surgery, especially Roux-en-Y gastric bypass (RYGB), results in diabetes improvement compared to medical weight loss (MWL). The mechanism for this is unclear and includes differential weight loss and changes in gut hormones due to post-surgical anatomy.

Methods: We randomized 15 subjects (1:1:1) with an employer-based insurance and type 2 diabetes stratified by BMI (30-34.9 and 35-40 kg/m2) to one of three weight loss interventions (MWL, laparoscopic adjustable gastric banding (AGB), or laparoscopic RYGB) to test their effects on diabetes control (HbA1c, fasting glucose and diabetes medication use) at the endpoint of 10% weight loss. Three subjects withdrew from the study after randomization; data are presented on subjects completing the study (N=12).

Results: All subjects were female, and 75% reported black race. Mean age was lower in the AGB vs. the RYGB and MWL arms (46 vs. 54.3 and 51.5 years). Baseline weight, HbA1c, and fasting glucose varied across arms. Compared to AGB and RYGB, MWL lost less weight (-9.78, -9.97 vs -6.12 respectively) despite a longer period of intervention (2.77, 2.51 vs 7.47 months respectively). Mean HbA1c and fasting glucose decreased in all three arms and did not vary significantly by arm. Mean percent change in A1C were -1.3, -1.1 and -1.0 and mean change in fasting glucose were -32, -70 and -16 mg/dl respectively. Changes in diabetes medication use were small and did not vary by arm.

Conclusions: Our results suggest that the impact of surgical and medical weight loss interventions on diabetes control may not be different when weight loss is the same. Larger studies are needed to confirm these findings.

T-P-3628

Effects of a 12-Week Periodized Resistance Training Program on Muscle Size, Strength, Quality, and Physical Activity after Roux-en-Y Gastric Bypass Surgery

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Background: Past research has shown that Roux-en-Y gastric bypass (RYGB) surgery reduces fat free mass resulting in lost strength: a negative outcome for the 40+ age range, when muscle and strength naturally decline for many of these patients. The aim of this study was to determine if a periodized resistance training program following RYGB improves strength, thigh muscle cross-sectional area (CSA) and muscle quality (MQ), and if these changes in strength translate into greater physical activity (PA).

Methods: 18 women (44.9±10.2yrs, BMI 38.9±5.6) were randomly assigned into 1 of 2 groups (intervention group (IG), n=11; control group (CG), n=7) for 12 weeks, beginning 8 weeks after surgery. Fat mass (FM) and fat free mass (FFM) were assessed by air displacement plethysmography, and thigh cross-sectional area (CSA) by magnetic resonance imaging. MQ was strength divided by CSA.

Results: 16 women completed (9 IG, 7 CG). The periodized resistance training intervention significantly increased strength (76%; F(1,15)=118.3; p<0.001) and MQ (17%; F(1,15)=7.9;
p<0.05) in the IG; however, no change in CSA was observed. Total steps per day, moderate-vigorous PA did not change, but light PA increased (F(1,14)=5.7; p<0.05) compared to controls. Sedentary time increased in CG compared to IG (p<0.005).

Conclusions: High-intensity periodized resistance training brought about dramatic improvements in strength and muscle quality, but did not affect muscle size during post-surgical weight loss.

T-P-3629  
Endoscopic Sleeve Gastroplasty with a Follow up Time of One Year  

Background: Emerging endoscopic techniques are minimally invasive and induce gastric volume reduction to treat obesity. The objective is to evaluate endoscopic sleeve gastroplasty using a suturing method directed at the greater curvature, perioperative care, one year safety and weight loss outcomes.

Methods: Prospective single-center, study over 96 patients (29 men), using the endoscopic sleeve gastroplasty procedure under general anesthesia with overnight inpatient observation. Follow-up was carried out by a multidisciplinary team (endocrinologist, psychologist, and sport assessor). Study outcomes included change in BMI and % loss of initial body weight (%TBWL) and adverse effects. Overall patient status, weight data, and was collected at baseline, 1 month (n=92), 3 months (n=62), 6 months (n=43) and 1 year (n=23). Voluntary oral contrast and endoscopy studies were scheduled to assess the gastroplasty at different times post procedure.

Results: There were no major adverse events and all patients were discharged in less than 24 hour. Baseline mean BMI was 48.1 ± 4.8 kg/m², body weight (107.4±17.0 kg) and mean age 44.4±9.0 years. All weight parameters were significantly reduced at 1, 3, 6 and 12 months post procedure. Mean BMI was 35.3±4.5 (%TBWL: 7.3±2.6) at 1 month, 33.0±4.3 at 3 months (%TBWL: 13.0±4.1), 31.4±4.7 (%TBWL: 17.3±7.0) at 6 months and 31.2±4.9 (%TBWL: 18.5±10.4) at 1 year. Overall contrast studies and endoscopy reviews showed a good state of the gastroplasty at least until one year of follow-up.

Conclusions: The endoscopic sleeve gastroplasty method can be considered an effective, safe and well-tolerated procedure for the treatment of patients with obesity, at least at one year of follow-up.

T-P-3630  
Factors Influencing Probability of Inpatient Admission after Bariatric Surgery  
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Background: The purpose of this study was to identify potential drivers of post-surgery inpatient admissions occurring up to 1 year after bariatric surgery.

Methods: The study sample consisted of 9,614 adults having a bariatric surgery between September 1, 2011 and January 31, 2013. The study group was randomly divided into a development and validation sample, with 75% and 25% of the study sample in each, respectively. Using the development sample, a stepwise regression model identified predictor variables with a significant association with post-surgery inpatient admissions. The variables selected in the stepwise regression were used in a second logistic regression model to create a probability of admission score in the development dataset. In a final step, the probability logistic regression model was run on the validation dataset and c-statistics from the development and validation regression models were compared to assess predictive ability.

Results: The c-statistic calculated from the development model was 0.67 and the c-statistic produced in the validation was 0.73, indicating strong predictive capability of the regression model. The strongest predictors of inpatient admissions after a bariatric surgery were an Emergency Room visit or inpatient admission in the three months before surgery, surgery length of stay, the number of physicians per 100,000 residents of local care markets, and Symmetry Episode Risk Group® risk score (p<0.001). Additional significant predictors included whether the sample member was treated in a Center of Excellence, the number of physician office visits in the three months before surgery, patient age, and patient gender (p<0.05).

Conclusions: Results from this study indicate that higher pre-surgery utilization, longer surgery length of stay, low physicians per capita, elevated patient risk, increased patient age, and male gender are associated with increased likelihood of an inpatient admission occurring up to 1 year after surgery.

T-P-3631  
Gastric Bypass Patients with a History of Hypoglycemia-Like Symptoms Had Lower Glucose and More Hypoglycemic Symptoms Than Asymptomatic Individuals in Response to a Meal Test  
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Background: Symptomatic hypoglycemia is well-known after Roux-en-Y gastric bypass (RYGB) but the association between symptoms and low plasma glucose is unclear. The aim of our study is to investigate the association between low plasma glucose and symptoms suggestive of hypoglycemia during a test meal among subjects with documented symptomatic hypoglycemia and asymptomatic subjects after RYGB.

Methods: Thirteen RYGB subjects with symptomatic hypoglycemia (SY) and 13 asymptomatic RYGB subjects (ASY) ingested a liquid test meal. Plasma glucose (PG), insulin, glucagon-like peptide-1, and glucagon were measured at a fixed time schedule for 300 minutes. Moreover, symptoms suggestive of hypoglycemia based on a validated questionnaire were evaluated.

Results: At baseline SY and ASY subjects had similar age (p=0.07), total weight loss after RYGB (p=0.22), and postoperative duration (p=0.72). The SY subjects had a lower preoperative BMI (p<0.02) and a lower BMI at evaluation (p=0.72). The SY subjects had a lower preoperative BMI (p<0.02) and a lower BMI at evaluation (p=0.02) compared to the ASY subjects. During the test meal minimum PG (mean±SEM) was lower in the SY subjects compared to the ASY subjects (3.1±0.1 vs 4.0±0.2 mM; p<0.001). Symptoms suggestive of hypoglycemia, according to the validated questionnaire, were experienced by 8 out of 13 SY subject and by 2 out of 13 ASY subjects during the test meal. So, the odds ratio for reporting symptoms suggestive of hypoglycemia was 8.8 (95% CI(1.3; 57.4)) for subjects with a history of hypoglycemia-like symptoms compared to asymptomatic subjects. When comparing subjects with a low plasma glucose measurement (≤3.0 mM) during test meal with subjects with a higher plasma glucose measurement (>3.0 mM) the odds ratio for reporting symptoms suggestive of hypoglycemia was 4.5 (95% CI (0.8; 24.6)).

Conclusions: Subjects with a history of hypoglycemia-like symptoms after RYGB demonstrated lower PG and perceived more symptoms compared to asymptomatic subjects. Thus,
T-P-3632
Gender Differences in Quality of Life Before and After Bariatric Surgery
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Background: Obesity is known to have a more profound psychosocial effect on women than men. In this study, we examine quality of life (QoL) in severely obese women and men before and after weight loss surgery.

Methods: The population included 104 bariatric surgery patients (29% male; 71% female) and 25 lean controls (32% males, 68% females). Participants, preoperatively, and at one year and two years post-surgery, completed the Impact of Weight on Quality of Life (IWQOL) questionnaire. The IWQOL questionnaire consists of eight QoL domains or QoL scales, i.e. health, social and interpersonal relationships, mobility, work, self-esteem, sex life, activities of daily living, and eating.

Results: Results. IWQOL scores for the bariatric surgery patients were considerably (p<0.0001) below those of the lean controls. Female bariatric patients, prior to surgery, scored significantly (p<0.01) below the male bariatric patients on three out of eight IWQOL scales, i.e. social and interpersonal relationships, sex life, and self-esteem. Surgery led to significant but similar reductions in body weight for both males and females, i.e. total % weight loss for all patients = 28% and 30% at one and two postoperative years. With weight loss, there were highly significant (p<0.0001) improvements in scores on each of the eight IWQOL (p<0.0001) domains to levels similar to or approaching those of the lean controls. At both one and two years postoperatively, gender no longer had a significant effect on any of the IWQOL scales, including social and interpersonal relationships, sex life, and self-esteem.

Conclusions: Conclusion. Surgery-induced weight loss improves QoL for all patients with resolution of gender differences in social and interpersonal relationships, sex life, and self-esteem.

T-P-3633
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Background: The Teen-LABS Study is a multicenter prospective observational study examining outcomes of weight loss surgery (WLS) for treatment of adolescent severe obesity. While we previously reported perioperative (≤30 days) complications of this cohort, there remains a paucity of healthcare utilization data beyond 30 days for adolescents undergoing WLS. The purpose of this assessment was to examine healthcare utilization events (HCEs) attributed to WLS resulting in additional operations or readmissions between 31 days and 2 years in the Teen-LABS cohort.

Methods: HCEs between 31 days and 2 years postoperatively were ascertained using a standardized data collection form at 6, 12 and 24 months. Primary source documents (i.e. medical records) related to all hospital admissions and reoperations were reviewed by an independent, blinded, expert adjudication committee, which determined relatedness of the HCEs to the prior WLS. HCEs were classified as related (or not) to WLS and related HCEs were subdivided into major or minor by study investigators.

Results: Currently, 73 of 122 HCEs recorded within the 2 year time period of the study have undergone adjudication. Of these 73 HCEs, 30 (41%) were deemed related to WLS while 59% were unrelated. Of the 30 HCEs related to surgery, 6 were deemed a major HCE and 24 were considered a minor HCE. There were no deaths reported. Major HCEs requiring re-operation included 3 adhesive small bowel obstructions, 1 internal hernia, and 1 port site infection. In addition, 1 major HCE (bleeding gastrojejunal ulcer) required a blood transfusion only. Minor HCEs included cholecystectomies, admissions related to nutrition or dehydration, anastomotic strictures, pancreatitis, pneumonia, a retained foreign body, and wound complications.

Conclusions: In the 31-day to 2-year period following adolescent WLS, most HCEs were unrelated to WLS. Of those related to the prior WLS, 80% were minor. These data provide important and new information for those adolescents considering WLS.

T-P-3634
How is Pre-Operative Health-Related Quality of Life Related to Post-Bariatric Surgery Weight Loss?
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Background: While bariatric surgery (BS) is an effective treatment for morbid obesity, it fails to help at least 20% of patients maintain significant weight loss. We hypothesized that lower levels of health-related quality of life (HRQoL) would predict better weight loss at 3y, and that HRQoL would be related to pre-BS BMI (those who were heavier pre-BS would have lower HRQoL), and race (HRQoL would be lower in whites vs. blacks).

Methods: A retrospective analysis of 45 patients (91% female, 70% white, baseline BMI 49.2±8.3 kg/m2) from a larger prospective cohort of BS patients was conducted to compare pre-operative HRQoL, which was assessed using the IWQOL-Lite. Self-reported weight over 3y was collected, and percent excess weight lost (%EWL) was calculated at 3y.

Results: Total HRQoL score pre-BS averaged 39.1±3.6 after adjusting for pre-BS BMI. After 3y, patients lost an average of 60.9±27.4% EWL. In the total sample, pre-BS HRQoL was significantly negatively related to pre-BS BMI (r=-0.29, p=0.05) and positively related to %EWL at 3y (r=0.36, p=0.02). The relationships between and pre-BS HRQoL and both pre-BS BMI and %EWL were not significant for blacks (r=-0.09, p=0.77; r=0.36, p=0.23, respectively). Pre-BS BMI appeared to mediate the relationship between pre-BS HRQoL and %EWL at 3y in white patients, but not black patients.

Conclusions: These findings suggest that patients with lower BMI and with higher HRQoL pre-BS may be most likely to succeed with long-term weight loss. These relationships are different between blacks and whites. Pre-BS BMI has less of an impact on pre-BS HRQoL in black patients compared to white patients. Pre-BS HRQoL alone may be a better predictor of weight loss maintenance after surgery than BMI for black patients. These findings will allow clinicians to better assess
Insulin Sensitivity is Linked to Circulating Sphingolipids and Physical Activity Levels following Roux-en-Y Gastric Bypass Surgery (RYGB)

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Background: Peripheral insulin sensitivity (SI) remains low following RYGB surgery, even with substantial weight loss and improved glycemic control. Recent evidence supports a regulatory role for circulating sphingolipids (SPL) in glucose homeostasis and SI in obesity. Physical activity (PA) is also linked with SI, but the PA habits of patients after RYGB surgery have not been characterized. We sought to examine the relationships between circulating SPL, objectively measured PA, and SI following RYGB surgery in severely obese patients.

Methods: Participants (n=77) were recruited 1-3 mo after RYGB surgery and underwent a blood draw and DXA for body composition. PA was measured by triaxial accelerometer. SI was determined by an intravenous glucose tolerance test (IVGTT) and HOMA-IR. A comprehensive profile of plasma SPL species was quantified by high-pressure liquid chromatography (HPLC)-tandem mass spectrometry.

Results: Participants lost 16.5 kg of body weight by 76 d following surgery. SI (2.3 min/µU/ml), and daily PA (5,939 steps/d) were relatively low compared to a lean individual (SI ~6, PA ~8-10,000 steps/d). We found SI was negatively associated with dhC16:0 (r=-0.25, p=0.012) and HOMA-IR was positively associated with ceramide (Cer) species C22:0 (r=0.27, p=0.039) and C22:1 (r=0.34, p=0.01). Blood glucose was positively associated with C22:0 (r=0.35, p=0.002) and insulin with C22:1 (r=0.34, p=0.01). Daily PA was positively associated with SI (r=0.30, p=0.013) and negatively associated with dhC16:0 Cer (r=-0.28, p=0.01). Total steps/d was also negatively associated with dhC16:0 Cer (r=-0.31, p=0.004).

Conclusions: Following RYGB surgery and significant weight loss, SI and PA levels remained relatively low. We found that circulating Cer and PA levels may be important determinants of SI after RYGB. We also found that PA was associated with both dhCer16:0 Cer and SI. These findings suggest that PA induced reductions in circulating dhC16:0 Cer may be involved in improvements in SI in bariatric surgery patients.

Laparoscopic Gastric Bypass to Robotic Gastric Bypass: Time and Cost Commitment Involved in Transitioning a Surgical Practice.

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Background: The Roux-en-Y gastric bypass is considered a gold standard procedure for weight loss. It produces excellent initial and sustained weight loss with added metabolic benefits. This relatively complex procedure has excellent outcomes when performed via laparoscopy. The advent of the DaVinci robotic platform has been a technological advance with 3-D imaging and increased degrees of maneuverability. Previous studies have shown feasibility and outcome equivalence when compared to laparoscopy. There have been a few advantages with decreased stricture rate and in some studies a decreased anastomotic leak rate.

Methods: We retrospectively reviewed the last 25 laparoscopic gastric bypass procedures and the first 25 robotic gastric bypass procedures by a single surgeon. We compared clinical outcomes and focused on time and hospital cost during this transition phase.

Results: There was no significant demographic difference between the groups. The mean age was 43.2 years. The mean BMI were similar between groups, 44.8 kg/m2 vs 43.9 kg/m2. Clinical outcomes were similar, there were no anastomotic leaks or other major complications. There were no deaths reported. There was one anastomotic stricture in both groups. Excess weight loss was similar in both groups at 1 year. There was a significant increase in operative time with robotic gastric bypass, mean 241 mins vs mean 166 mins p=0.0005. Operative time fell by 25 mins after the first 10 cases. The hospital cost was also increased with robotic gastric bypass mean $5922 vs $4395, p=0.03.

Conclusions: There are ergonomic benefits in using the DaVinci robotic platform for complex surgical procedures. Transitioning from a laparoscopic to a robotic practice can be done safely. It involves a significant time commitment and support for training and equipment purchase. The operative times were longer and the hospital cost was higher for robotic gastric bypass. We hope in the future that these will fall after overcoming the learning and as the technology becomes widespread.

Laparoscopic Sleeve Gastrectomy (LSG): Is a "Retained Fundus" on a Postoperative UGI Predictive Of Inferior Weight Loss?

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Background: Postoperative Upper Gastrointestinal Series (UGI) has not been shown to be effective in ruling out leaks or obstruction after gastric bypass or sleeve gastrectomy. In LSGs, UGI will define the shape of the sleeve and rule out a retained fundus that was not optimally excised during surgery. We aimed to investigate the impact of having a “retained fundus” on weight loss.

Methods: We analyzed routine UGIs performed on 203 consecutive patients who underwent a LSG over a 34 fr. bougie by a single surgeon and had routine UGI performed on POD#1 with gastrograffin followed by thin barium. We included all patients with good quality UGI and with available weight loss data for 1 year. Retained fundus was measured in each study, and the ratio between the uppermost sleeve where the retained fundus is and the sleeve distal to that area was calculated. These ratios were assigned four different groups. Group 1 was considered optimal and defined as a sleeve on UGI that had no retained fundus. Group 2 were sleeves where accurate measurements could not be made. Group 3 was labeled mild retained fundus and defined as a fundus measuring 100-200% of the sleeve diameter. Finally, group 4 was defined as severe retained fundus, where the fundus measured greater than 200% the sleeve diameter. Excess weight loss (EWL) at 1 year was then compared amongst the different groups.

Results: There was no significant statistical difference in EWL between the optimal group and the group of both mild and severe retained fundus (p=0.22). The weight loss remained equivalent even when comparing the optimal sleeves with only those with severe retained fundus (p=0.19). There was a statistically significant difference in quality of LSGs on UGI
with surgical experience showing less retained fundus on the UGs (p=0.006) in the latter half of the series.

**Conclusions:** UGI is not a predictor of success of LSG as defined by weight loss at one year. "Retained fundus" may not be a predictor for poor weight loss in the short term.

**T-P-3638**

**Laparoscopic Sleeve Gastrectomy is Effective in the Long-Term Resolution or Improvement of Co-Morbidities in Morbidly Obese Patients**


**Background:** Laparoscopic sleeve gastrectomy (LSG) is an effective procedure to treat morbid obesity; however, the effects on co-morbidities may not be as clear. We report our experience with LSG and improvement or resolution of co-morbidities.

**Methods:** We retrospectively reviewed 435 consecutive patients who underwent LSG at our institution from January 2004 to November 2013. Patient demographics, body mass index (BMI), co-morbidities, surgical results, postoperative weights, and co-morbidity resolution rates were recorded and compared. Co-morbidities investigated included diabetes mellitus (DM), hypertension (HTN), and hyperlipidemia (HL).

**Results:** The mean ±SD age of our cohort was 44±13.3 years. Approximately 70% were female and 24% were white. The median BMI was 48.3 kg/m² (range: 31.0-95.1). Approximately 74% of patients had American Society of Anesthesiology (ASA) scores >2. Incidence of DM was 30% preoperatively and 22% postoperatively (p<0.0001). In patients who continued to have these co-morbidities, the mean number of medications for DM (0.5±0.7 v. 1.2±0.7, respectively; p<0.0001), HTN (1.2±1.2 v. 1.8±1.1, respectively; p<0.0001), and HL (0.6±0.6 v. 0.9±0.7, respectively; p<0.0001) postoperatively were significantly less. Mean total weight loss at 3, 6, 9, 12, 18, 24, 36, 48, 60, and 72 months were -27.4%, -23.6%, -27.2%, -29.9%, -29.9%, -29.5%, -25.2%, -26.7%, -25.4%, and -24.3%, respectively. Linear regression analysis demonstrated no correlation between Hemoglobin A1c levels and time following LSG (p=0.22). Mean follow-up was 26±25 months (range: 1-112).

**Conclusions:** LSG is an effective procedure to treat morbid obesity. Moreover, it is effective in resolving DM, HTN, and HL. In patients who do not have resolution of these co-morbidities, LSG can lead to a reduction in polypharmacy.

**T-P-3639**

**Low Weight Loss Self-Efficacy and Childhood Dieting May Predict Weight Regain Following Bariatric Surgery**


**Background:** Bariatric surgery is the most effective treatment for severe obesity, however long-term weight regain remains a concern. This pilot study aimed to assess factors related to long-term significant weight regain in adults following bariatric surgery.

**Methods:** 86 patients who underwent primary bariatric surgery with ≥5 years of follow up data were included in this study. Prospective data on patient characteristics, preoperative eating, lifestyle and psychological factors, and postoperative outcomes were evaluated, as well as postoperative questionnaire data on eating and lifestyle behaviors, self-efficacy and hunger. Patients who experienced significant weight regain (≥30% of lost weight; n=25) were compared to those who did not (n=61).

**Results:** Age, sex, pre-op BMI and comorbidities, surgical procedure, and greatest %EWL achieved were similar between groups. Regain patients reported a younger age at which they began dieting (14.4 ± 3.2 vs 18.9 ± 7.9 yrs, p<0.03) and lower confidence that they could lose and maintain weight after surgery (8.6±1.4 vs 9.4±0.9, 10 pt scale, p=0.01) at the time of prep intake. Other psychological, eating and lifestyle behaviors were similar between regain groups. Post-op questionnaire revealed that confidence to maintain weight loss reduced to 3.8 ±2.3 vs 7.1±2.6 (<0.0001) in regain vs non-regain patients. Statistical findings showed that regain patients reported more frequent dining out and snacking, and feeling hungrier, consuming a greater amount of food, and making poorer food choices than non-regain patients.

**Conclusions:** Significant regain after bariatric surgery is associated with similar eating and lifestyle behaviors as regain after medical management. However patients who report a lack of confidence in their ability to achieve and maintain weight loss before surgery, or who have been dieting since childhood, may be at greater risk of long-term regain. These findings have implications for tailored counseling to reduce the risk of regain after bariatric surgery.

**T-P-3640**

**Lower Fat Mass Contributes to Greater Cardiorespiratory Fitness 10 Years After Gastric Bypass Surgery**

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**Background:** It is not known if the cardiorespiratory fitness (CRF) benefits observed in the first few years after weight loss surgery are maintained over the long term compared to severely obese controls. The aim of this study was to determine whether or not CRF measured before and 10 years following gastric bypass (GBP) surgery differed between GBP and severely obese, non-GBP patients, and whether differences in fat mass between groups at 10 years contribute to improved CRF.

**Methods:** As a subset of a long-term prospective GBP study, three groups of participants: (patients seeking GBP but did not have surgery, n=39, and severely obese controls not seeking GBP, n=53, all combined as controls (CNTL); and post-GBP patients (SURG), n=85) underwent exercise treadmill tests (80% predicted maximal heart rate) at baseline and 10 years follow-up. Linear regression was used to compare treadmill time (TT) between groups after 10 years of follow-up. Data were adjusted for baseline TT, pre-GBP weight, gender and age. Fat mass was determined by bio-electrical impedance and used as a covariate to determine the influence of excess adipose tissue on 10-year TT.

**Results:** There were no significant differences in TT at baseline between groups. SURG had a significantly greater TT (+57.7 seconds) at 10 years compared to CNTL (p=0.003). SURG also had significantly less fat mass (-12kg; p<0.0001). Adding fat mass to the model rendered the group variable insignificant (p=0.41) in the prediction of TT.

**Conclusions:** GBP surgery improves CRF out to 10 years post-GBP. This sustained improvement in CRF appears to be related to maintenance of reduced post-surgical fat mass.
T-P.3641
Patients with Food Aversion Post-Weight Loss Surgery: Hard to Spot, Difficult to Treat
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Background: While it is not uncommon for patients seeking weight loss surgery (WLS) to have maladaptive eating behaviors and nutritional deficiencies, these concerns are usually addressed by the multidisciplinary treatment team and are an area of focus in preparing patients for surgery. In a small number of cases, and likely under-reported, patients develop disordered eating post-surgery characterized by food aversion and extreme fear of weight regain. These patients require a high degree of healthcare utilization (re-admissions, nutrition support and close follow-up for malnutrition).

Methods: Four patients from the Medical University of South Carolina Bariatric Surgery Program were selected for case series analysis based on development of food aversion, malnutrition, and high level of healthcare utilization. Pre-WLS medical, nutritional and psychosocial data was reviewed (medical co-morbidities, laboratory results, and psychological test results). Post-WLS healthcare utilization, labwork, and nutritional progression were reviewed.

Results: Patients in this case series presented well during their pre-WLS psychosocial evaluation. They developed food aversion during the rapid weight loss period (first 6 mo) along with high healthcare utilization compared to usual care. This is consistent with models of anorexia nervosa that develop after restricting eating and achieving significant weight loss.

Conclusions: This review of cases suggests that it is difficult to predict which patients will develop food aversion post-surgery due to both low base rates and lack of distinctive characteristics pre-WLS. Regardless of predictive ability, it is critical that all members of the team communicate to intervene for these patients who are difficult to treat and require intensive healthcare resources. Future research may focus efforts on early detection post-bariatric surgery in order to mitigate complications.

T-P.3642
Perceived Facilitators and Barriers To Healthy Eating, Physical Activity and Weight Loss in Adolescents Following Sleeve Gastrectomy
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Background: Sleeve gastrectomy (SG) is utilized as a treatment for severe obesity with increasing frequency. Little is known about patient perceptions of outcomes following surgery and facilitators/barriers to achieving desired weight loss.

Methods: The current study employed a survey of 10 surgery patients prior to and following SG (90% female; 50% African American, 30% Hispanic, 20% Caucasian; Mean age = 18.2, SD=2.0; range 9-40 months post-surgery) on perceived facilitators/barriers to lifestyle change and weight loss following surgery, loss of control eating (Eating Disorder Diagnostic Scale), body esteem (Body Esteem Scale for Adolescents and Adults), and quality of life (Impact of Weight on Quality of Life – Kids).

Results: Half of the respondents noted they had not lost as much weight as they hoped following surgery and 40% reported significant concern they would be unable to maintain weight loss. The most commonly noted facilitator for healthy eating following surgery was feeling full faster (80%) and for physical activity exercising with someone (78%). The most commonly noted barrier for healthy eating was emotional eating (67%) and for physical activity a lack of energy (63%). One participant reported a remission of loss of control eating and 2 reported new onset loss of control eating since surgery.

Conclusions: Half of the respondents noted they had not lost as much weight as they hoped following surgery and 40% reported significant concern they would be unable to maintain weight loss. The most commonly noted facilitator for healthy eating following surgery was feeling full faster (80%) and for physical activity exercising with someone (78%). The most commonly noted barrier for healthy eating was emotional eating (67%) and for physical activity a lack of energy (63%). One participant reported a remission of loss of control eating and 2 reported new onset loss of control eating since surgery.

T-P.3643
Post-Operative Behavioral Variables and Weight Change 3-Years After Bariatric Surgery

Background: Bariatric surgery in severely obese individuals usually results in significant weight loss. However the magnitude of the weight loss can vary substantially. Post-operative predictors of the amount of eventual weight loss have not been adequately examined.

Methods: Participants were adults undergoing first time bariatric operations at one of 10 U.S. hospitals in six geographically diverse areas who were enrolled in the Longitudinal Assessment of Bariatric Surgery (LABS) Study, a multicenter observational cohort study. Participants completed detailed surveys regarding eating and weight control behaviors prior to surgery and then annually for 3 years.

Results: The sample included 1,513 participants who underwent Roux-en-Y gastric bypass (RYGB) and 509 participants who underwent laparoscopic adjustable gastric banding (LAGB). Those who adopted healthier behaviors following surgery such as weekly self-weighing, counting fat grams, and cessation of between meal snacking, experienced significantly greater weight loss than those who did not adopt healthier behaviors, or those who reported always engaging in these behaviors. Multiple behavior change was associated with greater weight loss. Among participants undergoing RYGB surgery, those who started to self-weigh, stopped eating when full and stopped eating continuously during the day averaged 14% more weight loss than those who did not make these positive changes and 6% greater weight loss than those who had always engaged in these healthy behaviors.

Conclusions: Structured programs to modify problematic eating behaviors and eating patterns after bariatric surgery for severely obese individuals could be of substantial importance in improving weight outcomes.

T-P.3644
Primary Inadequate Weight Loss Following Roux-en-Y Gastric Bypass: Do Psychosocial Factors Predict Poor Outcomes?
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Background: A minority of bariatric surgery patients have poor outcomes including never achieving expected weight loss. A better understanding of factors that may predict poor outcomes is needed.

Methods: Patients (N=2420) who underwent Roux-en-Y gastric bypass (RYGB) weight loss surgery at an academic medical center were examined. Primary inadequate weight loss (PIWL) was defined as total body weight loss less than 15% at 12 months post-op. Those with poorer outcomes were compared to all RYGB patients on demographics, psychopathology variables assessed during the initial semi-structured psychological evaluation, the Binge Eating Scale (BES) and clinician ratings on the Cleveland Clinic Behavioral Rating Scale (CCBRS).

Results: 105 (4.3%) of patients were identified as having PIWL. These patients didn’t significantly differ from the larger sample on gender, age, ethnicity, or baseline BMI. PIWL patients were significantly more likely to have a history of alcohol abuse/dependence (20.7% vs. 14.4%; p<.001). A trend was noted for PIWL patients being more likely to have had an inpatient psychiatric hospitalization (13.6% vs. 7.5%; p=0.07) and a past suicide attempt (13.6% vs. 7.3%; p=0.06). Patients with PIWL scored significantly higher on the BES (16.08 vs. 13.64; p<.04) but were not significantly different on any of the domains of the CCBRS; although a trend was noted for poorer ratings on stress and coping (3.04 vs. 3.24; p=0.06).

Conclusions: Psychological variables may be partially helpful in identifying patients likely to have PIWL. Future studies should evaluate the benefit of more sensitive psychological testing or early post-operative psychological risk factors.

T-P-3645 Psychiatric Profiles in Bariatric Surgery Candidates: Exploring the Clinical Configurations of the Millon Behavioral Medicine Diagnostic

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Background: The Millon Behavioral Medicine Diagnostic (MBMD) remains one of the most frequently utilized psychometric tests for use in evaluating bariatric surgery candidates—with 25-30% of psychologists endorsing use of the MBMD despite potential limitations regarding reliability. Given its popularity but lack of empirical data regarding validated profile configurations, our objective was to use the MBMD psychiatric indications subscales (which have been deemed reliable and clinically relevant) to identify psychiatric profiles which may be useful in making predictive judgments regarding patients’ surgical success.

Methods: Participants were 370 bariatric surgical candidates (46.5±12.7 years, 78% female, 20% non-white, BMI: 41.0±7.8 kg/m2) who completed the MBMD as part of a full pre-surgical evaluation. The Psychiatric Indications scaled scores from the MBMD were used to identify clusters via agglomerative hierarchical cluster analysis. ANOVAs and chi-squares were used to compare groups on demographic and psychological function indicators.

Results: A 3-cluster solution emerged after dendogram and cluster statistics evaluation. Cluster 1 reported minimal psychiatric symptoms (n=120). Cluster 2 reported high global psychiatric distress (n=117). Cluster 3 reported potentially-minimized psychiatric distress with higher levels of guardedness (n=133). Profiles differed across anxiety, depression, cognitive dysfunction, emotional lability, BMI, and education levels but did not differ in age, gender, or ethnicity.

Conclusions: Three psychiatric profiles emerged: minimal symptoms, high global distress, and potentially-minimized symptoms. Certain profiles may yield poorer surgical outcomes, a possibility which will be explored in our future analyses of post-operative outcomes.
program by asthma status.

**Methods:** We conducted a cross-sectional study of 171 adolescents (mean age 16 years, mean BMI 51 kg/m², 82% female, 40% Black, 9% Hispanic) enrolled in a bariatric program from 2007 to 2015. A diagnosis of asthma was assigned by a physician based on self-reported history of asthma and either recent use of an anti-asthma medication or recent asthma symptoms. Multivariable linear and logistic regression analyses were used to determine the association between an assigned diagnosis of asthma and impairments on spirometry and polysomnogram.

**Results:** Twenty-seven percent of patients were assigned the diagnosis of asthma. Patients assigned a diagnosis of asthma had lower FEV1% predicted (mean 91% vs. 100%, p<0.01), FEV1/FVC (mean 0.81 vs. 0.84, p<0.05), and FEF 25-75% predicted (mean 75% vs. 91%, p<0.001). Both an assigned diagnosis of asthma (p<0.05) and increasing BMI (p<0.01) were independently associated with reduced FEV1/FVC. There was a trend towards increased hypoventilation among patients assigned a diagnosis of asthma (mean peak etCO2 55 mmHg vs. 52 mmHg, p=0.08).

**Conclusions:** Patients assigned a diagnosis of asthma based on clinical history did demonstrate impaired airflow obstruction on spirometry, with increasing BMI compounded this effect. Ensuring proper management of asthma is important to optimizing pulmonary function prior to bariatric surgery.

**T-P-3649**

**Risk of Post-Bariatric Surgery Hypoglycemia In Nondiabetic Individuals: A Single Center Experience from the Geisinger Medical Center**

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**Background:** Hypoglycemia after bariatric surgery is an increasingly recognized metabolic complication. The epidemiology of post-bariatric surgery hypoglycemia (PBSH) is incompletely understood.

**Methods:** We conducted a cohort study of patients who underwent Roux-en-Y gastric bypass (RYGB) or vertical sleeve gastrectomy (VSG) at Geisinger Medical Center from 2004 to 2013. We included only individuals without diabetes, as defined by no diabetes medications or diagnosis and hemoglobin A1C<6.5% or fasting glucose ≤125 mg/dl. PBSH was defined by any post-operative record of glucose~60 mg/dl, outpatient or inpatient diagnosis of hypoglycemia, or any hospitalization or emergency room visit due to confusion, syncope or seizure, without a clear other cause. We used Kaplan-Meier method to describe the occurrence of PBSH and Log-rank tests to examine associated factors.

**Results:** Of the 1282 patients who were nondiabetic and eligible for this analysis, 86% female with mean age of 43.7 years, mean pre-operative BMI of 48.6 kg/m², median follow up of 4.2 years and 96% underwent RYGB. Of these 1282 patients, 217 had incident PBSH. The cumulative incidence of hypoglycemia at 1 and 5 years post bariatric surgery was 3.8% and 16.9% respectively. PBSH incidence was associated with lower BMI (p<0.040), lower hemoglobin A1C (p<0.0018) and a greater 6-month post-operative weight loss (p<0.0018) and not associated with age, sex or surgery type.

**Conclusions:** We found that between 3.8 to 16.9% of nondiabetic individuals who underwent bariatric surgery have PBSH. A lower BMI, lower hemoglobin A1C conferred an increased risk for PBSH, suggesting an association between intact presurgical insulin sensitivity with PBSH.

**T-P-3659**

**Role of Sleeve Gastrectomy in Long-term Diabetes Control – Review of 381 Patients**

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**Background:** Clinical data on the role of sleeve gastrectomy (SG) as a metabolic intervention for the control of diabetes mellitus (DM) is still limited. This literature review aims to provide an update on the long-term (5 years) effectiveness of SG in DM control.

**Methods:** A PubMed literature search using the terms: 5-year AND Sleeve AND Gastrectomy was performed and all papers written in English with 5 years follow-up data post-SG and also, with that of DM were selected for analysis.

**Results:** 381 patients (mean age: 43.7) were identified across 11 studies including 2 clinical trials. The female:male ratio was 2.1. Patients have been suffering from diabetes for up to 32 years pre-operatively. The baseline BMI and HbA1C% was 35.8 and 8.25% respectively. Only 34.6% had optimal glycaemic control, defined as HbA1C <7%. 34.5% were insulin dependent and the mean fasting C-peptide level (ng/ml) was 3.3. Post-operatively, many were lost to follow-up (year 5: 38.5% lost). Successful follow-up rates were 96.1% (year 1), 87.4% (year 2), 79.7% (year 3), 70.7% (year 4) and 61.5% (year 5). Initial 4 years annual DM remission rates were 61.7% (year 1), 66.7% (year 2), 72.2% (year 3) and 68.0% (year 4). At year 5, 22.4% reduction in HbA1C% (mean year 5 HbA1C%: 6.4) with DM remission rate of 83.7% was achieved. Optimal glycaemic control was also achieved in 84.2% of the patients. Complete DM remission was seen in 54.2% by year 5 and partial remission in 21.2%. Insulin therapy was no longer required in 82 of 116 patients (71.0%). However, DM recurred in 22.0% with relatively low excess weight loss and longer duration of DM being identified as potential risk factors.

**Conclusions:** SG represents an effective intervention modality against obesity-induced diabetes with satisfactory long-term outcome. However, the recurrence rate remains high. Clinical vigilance is required and further studies focusing on the recurred DM are required.

**T-P-3650**

**Roux-en-y Gastric Bypass Reversal: A 7-Year Experience**

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**Background:** After Roux-en-Y gastric bypass (RYGB) some patients develop conditions that ultimately require reversal of the bypass (GBPRev). There are currently few publications on the topic. We describe the indications, techniques, and outcomes for GBPRev at a major university bariatric program.

**Methods:** We conducted a retrospective chart review of all patients who underwent GBPRev at our institution between 2008 and 2015. Information regarding the original operation, indication for reversal, the procedure performed, and outcomes were collected and analyzed.

**Results:** Fifteen patients underwent GBPRev. All but one was laparoscopic. The indications for reversal were malnutrition/TPN-dependence (5 patients; 33.3%), chronic nausea, vomiting, and abdominal pain (4; 26.7%), neuroglycopenia/refractory hypoglycemia (3, 20%), and persistent marginal ulceration despite maximal medical therapy (3, 20%). One patient (6.7%) was found to have stomach polyps during ERCP and elected reversal to allow for stomach surveillance. In the peri-operative period one patient suffered a PE and required anticoagulation; one patient required a
pyloroplasty for gastric outlet obstruction; and one patient developed an abscess that required IR drainage. One patient’s hypoglycemia did not resolve; one patient remains on supplemental TPN.

Conclusions: Laparoscopic GBPRev is feasible and can be performed safely. The procedure can be employed to treat a variety of conditions that may occur after RYGB and the majority of patients benefit with resolution of symptoms. In carefully selected patient population, GBPRev should be considered if conservative approaches to adverse conditions fail.

T-P-3651

Safety and Efficacy of Sufentanil Sublingual 30 mcg Tablets for the Treatment of Acute Pain Following Bariatric Surgery
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Background: A 30mcg sufentanil tablet (ST30 mcg), dispensed sublingually by a healthcare professional, is in Phase 3 development for treatment of moderate-to-severe pain in medically-supervised settings, such as outpatient surgery centers. Sufentanil appears well-suited for short duration, acute pain management when administered sublingually because it acts rapidly (plasma-CNS equilibration time of 6 minutes), does not require an invasive route of delivery and possesses a predictable off-set, in part due to lack of active metabolites. The primary objective of this study was to compare the efficacy and safety of the ST30 mcg vs placebo for the management of moderate-to-severe acute pain following outpatient abdominal surgery.

Methods: This was a randomized controlled trial of up to 180 adults undergoing surgeries which included bariatric or minimally invasive abdominal surgery. Patients were randomly assigned at a 2:1 ratio to treatment with ST30 mcg or placebo. Efficacy was assessed by patient reports of pain intensity on an 11-point numerical rating scale (0 = no pain, and 10 = worst possible pain), a five-point pain relief scale, time to ‘first perceptible’ analgesia and time to ‘meaningful’ analgesia. Subgroup analysis by BMI and type of bariatric procedure was also performed. Safety was monitored via vital signs, reports of adverse events (AEs) and use of concomitant medications.

Results: The primary efficacy variable, the time-weighted summed pain intensity difference to baseline over the 12-hour study period (SPID12), was compared for the active and placebo arms. Statistically significant differences for SPID-12 were observed in favor of ST30 mcg. Most AEs were mild to moderate in severity and typical of opioid exposure (nausea, vomiting, and pruritus).

Conclusions: The sufentanil sublingual 30 mcg tablet has shown benefit over placebo as a bariatric surgery analgesic modality in medically supervised settings requiring short-term treatment of acute moderate-to-severe pain.

T-P-3652

Satisfaction with Sexual Life Prior to Bariatric Surgery in the Longitudinal Assessment of Bariatric Surgery 2 (LABS-2) Cohort
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Background: The objectives of this study were to describe sexual life in a large sample of males and females with severe obesity prior to weight loss surgery (WLS), and to identify factors associated with sexual life.

Methods: Before WLS, participants of the Longitudinal Assessment of Bariatric Surgery-2 study completed questionnaires, including a sexual life survey that assessed sexual desire, activity, and satisfaction and the impact of physical health on sexual function in the past month. Multivariable ordinal logistic regression models were used to identify factors independently related to sexual life; the adjusted odds of the next higher category (5 point scale) are reported.

Results: The sample (N=2036) was 79% female with a median age and body mass index of 47 years and 46 kg/m², respectively. Twenty-six percent of females and 11% of males reported no sexual desire. One third of females (34%) and a quarter of males (25%) were not sexually active. Thirty-eight percent of females and 72% of males reported that sexual activity was at least moderately limited by physical health, and about half of females (49%) and males (54%) were at least moderately dissatisfied with their sexual life. Among females, white race (OR 0.73, p<0.04), depressive symptoms (OR 0.61, p<0.0001), urinary incontinence (OR 0.70, p<0.01) and menopause (OR 0.92; p<0.01) were associated with lower satisfaction with sexual life, whereas prior live/still birth was related to higher satisfaction (OR 1.27, p<0.04). In males, older age (OR 0.55, p<0.0001), not being married (OR 0.61, p<0.04) and depressive symptoms (0.58, p<0.0001) were associated with lower satisfaction, while regular alcohol use (≥2 times/week) (OR 2.16, p=0.01) was related to higher satisfaction.

Conclusions: Approximately half of men and women with severe obesity report at least moderate dissatisfaction with their sexual life and significant percentages of patients report no sexual desire and a lack of sexual activity in the prior month.

T-P-3653

Single Surgeon Comparison Between Laparoscopic vs Totally Robotic Biliopancreatic Diversion with Duodenal Switch
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Background: Biliopancreatic diversion with duodenal switch (BPD-DS) has long been utilized as a bariatric and metabolic surgical option for morbid obesity. Numerous studies demonstrate the BPD-DS’s application for surgical weight loss and metabolic correction when used appropriately. Traditionally, BPD-DS presents technical challenges that have limited the procedure to laparotomy. Only in the past decade have advanced laparoscopic techniques been applied to the BPD-DS. The most recent improvements in surgical technology have allowed for a robotic-assisted technique to augment the laparoscopic challenges. We present advancement to the present techniques with a novel totally robotic BPD-DS.

Methods: A single surgeon, single institution series of 121 patients was evaluated retrospectively. Laparoscopic and robotic BPD-DS from March 2010 to present day were compared. Essential steps of the procedure were identical with...
the exception of bougie size used in the last 41 robotic cases. 20 patients excluded due to combination surgeries and staged BPD-DS. Several variables were reviewed including average age, body mass index, operative time, estimated blood loss, length of hospital stay, conversion of surgical technique, Clavien-Dindo classification of surgical complications, readmissions, and mortality prior to 90 days. 

Results: A total of 101 patients met the study criteria for BPD-DS, 49 for laparoscopic and 52 for robotic. Preoperative demographics including age, gender, BMI, and ASA showed no statistical difference between groups. The respective comparisons were: mean age 40 vs 41; percent male was 32.7% vs 34.6%; mean BMI was 56.7 vs 58.5; and mean ASA was 3.02 for both groups. The operative parameters were: mean operative time 166.1 minutes for laparoscopic vs 200.7 minutes for robotic (P = <0.01) and mean EBL 49 ml vs 52 mL (P = 0.77), respectively. There were no operative technique conversions in either group. 90 day Clavien-Dindo classification of surgical complications (Grade I-V) and readmission for laparoscopic vs robotic respectively were: major complications (III-V) 9 vs 7, minor complications (grade I-II) 6 vs 13, and readmission 9 vs 5. One death occurred in the laparoscopic group. Long-term data to date shows no statistical difference in postoperative reduction of comorbidities between surgical groups. 

Conclusions: Totally robotic BPD-DS presents a new technique for operative weight reduction and metabolic surgery. We present an alternative to the laparoscopic duodenal switch and advancement from the current robotic assisted methods. From our results, laparoscopic and totally robotic BPD-DS operations were statistically similar with the exception of operative time. Completion of the BPD-DS robotically allows for improved visualization, increased operative dexterity, and the advantage of minimally invasive surgery. Our novel totally robotic BPD-DS demonstrates advancement on a safe and proven option for surgical weight reduction and metabolic correction.

T-P.3654 
Sleeve Gastrectomy - Review of its Long-Term Safety and Efficacy 
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Background: Clinical data on the long-term (5 year) safety and efficacy of sleeve gastrectomy (SG) is still limited. This literature review aims to provide an update. 

Methods: A PubMed literature search using the terms: 5-year AND sleeve AND gastrectomy was performed and all papers written in English were selected. 1540 patients were identified across 16 studies including 2 clinical trials. Majority of the patients were female (73.8%) with mean age of 43.4. 96.2% received SG as primary intervention. Secondary SGs were most commonly performed due to failed gastric banding (93.1%). Most (99.0%) were performed laparoscopically and the staple lines were reinforced in 81.3%, using either sutures (+/- clips (74.5%) or buttressing materials (+/- clips (25.5%). Mean pre-operative BMI and fat mass were 47.1 and 48.4% respectively. 

Results: Mean operation length and hospital stay was 108.8 minutes and 3.6 days respectively. Common early (<30 days) complications were reflux/vomiting (5.8%), bleeding (1.9%), pneumonia (1.2%) and staple line leak (2.3%). The common late (>30 days) complications included reflux (11.0%) and anaemia (4.8%). 2.1% unfortunately had to have reoperations at 30 days primarily due to staple line leaks (86.4%). 6.2% underwent further revision/conversion within 5 years for reasons including poor weight loss/regain (49.4%) and reflux (16.9%). During the follow-up period, newly diagnosed reflux disease occurred in 16.0%. 30.1% BMI and 22.9% fat-mass loss was achieved at year 5. The lowest mean BMI was reached at year 1 (28.6) and 27.3% achieved BMI <30 after 5 years. However, 17.2% have regained weight after 5 years. 78.2% of dyslipidaemia, 77.6% of diabetes and 72.5% of hypertension either resolved or at least improved after 5 years post-operatively. 

Conclusions: Sleeve gastrectomy represents a safe and effective bariatric intervention modality. However, its relatively high revision and weight regain rate must not be overlooked especially when considering the cost effectiveness of the treatment.

T-P.3655 
Sleeve Gastrectomy: Alternative Surgical Technique 
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Background: The sleeve gastrectomy nowadays represents about 54% of bariatric surgeries. world. In Chile the first official communications dating back to the end of 2005. Since its original description, a number of amendments have been introduced in an attempt to improve outcomes and decrease complications. 

Methods: The aim of this paper is to describe the standardized surgical technique in 2500 consecutive patients undergoing sleeve gastrectomy for obesity since January 1, 2006 to March 31, 2015. 

Results: We present a video one of the patients in this universe, Female, 35 years with a BMI of 35. The procedure begins with the surgeon between the legs of the patient and two assistants. Used five trocars. The pneumoperitoneum was performed with the Veress needle in the upper left quadrant abdomen. The surgery as such begins with the skeletonization of the greater curvature of the stomach releasing the omentum to the cardia to up to 5 cm proximal and distal to the pylorus with the use of an advanced electronic device. With the consecutive use of linear stapler, 2 Green loads and then 3 or 4 blue 60 mm loads, a gastric pouch of approximately 100 ml is formed. The rest of the body is exteriorized and sent to histopathological study. Gastric reservoir is sutured reinforced with invaginating continuous seromuscular polydioxanone suture. The cutting line tightness is verified with methylene blue through the nasogastric tube.

Conclusions: This is a safe and reproducible technique , thats has shown great results in the short and mid term follow-up.

T-P.3656 
Staple Line Length and Size of Resected Stomach in Laparoscopic Sleeve Gastrectomy Correlate with Early Post-Operative Weight Loss 
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Background: Few studies have examined the relationship between weight loss and the size of resected stomach specimens after laparoscopic sleeve gastrectomy (LSG). Identification of patient-specific anatomic variances, may define optimal surgical weight loss strategies. 

Methods: A retrospective review of 96 consecutive patients who underwent LSG from January 2013 to April 2014 was performed. A 42-French bougie was used for sizing of the
gastric conduit. The patient’s weight, body mass index (BMI), and percent of excess body weight loss (%EBWL) was collected from their initial, 3 month, 6 month, and 1 year post-op clinic evaluations. Pathologic measurements of their resected gastrectomy specimens were compared to these parameters for correlation.

**Results:** Mean pre-operative BMI was 44.62 (SD=5.24). Gastrectomy maximum length and width measurements were available in 91 specimens and staple line lengths (SLL) in 48. At 3 months, %EBWL had a low positive correlation with specimen length (r=0.175) and width (r=0.088). Three month SLL to %EBWL had the strongest correlation (r=0.287) and approached statistical significance (p=0.06). Diminished correlation was identified at 6 months for all measurements: SLL (r=0.1628), specimen length (r=0.102) and width (0.029) relative to %EBWL. By 1 year, correlation coefficients were < 0.1 for SLL, specimen length and width in comparison to %EBWL. Patient’s pre-operative weight, height, or BMI did not correlate significantly with SLL. Three month %EBWL for patients with SLL >20cm was 37.0%, compared to 31.5% for SLL < 20cm. Interestingly, this difference was maintained at 6 months (51.1% vs 44.6%) and at 1 year (59.5% vs 53.9%).

**Conclusions:** Mechanisms influencing weight loss in LSG are multifactorial. Our data suggests that early post-operative weight loss after LSG correlates with resected stomach size and SLL. Further studies including long-term follow-up and consistent measurements of resected gastric specimens may better elucidate this relationship.

**T-P-3657**

**The efficiency of preoperative EGD in identifying operable hiatal hernia for bariatric surgery patients**

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**Background:** Gastroesophageal reflux (GERD) is a symptom frequently found in obese patients, often related to the presence of a hiatal hernia (HH). It is not uncommon for surgeons to evaluate for it on upper endoscopy while planning bariatric surgery as it may change or add to the operation performed. However, preop endoscopic presence or absence of a significant HH does not always correlate with intraop findings. The rate at which this discrepancy occurs is not clear. Our goal was to compare the rate of detection of significant HH between clinical, endoscopic, and intraop methods.

**Methods:** A retrospective chart review was performed of all consecutive patients who had undergone a primary bariatric procedure (sleeve gastrectomy (VSG), gastric bypass (GBP), or biliopancreatic diversion/dioubenal switch (BPDDS)) with preop endoscopy in a single institution between 2009 and 2013. Data points included 1) the diagnosis of GERD or heartburn +/- use of proton pump inhibitor (PPI) or H2 blocker from history, 2) the diagnosis of HH from preop EGD, and 3) the diagnosis of HH intraop that required repair. Sensitivity, specificity, and accuracy of detecting repairable hiatal hernias were calculated for both preop clinical indicators and preop EGD findings.

**Results:** 1569 patients were included in the study. 862 had GERD or other symptoms, and 359 were on PPIs. 482 (31%) of all patients had a finding of HH on EGD; 369 small, 90 moderate, and 23 large. Of these, repairs were done on 128 (35%), 59 (66%), and 16 (70%), respectively. A total of 260 (16%) HHR were performed. The sensitivity of clinical indicators (GERD+/+PPI) of 59% (P 0.146) was lower than the sensitivity of EGD findings at 78% (P 0.0000). Specificity was 46% and 72%, respectively.

**Conclusions:** EGD is more sensitive than clinical indicators in the diagnosis of significant HH that eventually requires repair. Small HH are over diagnosed with EGD as most do not require repair; moderate and large HH are more accurately detected.

**T-P-3658**

**The Safety and Benefits of Bariatric Surgery in the Elderly Population: a Retrospective Study in the Metabolic and Bariatric Center in Qatar**

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**Background:** Morbid obesity is a major health problem in Qatar that is affecting all age groups. The life expectancy in Qatar is increasing, therefore morbid obesity and its co-morbidities are becoming an important health issue among the elderly population. The aim of this study is to describe the outcomes and the safety of bariatric surgeries in morbidly obese patients over 60 years of age.

**Methods:** This study is a retrospective observational study that includes 28 patients over the age of 60 years, who underwent bariatric surgeries between 2011-2014 in our institution.

**Results:** A total of 28 patients were reviewed. Mortality was 0%. Morbidity was 3.5% (one patient developed a leak). Average length of hospital stay was 4 days (SD= 1.1 days), Excessive weight loss was 51.96% (25.6-71.6%, SD= 10.25). 18 patients complained of DM (64%): complete resolution of symptoms was seen in 44.4% of them. 20 patients (71%) were suffering from HTN; complete resolution was seen in 35% of them. 80% of the patients with obstructive sleep apnea improved and stopped using CPAP; and 66.6% of the patients complaining of GERD had relief of symptoms.

**Conclusions:** Bariatric surgery is generally safe in the elderly population and has a positive impact on obesity related diseases with an acceptable risk profile.

**T-P-3659**

**Totally Robotic Roux-en-Y Gastric Bypass as a Weight Loss Procedure for Older Bariatric Patients**

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**Background:** The rising prevalence of severe obesity among the older population has increased the number of elderly individuals electing to have bariatric surgery. Studies find that older bariatric patients have more health issues and are at increased risk for surgical complications, mortality, and failed weight loss success. The robotic surgical system may reduce complications for high-risk patients, including the elderly. In this study, we examine the safety and effectiveness of totally robotic Roux-en-Y gastric bypass (TR-RYGB) for older patients (>=60 years).

**Methods:** The study population included 1234 consecutive TR-RYGB patients from a single surgeon practice. Of these, 312 (25.3%) were >=60y and 922 (74.7%) were <60y. Postoperative measurements included: intraoperative complication and conversion rates, in-hospital complications/re-operations, 30-day readmissions, reoperations, mortality, and % change in BMI (6, 12, 24, 36 months).

**Results:** With TR-RYGB, intraoperative complication (0.32%) and conversion (0.16%) rates for all patients were low and did not differ significantly with regard to age. In-hospital complication and reoperation rates also did not significantly differ between the older and younger patients. Thirty-day readmission rates were less for the older vs. younger patients.
Conclusions: Totally robotic RYGB is a safe and efficacious procedure for patients >=60y.

T-P-3660
Trends in Bariatric Surgery: The Rise of the Gastric Sleeve
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Background: To analyze the trend of utilization of common bariatric operations and their short term outcomes in the Nationwide Inpatient Sample (NIS)

Methods: We used ICD-9 codes to extract data for six common bariatric surgical procedures from the NIS database from 2008 to 2012. United States census data of 2010 was used to calculate national population based rates of bariatric procedures for each year and secular trends in the types of procedures, demographics, comorbid conditions, in-hospital complications, length of stay and total charges were examined. IBM’s SPSS version 21 was used for statistical analyses.

Results: Annual rate of bariatric procedures has declined from 61 to 57 per 100,000 adult population. Laparoscopic Gastric Bypass (LGB) remained the most common procedure with a slight downward trend from 52.5% to 45.7% (OR 0.92, CI 0.91-0.92, P<0.001); Laparoscopic Sleeve Gastrectomy (LSG) showed the highest increase in incidence from 7.2% in 2011 to 36% in 2012 (OR 10.0, CI 9.54-10.48, P<0.001). No clinically significant differences in age (46.7±13.4 to 46.2±13.5 P<0.001) and gender (76.7% to 75.7% females, P<0.05) were observed. Venous thromboembolism, renal complications and early reoperation decreased (P<0.01). Respiratory complications, visceral injury and complicating hemorrhage increased (P<0.01). Infections remained stable (P<0.05). Composite in-hospital morbidity decreased from 12.0% to 10.1% (OR 0.96, CI 0.94-0.97, P<0.001) In-hospital mortality decreased from 0.9% to 0.6% (P<0.001, OR 0.92, CI 0.88-0.96). Length of stay decreased (P<0.001, Effect size<0.02) and total charge increased (P<0.001, Effect size<0.02).

Conclusions: LSG is becoming the most popular procedure in bariatrics. Length of stay, morbidity and mortality have decreased.

T-P-3661
Vertical Sleeve Gastrectomy vs. Roux-en-Y Gastric Bypass: Comparing the Impact of Two Leading Bariatric Procedures on Medical Costs & Utilization in a National Claims Dataset
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Background: Roux-en-Y Gastric Bypass (RYGB) is considered the gold standard surgical treatment for obesity, but Vertical Sleeve Gastrectomy (VSG) is becoming a procedure of choice in the U.S. Few studies have compared the effects of the 2 procedures on health care utilization and costs.

Methods: We conducted a retrospective interrupted time series with comparison series study using a national claims dataset. We identified patients age 18-64 who underwent a VSG or laparoscopic RYGB between 2005-2011, and propensity score matched 1108 VSG to 4196 RYGB subjects according to age, group, sex, race, socioeconomic variables, comorbidities, and baseline costs, emergency department (ED) visits and hospital days. Outcome measures were changes in ED visits, hospital days, prescription drug costs and total health care costs. We used multivariable segmented regression to compare pre-to-post changes in level and trend of these measures in VSG versus RYGB, and difference-in-differences analysis to estimate the magnitude of difference by year.

Results: The two groups were well-matched on baseline characteristics. Of 5304 subjects: 77% were female and 68% were non-Hispanic White. Mean (SD) age was 44 (9.9) years; 28% had diabetes and 65% had hypertension. Median post-op follow-up was 2.1 years. VSG subjects had 44.7% [95%CI: -33% , -57%] fewer ED visits in post-op year 1, and 69% [-59% , -79%] fewer in year 2, compared to RYGB. There were no significant differences in other outcomes.

Conclusions: In a nationwide study, VSG subjects experienced lower post-op ED visits, prescription and total healthcare costs relative to RYGB subjects. More research is needed to explore these differences and examine their durability.

T-P-3662
African ancestry is associated with lower systemic F2-isoprostane levels
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Background: Previously we demonstrated that elevated urinary F2-isoprostane (F2-isoP) levels present a favorable metabolic trait by predicting lower risks of weight gain and type 2 diabetes. African Americans (AAs) have lower urinary F2-ISO-Ps as compared to Whites. We hypothesize that low F2-ISO-P levels present an unfavorable metabolic trait that is prevalent among individuals of African ancestry. To test the hypothesized link between continent of ancestry ("race") and systemic F2-ISO-Ps we compared these biomarkers among three groups: Whites, US-born AAs, and West African - immigrants (WAI).

Methods: We used the data from the Study on Race, Stress and Hypertension (SRSH) that included individuals aged 25-74 years who self-identified as Non-Hispanic Whites (NHW), AAs or WAI and who were residents of Georgia. Data on plasma F2-ISO-Ps were available for 218 participants, among them 79 WAI, 56 AA, and 83 NHWs. Plasma F2-ISO-Ps were measured by GS/MS.

Results: Plasma F2-ISO-Ps levels in these three groups were lowest among WAI (33.8 pg/ml), a group with an a priori greatest proportion of African ancestry, followed by AAs (51.1 pg/ml), and NHWs (80.1 pg/ml), the group that a priori has the lowest proportion of African ancestry: p-values <0.05. Regression analysis confirmed that age and gender adjusted F2-ISO-P levels were lower among WAI and AAs as compared to NHWs with the lowest levels being among WAI: adjusted regression coefficients were -0.75 (p<0.0001) and -0.41 (p<0.0001) for WAI and AAs, respectively.

Conclusions: We conclude that African ancestry is associated with a lower systemic levels of F2-ISO-Ps. Taking into account previous observations that lower F2-ISO-P levels predict greater risks of weight gain and type 2 diabetes, low F2-ISO-Ps may
reflected metabolic predisposition to obesity and type 2 diabetes in individuals of African ancestry.

**T-P-3663**

**Arsenic Exposure is Associated with Dysglycemia and Cardiometabolic Dysfunction in Non-Diabetic Adults**

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**Background:** It is hypothesized that arsenic (As) exposure may adversely affect cardiometabolic function and lead to diabetes and related complications, but epidemiological evidence is mixed. Laboratory experiments suggest mechanisms that may involve impaired insulin secretion rather than increased insulin resistance, as well as increased inflammation and impaired liver function, but studies exploring these pathways are lacking in humans. Experimental evidence that As may reduce weight gain make it uncertain whether adverse effects may vary depending on weight status.

**Methods:** We used toenail As concentrations in >5,700 adults aged 18-75 in the 2009 China Health and Nutrition Survey to examine associations between this exposure and markers of impaired insulin secretion (HOMA-β), insulin resistance (HOMA-IR), C-reactive protein (CRP; mg/L), and alanine aminotransferase (ALT; UL/L). Multivariable linear regression was used to analyze associations between increasing tertiles of toenail As and each of the cardiometabolic markers adjusting for age, gender, BMI, elevated waist circumference, (community city, suburb, town, village), income, education, smoking status, and alcohol consumption.

**Results:** Toenail As was associated with impaired insulin secretion (β; 95%CI for highest vs. lowest tertile: -14.75%; -22.61, -6.90) and increases in mean CRP (0.35; 0.15, 0.55), ALT (0.91; -0.12, 1.94) and triglycerides (7.5; 1.1, 14.0), but not with HOMA-IR (-0.04; -0.19, 0.10). Toenail As was also associated with increased mean fasting glucose 1.37 (0.63, 2.12) mg/dL. The magnitude of associations was stronger in overweight than normal weight subjects (interaction P=0.10 for HOMA-β, ALT, triglycerides).

**Conclusions:** Results support adverse effects of As exposure on insulin secretion, systemic inflammation and impaired liver function, particularly among overweight subjects. Widespread exposure to this contaminant may contribute to cardiometabolic risk in China.

**T-P-3664**

**Brachial PWV and Peripheral Endothelial Function with Cardiometabolic Risks in Chinese Pediatric Population**

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**Background:** To propose the percentile curves of brachial aterial pulse wave velocity (BaPWV ) and peripheral endothelial function (EF) by age and/or height, and observe associations with cardiometabolic risks in Chinese pediatric population.

**Methods:** 452 normal-weight and 94 overweight/obese students aged 7-18 years were recruited after obtaining written inform censent from parents. Anthropometrics, blood pressure (BP), and fasting plasma glucose, lipids, insulin were examined. BaPWV and EF were examined using OMRON BP-203RPE I and Endo. PAT2000 by trained investigator, respectively. LMS method and GAMLLSS method were performed for fitting BaPWV and EF respectively to obtain centile curves for age and height percentiles among 452 normal-weight students. Associations between normalized BaPWV and EF with obesity and cardiometabolic risk factors.

**Results:** BaPWV or EF did not differ between genders. RHI in children correlated with both age and height, however only age effect was observed on BaPWV. Medians of BaPWV ranged from 8.5 to 9.5 m/s for age of 7-17 years, the 95th percentiles ranged from 10.7 to 12.1 m/s. The centile curves between 7 to 15 years were in “U” shape and remained increasing till 17 years old. The median of EF almost linearly increased with age from 1.23 to 1.79 ml/mm Hgx100, reaching adult cutoff point at age of 14. The 5th percentiles ranged from 0.77 to 1.07ml/mm Hgx100. Normalized BaPWV (Z-score) differed between obese and non-obese subjects, with or without hypertension, and correlated with HOMA IR(r=0.21, P=0.004). Z_RHI was not associated with obesity, HOMA_IR or impaired fasting glucose.

**Conclusions:** BaPWV and EF show different growth trend from 7 to 17 years old. BaPWV shows non-linear trend with age between 7-14 years, EF grows almost linearly with age. Elevation of peripheral arterial stiffness is more sensitive to becoming obesity and insulin resistance index than EF does in Chinese pediatric population.
T-P.3666-DT
Concordance of Hemoglobin A1c Among Children, Parents, and Grandparents in Chinese Households
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Background: Parental obesity has been shown to be positively associated with obesity of their offspring. While obesity is a strong risk factor for diabetes risk, little is known about concordance of diabetes risk across generations and how diabetes risk differs in concordance by degree of relatedness.

Methods: In 796 children (aged 7-18 years) who participated in the 2009 China Health and Nutrition Survey, we measured every household member’s hemoglobin A1c (HbA1c) using fasting blood. We used multivariable random-effects linear regression models to examine the association between children’s HbA1c with that of their parents’ and grandparents’ (separately), controlling for sociodemographics, diet, and physical activity. Models were stratified by gender and age groups (7-12y, 12-18y).

Results: Mean HbA1c was 5.30 (SD=0.52) mmol/L among children. We observed overall positive association between HbA1c among children and their parents, with particularly strong child-mother associations for 7-12y boys (β: 0.83; 95% CI: 0.52, 1.10) and girls (β: 0.26, 95% CI: 0.06, 0.46). Child-parent association in diabetes risk was weaker but statistically significant among 12-18y children. Grandchild-grandparent associations were mostly weak and not statistically significant.

Conclusions: Overall, children’s HbA1c was positively associated with their parent’s HbA1c, with stronger associations at younger ages. Our findings could have implications for household-based efforts to reduce risk of childhood diabetes.

T-P.3667
Effects of Weight Cycling on Blood Pressure Load in Obese Middle Age Woman
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Background: BACKGROUND: Approximately 80-95% of those who lose weight are NOT able to sustain it. Nevertheless, greater than 44% of adult woman are dieting at any given time, relapsing into a pattern of weight loss and regain sequences termed weight cycling (WC). WC is associated with increased blood pressure (BP), cardiovascular disease (CVD) and early death. Ambulatory BP (ABP) is superior to resting BP measurements for estimating CVD risk and it allows for assessing BP load (% of readings >140/90 mmHg during daytime hours) which is a strong predictor of cardiovascular complications. The effect of WC on ABP or BP load is unknown. PURPOSE: To examine the effects of self-reported history of WC on ABP and BP load.

Methods: METHODS: This is a cross-sectional observation of cardiovascular risk factors in middle aged and overweight/obese women who completed the Weight and Lifestyle Inventory (WALI). The WALI has been shown to be reliable for number of cycles (times subjects lost >10 lbs) and the total pounds lost (r=.87, P<0.001). 33 women were classified either as weight cyclers (N = 19; WC: ≥ 4 WC of ≥10lb) or non-weight cyclers (N = 14; NWC: <4 WC of ≥10lb). Dependent variables were daytime systolic and diastolic ABP (Oscor 2, SunTech) & BP load. Univariate general linear models were used to compare means between groups while adjusting for confounders (age, fat %). Chi Square was used to assess number of times BP read >140/90 mmHg.

Results: RESULTS: WC were older and had greater % fat than NWC (WC: age= 39±8 yr, 46% fat vs. NWC: age= 36 ±10 yr, 41% fat). After adjusting for age, WC had higher ABP (129±18 / 76±13 mmHg vs.125±16 / 73±12) and BP load (26% vs 15%>140mmHg & 15% vs 9%>90mmHg P<0.001) compared to NWC. After adjusting for fat%, BP load was still higher (P<0.01) in WC.

Conclusions: CONCLUSION: Woman who weight cycle have increased BP load and are at significantly higher risk of developing CVD independent of body fatness.

T-P.3668
Elevation of Arterial Elasticity Occurred Earlier Than Impaired Endothelial Function in Obese Children and Adolescents
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Background: Increased arterial stiffness and endothelial dysfunction are recognized as primum movens in the development of atherosclerosis and track into adult life increasing the risk of cardiovascular disease in adulthood. We investigate changes of peripheral arterial stiffness and endothelial function in obese children and adolescents compared with normal-weighted counterparts.

Methods: Subjects were recruited from four schools. Written informed consent was obtained. Candidates with a history of congenital heart disease or peripheral vascular disease were excluded. Information on family medical history and daily exercise was obtained by use of a standard questionnaire. Obese children were defined by Working Group on Obesity of China standards by their age and gender. Hypertensive children were defined by measurement at visit 3 with BP equal to or over 95th percentile for their age and gender among those with elevated BP at visit 1 and visit 2. Brachial-ankle pulse wave velocity (BaPWV) was measured using an automatic waveform analyzer. Peripheral endothelial function (EF) was evaluated by Endo-PAT2000, reactive hyperemia index (RHI) was recorded. Student’s independent t-tests were performed for group comparisons of anthropometrics and age-normalized arterial function measurements.

Results: 546 subjects aged 7–17 years old were recruited including 299 (54.8%) males and 94(17.22%) obese subjects. BaPWV and RHI did not significantly differ between genders, but grow with age. BaPWV differed between obese and normal-weight groups (895.63 vs 854.27 cm/s, P<0.001), however, RHI did not differ (1.67 vs 1.65 ml/mm Hgx100, P= 0.17).

Conclusions: The current study demonstrates that elevation in arterial elasticity occurred earlier than changes in EF in obese children and adolescents.

T-P.3669
Examination of the Relationships of Inheritance Patterns of Type 2 Diabetes Risk with Metabolic Function and Disinhibited Eating in Adolescents
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Background: A family history (FH) of type 2 diabetes (T2D) has been implicated as a risk factor for developing T2D; however, less is known about how maternal versus paternal inheritance of T2D risk or degree of T2D FH affects metabolic function and associated disinhibited eating behaviors in adolescents.

Methods: A cohort of 197 boys and girls (12-17y) enriched for both overweight and T2D FH was studied. T2D FH (presence vs. absence), degree of FH (1st degree vs. 2nd degree relative vs. both), and parental inheritance pattern for T2D risk (maternal vs. paternal vs. none) were assessed during a medical history. BMIz, fat mass (by air-displacement plethysmography or dual energy x-ray absorptiometry), blood pressure, as well as fasting leptin, insulin, glucose, and triglycerides were measured. Disinhibited eating (loss of control and objective binge eating) was assessed with the Eating Disorder Examination interview.

Results: Controlling for age, height, body fat, sex, race, socioeconomic status, and pubertal stage, youth with T2D FH had higher fasting insulin (p=0.006) and BMIz scores (p=0.01) compared to youth with no T2D FH. Neither parental inheritance pattern for T2D risk nor degree of T2D FH was significantly associated with any indicator of metabolic function (p>0.05). By contrast, as expected, body fat was a strong predictor of almost all metabolic variables (p<0.001-.04). There were no significant associations between T2D FH, degree for FH, or parental inheritance pattern and disinhibited eating (p>0.05).

Conclusions: We confirmed that presence of a T2D FH is linked to greater insulin resistance in youth, independent of adiposity. The lack of association for degree of T2D FH and metabolic variables may reflect ascertainment biases for T2D FH when assessing relatively young parents who may not have developed T2D yet. As compared to T2D FH inheritance pattern, body fat appears to be a more salient indicator of adolescents’ metabolic function.

T-P-3670
Global Index of Visceral Adiposity/Liver Fat Accumulation and its Relationship with Cardiometabolic Risk Variables:
Results from an International Study INSPIRE ME-IIA
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Background: i) Examine the respective associations of visceral adiposity (VAT) and liver fat (LF) accumulation with the cardiometabolic risk (CMR) profile; ii) Develop a global index reflecting overall VAT/LF and document its association with features of the CMR profile.

Methods: Baseline data from the INSPIRE ME-IIA study have been used. A sample of 3699 subjects with both VAT and LF data was included in the analyses. Subjects’ medical history was evaluated using a questionnaire administrated by physicians. A fasting blood sample was obtained followed by a 75g oral glucose tolerance test to assess: triglycerides, total cholesterol, HDL-C, LDL-C, ApoA1, ApoB, HbA1c, adiponectin, CRP, PAI-1, fibrinogen, glucose and insulin levels. VAT cross-sectional area and LF attenuation were assessed by computed tomography. A global VAT/LF score ranging from 2 (low) to 8 (high) was generated by summing VAT and LF quartile scores. For each CMR variable, linear multivariante regressions were performed with VAT and LF together, then with the global VAT/LF score and adjusted for age, education, smoking, ethnicity, physicians’ specialty, age, education, smoking, ethnicity, physicians’ specialty, and BMI. Subjects taking medications to control blood pressure, glucose or lipid metabolism were excluded from some of the analyses, depending upon the outcome of interest.

Results: The number of medications used was positively associated with VAT and LF, as well as with the global VAT/LF score in men and women (p<0.001). VAT was more often associated with CMR variables, and showed higher r2 compared to LF. Individuals with a higher global VAT/LF score had more serious CMR alterations (p<0.001; ANOVA), except for cholesterol in women and LDL-C in both sexes.

Conclusions: VAT and LF in men and women show differential associations with CMR variables, particularly for lipid variables. These results support the use of a global index reflecting visceral adiposity and liver fat deposition in the evaluation of CMR.

T-P-3671
Has the Relationship between Obesity and Disability Changed from 1999 Through 2013?
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Background: Recent studies suggest that improvements in awareness and treatment of obesity-associated cardiometabolic disruptions (e.g. hypertension) have reduced the excess mortality associated with obesity. It is plausible, however, that treating obesity-associated co-morbidities without treating obesity per se may have increased the obesity-associated disability burden. We evaluated whether obesity-associated disability has changed between 1999 and 2013.

Methods: Adult population data, aged 18 years and older, from National Health Interview Survey (NHIS) 1999-2013 were used. Our outcome of interest was presence of functional or activities of daily living limitation from stroke, hypertension, diabetes, weight or either chronic condition. We stratified data by age categories: 18 to <40 (young); 40 to <60 (middle-aged); 60 and above (older). Odds ratio (ORs) were estimated by BMI category (i.e., underweight: <18.5, normal: 18.5 to <25 [reference category], overweight: 25 to <30, grade 1 obesity: 30 to <35, grade 2-3 obesity: ≥35), separately for each age category, using a logistic regression. The interaction term between BMI category and year, where year was treated as a continuous variable, was tested to evaluate whether obesity-associated disability had changed.

Results: In young adults, for every unit increase in year between 1999 and 2013, the grade 1 obesity and grade 2-3 obesity ORs decreased by 1.23% (p=0.53) and 0.77% (p=0.66) respectively. In middle-aged adults, for every unit increase in year, the grade 1 and grade 2-3 obesity ORs decreased by 1.33% (p=0.015) and 2.31% (p=0.009) respectively. In older adults the grade 1 obesity OR decreased by 0.53% (p=0.47) and increased by 0.76% (p=0.36) for grade 2-3 obesity.

Conclusions: Our results, based on time trends in cross-sectional associations between obesity and disability, suggest that the obesity-associated disability has not increased between 1999 and 2013 and in fact may have decreased for the middle-aged grade 2-3 obese.

T-P-3672
Hypocalcemia After Bariatric Surgery

Background: The reported prevalence of hypocalcemia after bariatric surgery ranges from 1% after Roux-en-Y gastric
bypass (RYGB) to 25% after biliopancreatic diversion duodenal switch (BPD-DS). We aimed to define the prevalence of post-operative hypocalemia and identify clinical predisposing factors.

**Methods:** We retrospectively analyzed a prospectively-maintained database and medical records for all patients undertaking primary or revision bariatric surgery (RBS) from May 2008 to December 2014 at Mayo Clinic Rochester, MN. Patients with immediate post-operative hypocalemia were excluded due to albumin fluxes.

**Results:** 1803 patients fulfilled the criteria above. 250 patients (14%) had serum calcium below the reference range and underwent the following procedures: RYG (54%), BPD-DS (17.6%), RBS (14.8 %), sleeve gastrectomy (SG, 11.2%), and laparoscopic banding (1.6%). 47 patients (2.6%) had significant hypocalemia (corrected serum calcium ≤ 8.9 mg/dL). Mean serum calcium was 8.2±0.54 mg/dL of whom 36% underwent primary RYG, 17% primary DS, 28% SG and 17% RBS. In primary and revision RYG patients (n=23), 17% had renal impairment, 74% had malnutrition and 8.7% were vitamin D deficient. In primary and revision DS patients (n=10), 1 had renal impairment, 9 had malnutrition and 1 had hypoparathyroidism. In SG patients, 31% received a liver transplant and 85% had end-stage renal disease or a kidney transplant. None had malnutrition. Patients with more than one etiology for hypocalemia were analyzed in all applicable groups.

**Conclusions:** In our series, hypocalemia was seen in 1 in 6 patients post-bariatric surgery. After RYG, malnutrition contributing to hypocalemia is higher than previously reported. Restrictive procedures are also associated with hypocalemia in liver and kidney transplant patients and those with renal disease. Preoperative assessment for factors predisposing to post-operative hypocalemia could identify patients who may benefit from better surveillance and prevention strategies.

**T-P-3673-DT**

**Increased Myeloperoxidase in Obese Subjects and Its Correlations with Adipocytokines**

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**Background:** Obesity is characterized by a state of chronic low-grade inflammation. Recent experimental data showed that diet-induced obesity increased both adipose neutrophil infiltration and Myeloperoxidase (MPO) activity without increased MPO protein level. The objective of the current study was to evaluate serum MPO levels in adult obese and its correlations with adipocytokines.

**Methods:** A prospective cross-sectional study was performed on 65 obese and 65 lean controls. They were recruited from Hammed Medical Corporation (HMC)-Qatar. Fasting serum was used for the biochemical analysis of circulating levels of MPO, MMP-9, and TNF-alpha, sE-selectin, sVCAM-1, and sICAM-1, insulin, leptin and adiponectin. The analysis was done using LUMINEX 200 by xMAP-technology. Anthropometric measurements were measured.

**Results:** The obese subjects had a mean value of age ± standard deviation (SD) (47.26 ± 12.34) years, while control subjects had 43.32 (14.12) years, P=0.092; and BMI was 34.59 (3.56) kg/ m2 in obese while it was 26.26 (2.64) kg/ m2 among the control group, p=0.0001. No significant difference were detected for the following parameters, insulin, MCP-1, VI-CAM, sE-selectin and adiponectin. MPO was significantly correlated positively with the followings: BMI (r=0.69, p=0.0001); total cholesterol (r=0.25, P=0.006); leptin (r=0.23, p=0.017); TNF-alpha (r=0.34, p=0.001), and MMP-9 (r=0.64 and p=0.0001).

**Conclusions:** MPO is a biomarker associated with obesity and inflammation.

**T-P-3674**

**Interactions of Pre-Diagnostic Obesity and Regular Aspirin use on CIMP-Status in Colorectal Cancer Patients**

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**Background:** Obesity is associated with increased risk of colorectal cancer (CRC) development and recent evidence suggests an association between increased BMI and CpG Island Methylator Phenotype (CIMP) high CRC. In such tumors, hyper-methylation produces differential gene expression and is associated with poorer overall survival. Other research suggests that regular aspirin use reverses hyper-methylation in normal colonic mucosa. Therefore, we investigated whether pre-diagnostic BMI and regular aspirin use were associated with CIMP status in a cohort of stage IV CRC patients.

**Methods:** Data for regular aspirin use, self-reported weight in the decade prior to stage IV diagnosis (n=157), and demographic characteristics were available through a structured survey about CRC risk factors in a subset of patients from the Assessment of Targeted Therapies Against Colorectal Cancer protocol, which is designed to molecularly profile tumors of patients with refractory/inoperable metastatic CRC. Tumor samples were considered CIMP-high if ≥ 30% of gene probes were methylated. BMI was calculated from self-reported weight and height, and categorized as normal-underweight (< 25), overweight (25-30) or obese (≥ 30). Logistic regression was used to estimate the associations between CIMP-high status, BMI category and asiprin use.

**Results:** Obesity was significantly associated with CIMP-high status, after controlling for aspirin use (OR: 2.50, 95% CI: 1.06, 5.89). Overweight was not significantly associated with CIMP-high status (OR: 1.24, 95% CI: 0.56, 2.71). Aspirin use was not a significant predictor, but there was a significant interaction between BMI category and aspirin use (p = 0.01) on CIMP-high status.

**Conclusions:** These preliminary results suggest a complex relationship between pre-diagnostic obesity, regular aspirin use and CIMP status in this group of CRC patients. Exploring this relationship may provide unique insights into the role of pre-diagnostic obesity and aspirin use in CRC biology.

**T-P-3675**

**Moderate Levels of Arsenic Exposure Appear to Exacerbate Effects of Obesity on Dysglycemia in Non-Diabetic Subjects**

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Background: Arsenic (As) concentrations >100 ppb in drinking water have been associated with diabetes and other markers of increased cardiometabolic risk, but evidence is limited and mixed on effects of lower levels of exposure. As most studies have explored effects in lean populations, it is also unknown to what extent As may exacerbate cardiometabolic risk in overweight or obese subjects.

Methods: We used data from a cross-sectional study that included 748 non-diabetic adults in Chihuahua, Mexico exposed to up to 100 ppb As in drinking water to examine joint effects of obesity and arsenic exposure on cardiometabolic markers, including fasting plasma glucose (FPG) and 2h glucose tolerance. Subjects who were normal weight, overweight and obese based on BMI were classified as having low, moderate and high exposure based on tertiles of drinking water As (<38.5, 38.5–65.53, 65.53–100 ppb). Multivariable linear regression was used to analyze associations between increasing water As on cardiometabolic markers at each weight status, adjusting for age, gender, education, ethnicity, smoking, alcohol use, and water source.

Results: Compared to normal weight subjects with low water As, there were significant increases in mean FPG (mg/dL) in normal weight subjects with moderate and high exposure (adjusted β+SE: 4.9±1.8 and 4.7±2.1). Mean FPG also increased among overweight subjects even with low exposure (4.9±1.6 P<0.05), but the mean increase in FPG was substantially higher among overweight subjects with moderate or high water As (7.3±1.7 and 9.0±2.1; P<0.05). Compared to normal weight subjects with low exposure, odds of impaired fasting glucose/glucose tolerance were significant in obese subjects with low exposure to water As (OR 95% CI 2.5, 1.1–5.9), but was substantially higher among obese subjects with high exposure (3.8, 1.5–9.9).

Conclusions: Results suggest moderate As exposure may exacerbate dysglycemia in normal weight as well as among overweight and obese subjects.

T-P-3676 NHANES: Prevalence of Prediabetes by Body Mass Index (BMI) in US Adults
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Background: Prevalence estimates of prediabetes may vary depending on screening criteria. We assessed glycemic status of individuals across BMI categories and evaluated impact of glycemic status and BMI on comorbidities.

Methods: National Health and Nutrition Examination Survey (NHANES) data 2009–10 and 2011–12, corresponding to a representative sample of 12,391 US adults (aged ≥18 years), were combined. Absolute values and weighted frequencies were generated to estimate glycemic status (defined by fasting plasma glucose [FPG], A1c or 2-h plasma glucose according to American Diabetes Association [ADA], 2010) by BMI class. Association between glycemic state and relevant comorbidity by BMI was assessed using Proc Surveylogistic in SAS, with regression analysis adjusted for age and gender.

Results: Prevalence of prediabetes using A1c increased with BMI (BMI 25–29.9: 25.3%; BMI ≥30: 36.3%); with 2-h plasma glucose, prediabetes prevalence increased with BMI but plateaued between BMI 35–39.9 (22.4%) and BMI ≥40 (22.2%). With FPG, the prevalence increased in BMI ≥30 vs BMI <30 but decreased between BMI 30–34.9 (47.8%) and ≥40 (44.0%). Prevalence of diabetes increased with BMI. For BMI ≥30 to ≥40, diabetes prevalence was comparable between A1c (11.2–23.9%) and FPG (12.0–22.5%) but lower for 2-h plasma glucose (6.9–13.0%). Prevalence of hypertension and dyslipidemia generally increased with BMI. Hypertension was associated with prediabetes (significant in BMI ≥30) and type 2 diabetes (significant in BMI ≥25). Dyslipidemia was associated with prediabetes and type 2 diabetes across BMI groups.

Conclusions: Prevalence of prediabetes and diabetes varied depending on definition but the general trend with all 3 definitions was prevalence increased with BMI. Presence of hypertension and dyslipidemia was associated with prediabetes and diabetes; for hypertension, the association was significant in obese adults, but for dyslipidemia the association was observed across all BMI groups.
interval) for men and 2.2 [1.8–2.5] for women; the HR for developing hypertension was 2.0 [1.9–2.1] for men and 1.5 [1.4–1.6] for women; and the HR for developing CHD was 4.9 [4.1–5.9] for men and 2.7 [2.0–3.6] for women.

Conclusions: This study suggests that obesity is associated with higher risks of co-existence of multiple ORCs.

T-P-3679
Paradoxical Associations Between Severe Obesity and Carotid Artery Structure in Youth
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Background: The influence of severe obesity on carotid artery structure in youth is not well understood. We investigated the association of obesity on carotid intima-media thickness (cIMT) and lumen diameter (cLD) among youth ranging from normal weight to severe obesity.

Methods: Two hundred twenty-six youth ages 8-17 years (mean age 12.8±2.5 years) were recruited from the Minneapolis/St. Paul area. Based on BMI percentile, participants were classified into 3 categories: normal-weight (NW) (<85th percentile) (M=38/F=22); overweight/obese (Ow/Ob) (>85th to <120% of the 95th percentile) (M=35/F=39); severe obesity (SO) (>120% of the 95th percentile or BMI ≥35 kg/m²) (M=34/F=55). Using ultrasonography we measured cIMT and cLD in the left common carotid artery. Resting blood pressure was measured in triplicate and body fat, including visceral fat, was assessed by iDXA. An analysis of variance compared cIMT and cLD for males and females separately across BMI groups adjusted for Tanner stage.

Results: Systolic blood pressure (p<0.05 for all), total fat (p<0.001 for all), and visceral fat (p=0.001 for all) were higher across increasing BMI groups in males and females. In males and females with SO, cIMT was lower than NW (M: 0.44±0.10 vs. 0.52±0.06mm, p=0.001; F: 0.44±0.10 vs. 0.53±0.06mm, p<0.001) and Ow/Ob (M: 0.44±0.10 vs. 0.50±0.07mm, p=0.002; F: 0.44±0.10 vs. 0.50±0.08mm, p=0.006). Males with SO had a larger cLD than NW, which did not achieve statistical significance (6.08±0.75 vs. 5.73±0.57mm, p=0.10); however, Ow/Ob had significantly larger cLD than NW (6.13±0.64 vs 5.73±0.57mm, p=0.022). In females, SO (6.14±0.68mm) and Ow/Ob (6.10±0.56mm) had larger cLD than NW (5.55±0.38mm, p=0.001 for both).

Conclusions: Paradoxically, despite having higher blood pressure, youth with SO have lower cIMT compared to NW and Ow/Ob peers. Further research is needed to identify the mechanisms explaining this phenomenon and elucidate the compensatory adaptations leading to arterial structural changes in severe obesity.

T-P-3680
Population Effects from an Obesity Treatment Over Nine Years in San Luis Obispo County
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Background: Qysmia, (Vivus, Inc.) a novel formulation of low-dose phentermine and controlled release topiramate has been on the market in the U.S. for obesity for about two years. The inventor of this treatment had been using this off-label treatment for obesity in San Luis Obispo (SLO) County, Ca from 2001 to 2010.

Methods: Data from SLO County and population vital statistics have been gathered to determine whether population effects of this treatment can be seen over the nine years that the author operated a weight loss center in San Luis Obispo County. Data for diabetes rates and obesity rates are compared for the periods starting in year 2000 and going forward to 2009 and compared to rates for diabetes and obesity for the rest of California. During this time the weight loss center treated approximately 20,000 patients.

Results: Adult obesity (BMI over 30) and diabetes rates in SLO County that were similar to the rest of CA in 2000 have improved in SLO County compared with a worsening in the remainder of CA. SLO County’s adult obesity prevalence was 17.6% in 2009 versus the rest of CA at 24.4%. The prevalence of obesity was about 20% in 2000 for both SLO County and CA. Adult diabetes rates which were about 5% in SLO County in 2000 and 6.5% for the rest of CA in 2000, improved to 3.1% in SLO County in 2009 versus a worsening to 8% for the rest of CA in 2009. Diabetes death rates have decreased in SLO County from 2000-2008 compared to an increase in the rest of CA during the same period. From 2000-2009, there were no safety signals from this treatment.

Conclusions: It appears that low-dose phentermine with topiramate given to a large population of obese patients from 2001-2010 in San Luis Obispo County, CA appears to be both safe and effective as measured by reduction in obesity and type 2 diabetes rates in SLO County compared to the rest of CA during the time the author applied the treatment to a broader population of obese patients in SLO County. No safety signals were observed in overall death rates.

T-P-3681
Prevalence of Metabolic Syndrome and its Individual Components among University Students
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Background: Although Michigan is one of the states where more than one-third of the population are obese, studies among college students to assess metabolic dysfunction are lacking. The purpose of this study was to examine the prevalence of metabolic syndrome and its individual components among a sample of students from Central Michigan University.

Methods: A cross-sectional survey was conducted among 350 students aged 18 to 25 years in Spring 2013. Students were recruited throughout the campus via flyers, in-class and Blackboard announcements. Biochemical, anthropometric (height, weight, waist circumference, percent body fat, visceral fat score), and blood pressure measurements were taken for all students. Prevalence of metabolic syndrome was estimated based on the National Cholesterol Education Program’s Adult Treatment Panel III revised guidelines. Multiple regression analyses was used to assess prevalence of metabolic risk components

Results: Metabolic syndrome was not prevalent in our pilot sample. However, one-third of the students (24% of male and 33% of female) had at least one metabolic abnormality and 7% had two metabolic abnormalities. The most common metabolic abnormalities among students were high waist circumference (5% in male vs. 13% in female), low HDL- cholesterol (15% in male vs. 20% in female), and elevated serum triglyceride. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat. Adjusting for other factors, visceral fat score was positively correlated with waist circumference and percentage body fat.
particularly women, efforts to identify and reduce early metabolic risk factors is crucial and warrant further research among this understudied unique age group.

**T-P-3682**

**Prevalence of Overweight Obesity and Metabolic Syndrome in HIV-Infected Patients**

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**Background:** Lipodystrophy syndrome or HIV metabolic syndrome is characterized by alterations in the lipid and glucose metabolism, excess and redistribution of body fat and hypertension. Despite the highly active antiretroviral therapy (HAART) bring many benefits to carriers of the HIV virus, metabolic changes can occur as side effects, increasing cardiovascular risks. Objective: To assess the prevalence of overweight, obesity and metabolic syndrome in HIV-infected patients on HAART.

**Methods:** We measured the weight and height and calculated body mass index (BMI). We also performed biochemical tests of lipid profile and fasting glucose. Systemic blood pressure was measured on the right side using a digital sphygmomanometer. Waist circumference was measured from the midpoint between the last rib and the iliac crest. The criteria proposed by the National Cholesterol Education Program III (NCEP-ATP III) to metabolic syndrome classification were used.

**Results:** We studied 281 patients (120 female and 161 male) with a mean age of 44.01 (± 10.19) years. BMI averaged 25.82 ± 26.65 kg/m². The prevalence of obesity was 18.50% and the overweight, 31.31%. Metabolic syndrome was present in 51.24% of patients (55.00% in females and 48.4% in males). The mean values of total cholesterol, triglycerides, HDL, LDL and fasting glucose in mg/dl were: 194.71(±52.47), 181.00(±164.32), 41.25(±11.98); 125.78(±52.72) and 97.56(±26.65), respectively.

**Conclusions:** The high prevalence of overweight/obesity and metabolic syndrome highlights the importance of early nutritional intervention to prevent cardiovascular complications in this group of patients.

**T-P-3683-DT**

**Proteomics of the Metabolically Healthy but Obese (MHO) Phenotype in African Americans**

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**Background:** The metabolically healthy but obese (MHO) phenotype is an important obesity subtype in which obesity is not accompanied by any of the usual comorbidities such as insulin resistance and dyslipidemia. While it has been extensively studied epidemiologically, there is little data on the underlying molecular mechanisms. In the present study, we used a shot gun proteomics approach to identify circulating biomolecules and pathways associated with MHO.

**Methods:** The subjects were twenty African American women (10 MHO and 10 non-MHO controls) with MHO strictly defined using modified Wildman et al. criteria (2008). Serum proteins were analyzed using label-free proteomics (LC-MS/MS after immunodepletion and trypsin digestion). Differential expression of proteins between the two groups was done using Danter software for quantitative proteomics analysis. The list of differentially expressed proteins was submitted to Ingenuity pathway analysis (IPA) to determine enriched biological pathways.

**Results:** At a p-value threshold of 0.05 , 56 proteins were differentially expressed between MHO and non-MHO including Hemoglobin subunits (HBA1, p=3.0x10-21; HBB, p=4.6x10-15), haptoglobin-related protein (HPR, p=7.6 x10-19), apolipoproteins (APOB-100, p=1.9x10-44; APOA4, p=8.5x10-18) and retinol-binding protein 4 (RBP4, p=8.1x10-11) as well as CRP (p=4.0x10-7), a previously described molecule associated with MHO . Pathway analysis showed enrichment of lipids and inflammatory pathways, including LXR/ RXR and FXR/RXR activation, acute phase response signaling and complement system.

**Conclusions:** The findings suggest that protection from harmful inflammatory and lipid molecules are the primary molecular hallmarks of MHO. Confirmation in diverse population samples and studies of clinical translation are currently ongoing.

**T-P-3684-DT**

**Racial Differences in Markers of Cardiovascular Risk in Obese Children: The Influence of Body Size**

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**Background:** Racial differences in left ventricular (LV) mass and carotid intima-media thickness (cIMT) are thought to contribute to the difference in incidence of cardiovascular disease between white and black adults. However the effect of body size on these racial differences is unknown, especially in children. The objective of this study was to: 1) determine if racial differences exist in markers of cardiovascular risk between white and black obese children, and 2) identify measures of body size that contribute to these differences.

**Methods:** A secondary analysis was performed on obese subjects ages 4 to 21 who were previously recruited for a research protocol. Body composition by dual-energy x-ray absorptiometry was performed. LV mass and cIMT were obtained by ultrasound. Uni- and multivariable regressions were performed.

**Results:** 157 subjects were studied, 74 white (36% male) and 83 black (38% male); aged 11.8 ± 3.4 years. Black patients had similar height and blood pressure to white patients, but had greater weight (85.8 ± 29.1 vs. 77.9 ± 27.7 kg, p < 0.02), BMI (34.4 ± 7.5 vs. 31.3 ± 6.9 kg/m², p < 0.01), and lean body mass (LBM) index (19.2 ± 3.3 vs. 17.6 ± 3.1 kg/m², p < 0.01). Percent body fat was no different between groups. Black patients had higher LV mass (38.2 ± 6.3 vs. 35.3 ± 8.1 g/m²; p = 0.01) and cIMT (0.45 ± 0.03 vs. 0.43 ± 0.02 mm, p < 0.01). LBM had the strongest relationship with LV mass (R²=0.83, p < 0.01) and cIMT (R²=0.26, p < 0.01) compared to other variables. When indexed to LBM, the racial differences seen in LV mass disappeared (2.2 ± 0.3 vs. 2.2 ± 0.4, p = 0.91). Upon multivariable regression, only LBM had a significant relationship with LV mass and cIMT, race did not.

**Conclusions:** The racial differences in LV mass and cIMT between white and black obese children can be attributed to their differences in LBM. The relationship between detectable racial differences in LV mass and cIMT and racial differences in cardiovascular disease outcomes in adulthood should be further studied.

**T-P-3685**

**Relationship between Weight and Glycated Hemoglobin in Diabetes**
Background: Following the American Medical Association’s official recognition of obesity as a disease in June 2013, awareness of obesity has increased nationally. However, Michigan continues to have an obesity rate of 31.5%, ranking as the 11th highest in the country. Obesity is a known risk factor for type 2 diabetes which affects 10.4% of adults in Michigan, and we aimed to observe the effect of weight on diabetes.

Methods: All diabetic patients seen at Henry Ford K15 clinics from 11/17/2013-11/17/2014 were identified. A regression analysis was performed to identify a correlation between weight and A1c. Patients were also stratified into groups based on BMI: <18.5 (underweight), BMI 18.5 to 25 (normal weight), BMI 25 to 30 (overweight), BMI 30 to 35 (obesity), BMI 35 to 40 (severe obesity), and BMI >40 (morbid obesity). Using this classification, we calculated the mean A1c for each group and compared them using the analysis of variance (ANOVA).

Results: Out of the diabetic population at Henry Ford, 4644 visited a K15 provider during our study time frame. Of these patients, 30 had BMI<18.5, 543 had BMI 18.5-25, 1905 had BMI 25-30, 1025 fell between 30-35, 716 between 35-40 and 741 had BMI>40. The correlation coefficient between weight and A1c was found to be 0.00247 (R <2) with a CI [0.005-0.0019] and a p-value of 0.001. This indicates a positive and significant correlation between increase in weight and increase in A1c. Also, the glycated hemoglobin mean of each weight classification, we calculated the mean A1c for each group and compared them using the analysis of variance (ANOVA).

Conclusions: Our study shows that as weight increases so does A1c. This highlights the importance of identifying and properly treating the disease of obesity especially in diabetic patients since they may benefit from better diabetic control as evidence by decrease in A1c.

T-P-3686 Sarcopenia, Obesity and Insulin Resistance in the Elderly: Results from the National Health and Nutrition Examination Survey 1999-2004
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Background: Obesity and sarcopenia are believed to share common underlying pathophysiological mechanisms. We ascertained the relationship between markers of inflammation and appendicular muscle mass, body fat, and their interplay in a representative cohort of the elderly US population.

Methods: Subjects aged ≥60 years with dual energy x-ray absorptiometry (DEXA) measures from the National Health and Nutrition Examination Surveys 1999-2004 were identified. Appendicular lean mass (ALM) was defined as fat-free mass of all four limbs, and obesity was defined as total body fat using DEXA. Baseline characteristics were determined. The primary outcome measures were variables of systemic inflammation and insulin resistance. We present the regression coefficients of ALM, after adjusting for age, gender, education status, race, smoking, and arthritis. The p-values of the same model including the interaction term of ALM and body fat is also presented.

Results: Mean age was 71.1 years with 57.0% female. Mean ALM was 19.8 kg and mean BMI was 28.2 kg/m2. Mean body fat was 37.2% Median C-reactive protein level is 0.002 again indicating increase A1c with worsening obesity.

Conclusions: Obesity and sarcopenia are believed to share common underlying pathophysiological mechanisms. We present the regression coefficients of ALM, after adjusting for age, gender, education status, race, smoking, and arthritis. The p-values of the same model including the interaction term of ALM and body fat is also presented.

T-P-3687 Serum HDL Cholesterol and Blood Mercury Concentration have a Positive Correlation in Metabolic Syndrome: Analysis of the Fourth and Fifth Korea National Health and Nutrition Examination Survey (KNHANES 2008-2013)
Soo-Jung Park Seon Seonggi-do, Beomhee Choi Seoul Korea, Nam-Seok Joo

Background: Dyslipidemia, reflected by reduced high-density lipoprotein cholesterol (HDLc) concentrations, is a cardinal feature of metabolic syndrome (MetS) that independently predicts cardiovascular disease. HDLC is “chameleon-like” lipoproteins with the capacity to be anti-inflammatory in the basal state and pro-inflammatory during acute-phase responses. Blood mercury is also known to have an inflammatory property. Therefore, the aim of this study is to investigate the relationship between HDLC and blood mercury in MetS.

Methods: The data of 7,616 subjects (3,713 men and 3,903 women), over the age of 20 years, were from 2008 to 2013, Korea National Health and Nutrition Examination Survey was selected and analyzed cross-sectionally. Correlation of serum HDLC and blood mercury was initially done. We compared serum HDLC concentration according to blood mercury quartile after relevant variables adjustment with or without MetS. In addition, odds ratio of having the highest quartile of serum HDLC was calculated.

Results: Blood mercury concentration was positive correlated with serum HDLC concentration (men: r=0.129, p<0.001, women: r=0.076, p=0.025) in MetS. Blood mercury concentration was associated with higher HDLC concentration (β=0.372, 95% CI, 0.15-0.60) in MetS men. Odds ratios (OR) of having the highest HDLC quartile were significantly associated with higher quartile of mercury (Q2=1.46; 95% CI, 0.77-2.77, Q3=2.65; 95% CI, 1.35-5.20, Q4=2.69; 95% CI, 1.44-5.02) in MetS men.

Conclusions: Serum HDLC was positively associated with blood mercury concentration in MetS Korean men. In addition, high HDLC concentration may not reflect anti-inflammatory capacity in case of MetS men with elevated blood mercury concentration.

T-P-3688 Stability of metabolically healthy obesity over 8 years: The English Longitudinal Study of Ageing
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**Background:** Metabolically healthy obesity possibly reflects a transitional stage before the onset of metabolic dysfunction, but few studies have characterised this transition. The aim was to examine stability of healthy obesity over an 8 year follow-up period and to describe the metabolic and lifestyle profile of obese participants that remained healthy.

**Methods:** Participants were 2442 men and women (aged 63.3 ± 7.7 yrs, 44.2% men) from the English Longitudinal Study of Ageing. Obesity was defined as body mass index ≥ 30 kg/m². Based on blood pressure, HDL-cholesterol, triglycerides, glycated haemoglobin, and C-reactive protein participants were classified as ‘healthy’ (0 or 1 metabolic abnormality) or ‘unhealthy’ (≥ 2 metabolic abnormalities).

**Results:** At baseline, 243 (9.9% of sample) participants were classified as healthy obesity. At follow up 44.5% of healthy obese had transitioned into a metabolically unhealthy state compared to only 22.0% of healthy non-obese. Compared with healthy obese that remained stable, those that progressed to an unhealthy state gained greater waist circumference (B=2.7, 95% CI, 0.3 – 4.9 cm), although no differences in lifestyle factors were observed. Healthy obese who progressed to an unhealthy state were more likely to have high blood pressure (75.0% vs 37.0%, age- and sex-adjusted odds ratio [OR] 8.9, 95% confidence interval [CI] 4.7-17.0), high C-reactive protein (53.7% vs 17.0%, OR=8.6, 95% CI 4.1-18.0), impaired glycemic control (46.3% vs 5.9%, OR=13.8, 95% CI 6.1-31.2) and high triglycerides (45.4% vs 11.9%, OR=5.9, 95% CI 2.9-12.0) at follow-up, with excess risk remaining independent of lifestyle factors including physical activity.

**Conclusions:** A stable healthy obesity phenotype is rare and possibly explained by inherent features that prevent visceral fat accumulation, but not by lifestyle risk factors.

**T-P-3689**

The Effect of Weight Loss on All-Cause Mortality: Systematic Revision

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**Background:** Randomized clinical and prospective trials that assess the effect of weight loss on all-cause mortality have shown controversial results. We conducted a systematic review of prospective studies, with a follow up ≥1y, assessing the association of weight loss and weight cycling with all-cause mortality.

**Methods:** We searched Pubmed of prospective studies with a follow up ≥1y, published from January 1st 2004 to December 31th 2014.

**Results:** Nine studies met the inclusion criteria. Five studies assessed the association between weight loss and mortality, two weight cycling, two weight loss and weight cycling with mortality. Weight loss increased all-cause mortality, in all of them. In the two studies evaluating the association between weight cycling and mortality, weight cycling did not have any beneficial or deleterious effects on mortality. In the two studies assessing weight loss and weight cycling, weight cycling increased mortality in the both of them, and weight lost increased mortality in one study.

**Conclusions:** Six out of seven (≥11y of follow up) prospective studies showed that weight loss was associated with increase mortality; results from studies assessing weight cycling were inconsistent.

**T-P-3690**

The Joint Association of Obesity and Smoking with Mortality Among Public Sector Employees

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**Background:** Obesity increases the risk of morbidity and mortality. Smoking is associated with adverse consequences for health, including increased risk of premature death. The joint effects of obesity and smoking on mortality are largely unknown.

**Methods:** The participants of this cohort study were employees of the City of Helsinki, Finland. Baseline mail surveys (years 2000-2002) were used to gather employees’ weight and smoking status (N=8960, RR 67%). Weight was categorized as non-obese (BMI 18.5-29.9) and obese (BMI 30-). Smoking was categorized as ex-smoker, never-smoker, occasional smoker and regular smoker. Underweight (BMI<18.5) and pregnant participants were excluded. Data were linked prospectively with mortality registers from Statistics Finland, with a mean follow-up time of 12.5 years. The analysis was done among respondents who gave a consent for the linkage (74%). The final sample included 6437 employees (83% female). Cox proportional hazard models were used to analyze the joint association between smoking and weight status with mortality due to any cause and due to cancer. Men and women were analyzed together as no interaction was observed between gender, weight status and smoking.

**Results:** There were 229 deaths among 6437 employees. The majority of the deaths were caused by cancer (55%), cardiovascular events (19%) being the second most common cause. Adjusting for age and gender, non-obese regular smokers had a clearly elevated risk of death due to any cause (HR 2.97, 95%CI 2.05-4.32) and due to cancer (HR 2.94, 95% CI 1.79-4.82). Obesity strengthened the association as obese regular smokers had an even higher risk of death due to any cause (HR 3.46, 95% CI 1.87-6.40) and due to cancer (HR 4.56, 95% CI 2.14-9.76). Ex-smokers’ risk of death was not elevated irrespective of their weight status.

**Conclusions:** Regular smoking increases the risk of death. The risk is especially high among smokers who are obese. Quitting smoking may reduce cancer mortality, particularly among obese.

**T-P-3691**

The Melanocortin 3 Receptor C17A + G241A Haplotype in Adults: Increased Adiposity but No Differences in Bone Mineral Density and Bone Area

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**Background:** The melanocortin 3 receptor (MC3R) is implicated in the regulation of energy balance. In children, homozygosity for the MC3R C17A + G241A haplotype is associated with increases in fat mass and decreases in lean mass. Our lab has reported that knock-in mice for this genetic variant have increased adipose tissue, reduced lean mass percentage, reduced bone mineral content (BMC), and reduced bone area. No study has reported the effect of this haplotype on bone in humans.

**Methods:** A convenience sample of 239 healthy adults was
examined at the NIH. Body composition was assessed by dual-energy X-ray absorptiometry (DXA). Genotype analyses for the MC3R allelic variants C17A (rs3746619) + G241A (rs3827103) were performed using Taqman assays. Primary statistical analyses were performed using ANCOVA, controlling for age, sex, race, height, fat percentage, and lean mass.

**Results:** Of 239 subjects (age 33.2±11.4y; BMI 35.4±7.3; 69% female; 57% white), 10.5% (n=25) were homozygous “double mutant” for the MC3R C17A + G241A haplotype (DM), 59.4% (n=142) were heterozygous (HET), and 30.1% (n=72) were homozygous wild-type at both loci (WT). DM displayed 59.4% (n=142) were heterozygous (HET), and 30.1% (n=72) were homozygous “double mutant” for the MC3R C17A + G241A haplotype (DM), 59.4% (n=142) were heterozygous (HET), and 30.1% (n=72) were homozygous wild-type at both loci (WT). DM displayed 59.4% (n=142) were heterozygous (HET), and 30.1% (n=72) were homozygous wild-type at both loci (WT). DM displayed 59.4% (n=142) were heterozygous (HET), and 30.1% (n=72) were homozygous wild-type at both loci (WT). DM displayed

**Conclusions:** In this adult cohort, the MC3R C17A + G241A haplotype was associated with greater fat mass and reduced lean mass percentage, but was not associated with the reductions in BMC and bone area that have been observed in knock-in mouse models. Further investigation is required to determine the essential pathways that mediate this phenotypic divergence between humans and mice.

**T-P.3692**

**The Predictive Role of Selected Hormones and Adipokines for Waist Circumference in Representative Cohort of Czech Adolescent Boys**

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**Background:** There is accumulating evidence that androgens and adipokines play an important role in the development of cardiometabolic risks including metabolic syndrome. Limited data are available in adolescents. The aim of the study was to assess the major hormonal and adipokine predictors of waist circumference z-score that is a reliable marker of visceral adiposity and cardiometabolic health risks.

**Methods:** The studied cohort included 496 Czech boys of a representative cohort aged 13.0–17.9 years. Waist circumference was measured according to World Health Organization recommendation. Waist circumference z-score was calculated according to German sex and age specified references. The following hormonal parameters were assessed: free triiodothyronine, free thyroxine, thyroid stimulating hormone, prolactin, cortisol, dehydroepiandrosterone sulfate, sex hormone-binding globulin (SHBG), total testosterone, free testosterone, luteinizing hormone, follicle stimulating hormone, estradiol, progesterone, adiponectin, adipin, ghrelin, glucose insulinotropic peptide, glucagon-like-peptide 1, glucagon, leptin, resistin and visfatin. A multivariate regression with reduction of dimensionality (O2PLS) was applied to design a prediction model (statistical software SIMCA-P + Version 12.0.0.0 from Umetrics AB, Umeå, Sweden).

**Results:** Of the total, 17 hormones demonstrated a sufficient predictive capacity for WC z-score (22.7 % variability of the dependent variable explained by O2PLS). The most predictive power was observed for total testosterone, SHBG and adiponectin. Those parameters also significantly correlated with waist circumference (total testosterone: r = -0.453, p < 0.01; SHBG: r = -0.515, p < 0.01; adiponectin: r = -0.414, p < 0.01).

**Conclusions:** Our results suggest that particularly total testosterone, SHBG and adiponectin are important predictors of waist circumference z-score in Czech adolescent boys. Grants: IGA MZCR NT/13792-4, MH CZ-DRO 0023761, CZ0123 Norwegian Financial Mechanisms

**T-P.3693-DT**

**The Prevalence of Fatty Pancreas at a Pediatric Tertiary Care Center**

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**Background:** Pancreatic steatosis in adults has been proposed to be associated with obesity and metabolic syndrome and to have the same pathogenesis as that of nonalcoholic fatty liver disease (NAFLD). Data on pancreatic steatosis in children remains lacking. Our study aims to measure the prevalence of pancreatic steatosis in children and to examine its association with obesity and NAFLD.

**Methods:** We retrospectively reviewed charts of 321 patients 2-18 years of age who received abdominal CT imaging in the emergency department or inpatient ward within a 1-year time span, and obtained demographics, anthropometrics, and medical history. Our radiologist determined mean Hounsfield Unit (HU) measurements for the pancreas, liver, and spleen. A difference of -20 between the pancreas and spleen (psHU) and between the liver and spleen (lsHU) were used to determine fatty infiltration

**Results:** Of the 321 patients, 11.5% had a psHU less than -20. The prevalence of pancreatic steatosis was higher in the obese vs. overweight vs. normal group (18% vs. 8% vs. 9%, chi-square 3.5, P=0.18). Obese females 15-18yrs old and males 2-14yrs old have a higher odds ratio of having pancreatic steatosis (OR=5, P <0.05) compared to their non-obese counterpart. There is a significant correlation between the psHU and lsHU (r=0.50, p=0.001).

**Conclusions:** Pancreatic steatosis was identified in more than one tenth of the study population and is associated with obesity, especially, in certain gender-age groups. Also, pancreatic steatosis is significantly associated with NAFLD. This is the first study assessing the prevalence of pancreatic steatosis in children.

**T-P.3694**

**Thirty Years of Obesity Publications from NHLBI Studies**

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**Background:** The National Heart, Lung, and Blood Institute (NHLBI) is the second largest funder of obesity research at the National Institutes of Health, with over $140 million invested in obesity research in fiscal year 2014. To measure the outcomes of this funding, we conducted an in-depth analysis of the obesity-related publications supported by NHLBI that were published over the past 30 years.

**Methods:** NHLBI-supported obesity publications from 1983-2013 were identified from the Thomson Reuters InCites database using obesity-relevant MeSH terms. Network analysis techniques were then used to cluster these publications based on shared references.

**Results:** Publication of obesity studies supported by the
NHLBI has increased dramatically over 30 years from 23 publications in 1983 to 292 in 2013. As the obesity epidemic has unfolded, a fuller range of topics has been represented in these publications. Earlier publications took advantage of existing cohort studies to describe the correlates and cardiovascular consequences of weight change. Emerging topical areas with increasing interest within the field of obesity include genetics & gene x environment associations, asthma & respiratory disorders, treatment & intervention, and sleep.

Thirty percent of the publications were ranked in the top 10 percentile based on citations normalized for year of publication and journal subject category.

Conclusions: NHLBI funded studies have produced a large number of diverse obesity-related publications, with a high proportion of these publications being highly cited.

T-P.3695
Trends in the Prevalence of Obesity in Adults with a History of Cancer: Results from the US National Health Interview Survey, 1997–2013
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Background: Prior observational studies report associations between obesity and cancer progression and mortality. However, trends in obesity prevalence among cancer survivors have not been evaluated.

Methods: We used data from the 1997-2013 National Health Interview Surveys (NHIS) to construct a nationally representative sample of 1,140,642 adults aged 18-85 years, of whom 36,408 reported ever having a cancer diagnosis. We tested for a linear trend in obesity prevalence over the study period using the Cochran–Armitage trend test, and estimated the relative risks of obesity within each time period using logistic regression models. Obesity was defined as body mass index (BMI) >30 kg/m^2. We also examined trends among adults with a history of breast (n=6,568), prostate (n=3,859) and colon cancer (n=2,440).

Results: Between 1997 and 2013, the prevalence of obesity increased in adults both with and without cancer (p for trend <0.001 for both groups). Throughout this period, the prevalence of obesity was higher in cancer survivors than cancer-free adults for women (21%-31% vs. 20%-28%) and men (20%-30% vs. 20%-29%). Across the period, cancer survivors were 8%-10% more likely to be obese than cancer-free adults after adjusting for demographic characteristics. Furthermore, colon and breast cancer survivors were 26%-40% and 17% more likely to be obese than cancer-free adults, respectively. Among cancer survivors, African Americans [OR range: 1.8 (95% CI: 1.5-2.1) to 2.1 (95% CI: 1.7-2.4)] and Hispanics [OR range: 1.2 (95% CI: 1.0-1.5) to 1.8 (95% CI: 1.4-2.2)] were more likely to be obese than non-Hispanic whites.

Conclusions: From 1997 to 2013, there was an increasing trend in obesity for adult cancer survivors. Currently, cancer survivors have a significantly higher prevalence of obesity than cancer-free adults. Obesity prevention and treatment is needed for cancer survivors, especially colon and breast cancer survivors and survivors of African and Hispanic descent.

T-P.3696
Type and Magnitude of Cardiovascular Risk Factors in Adolescents of Chiapas, Mexico
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Background: The Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents addresses 13 cardiovascular (CV) disease (CVD) risk factors. This study was conducted in Chiapas, a State with over 70% of inhabitants (mostly indigenous Mayan) living under the poverty line with high food insecurity and limited access to health services. There are no studies on the type and magnitude of CV risk factors to which this population is exposed.

Methods: We measured blood pressures for hypertension (HT), fasting blood glucose for diabetes (DB), dyslipidemia (DYS)(low high density lipoprotein cholesterol (HDL-C) and hypertriglyceridemia (HTG) per NHLBI definition) tobacco exposure (TE), physical activity (PA) and metabolic syndrome (MS)(ATP III) in 69 (55% female) adolescents (mean ±SD; age 13.59 ± 0.94 y) attending a school program. Students were divided into 3 groups: underweight (UW) BMI <5pc (CDC), non-obese (NO) BMI pc5-85 and overweight/obese (OO) BMI >pc85.

Results: Adolescents were 4% UW, 71% NO and 25% OO. Prevalence of HT, HT, SM and DYS was 0.34, 8 and 44% for NO and 0.29, 24 (OR:3.46; P=0.002) and 71% (OR:3.16; P=0.000) for OO. HDL-C values were low (<40 mg/dL; NCEP) in 50% of UW 29% NO and 71% OO (NO/00: OR:6.0; p=0.000) while HTG was high (≥ 130 mg/dL) in 50% of UW 29% NO and 0, 29 (p=0.290), 24 (OR:3.46; p=0.002) and 71% (OR:3.16; P=0.000) for OO. HDL-C values were low (<40 mg/dL; NCEP) in 50% of UW 29% NO and 71% OO (NO/00: OR:6.0; p=0.000) while HTG was high (≥ 130 mg/dL) in 50% of UW 29% NO and 43% OO (OR:2.44; p=0.004). All TE adolescents presented DYS. Only 1/5 adolescents with DYS declared PA and 2/5 declared less than 2 h of daily TV watch.

Conclusions: Except for DB, all CVD risk factors were present in both NO and OO. No significant association was found with HT: 1 out of 3 adolescents is exposed regardless of obesity. Significant association was found between OO-SM and OO-DYS. There is higher risk of low HDL-C and HTG in OO, but 1 out of 4 adolescents NO is also exposed; even UW adolescents presented DYS problems. Prevention and attention programs are needed regardless of nutritional status.

T-P.3697-DT
Acculturation is Associated with Computer Screen Usage among Latino Adolescents
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Background: Previous research has shown that Latinos are disproportionately affected by obesity. Sedentary behaviors have been linked with the obesity epidemic. Further, acculturation has been shown to influence sedentary behaviors; however, only a few studies evaluated acculturation as a predictor of sedentary behaviors among Latino adolescents. For instance, some research has evaluated acculturation and computer screen time, without consideration of other sedentary behaviors (e.g. television time or reading time).

Methods: Latino adolescents (n = 99), ages 14-17 years, were recruited from high schools in California. Acculturation was assessed with the Norris’ Acculturation Scale for Hispanics, sedentary behaviors were measured along with other covariates. Participants completed cross-sectional assessments on laptops. Multiple linear regression was used to examine the association of acculturation with sedentary behaviors: TV time, computer time and reading. It was hypothesized that acculturation would be positively associated with sedentary behavior.
Results: Participants were 72% female, had a mean BMI of 24.1 kg/m² (SD=5.7), mean TV time of 23.2 hours (SD=10.1), mean reading of 20 hours (SD=11.3) and mean computer time of 15.6 hours per week (SD=14.4). Latinos who were more acculturated were more likely to engage in computer usage (β=.25, p<.01) after controlling for gender, BMI, and income. Acculturation was not associated with TV watching or reading time. However, gender was associated with reading time (β=.28, p<.01) after controlling for gender, BMI and income. Females read more hours than males.

Conclusions: Acculturation was positively associated with computer time, but not with TV or reading time. Future research is needed to examine the relationship between acculturation and sedentary behaviors among Latino youth. Given these youth are at increased risk for obesity, prevention efforts may want to target certain sedentary behavior such as computer screen time to improve health outcomes.

T-P-3698
Adolescents' Attitudes Towards Smartphone Applications for Health Behavior Change: A Qualitative Study
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Background: Despite the growth in smartphone use among adolescents, few mobile health applications (apps) are designed specifically with this population in mind. This study used qualitative methods to explore adolescents’ attitudes towards mobile apps for health management.

Methods: Individual semi-structured interviews were conducted with participants (N=20, aged 13 to 19 years) from Boston Children’s Hospital Primary Care Center. Question domains included 1) experience with health-related smartphone apps, 2) barriers to use, and 3) preferences for app features. Interviews were recorded, transcribed, and analyzed using an iterative coding process.

Results: Of the 20 participants, 55% were male, 40% Latino, and 50% Black with mean age of 15.1 years. The mean body mass index percentile was 85th% (8th% to 99th%). Among participants with no prior experience to health apps, some expected apps to be adult-focused and others perceived apps to be a last resort to staying healthy. Barriers to adoption included lack of motivation, lack of awareness, and need for improved user interface. Desired features included convenience, multimedia content, personalized training, and biometric data tracking. Most participants noted that concise notifications and attainable goals linked to tangible rewards were important for sustaining usage. The integration of health apps with social media was divided as some participants felt health was a private concern, while others believed social media could encourage healthy competition. Most participants agreed that advertising via social media would be necessary for widespread adoption. Body image was a major concern, as some participants felt that weight-centric apps could lead to stigma, excessive exercise, and teasing.

Conclusions: This study described features that were important for mobile health app uptake as well as negative features that hindered usage. This information could guide app designers to create health applications that are more attractive and relevant to adolescents.

T-P-3699
Associations Between Weight-related Anthropometric Traits and Lifestyle Factors in 3839 Norwegian Children Aged 4-16 Years

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Background: There is limited information about how different weight-related anthropometric measures are associated with children’s eating habits, physical activity and sedentary lifestyle on a population level. As body mass index (BMI) is not a direct measure of fat, we postulated that associations between skinfold thicknesses, waist circumference (WC) or waist-to-height ratio (WHtR) and lifestyle factors differ from those seen for BMI.

Methods: Data from the Bergen Growth Study (www.vekststudien.no) was used to study the relation between standard deviation scores (SDS) of BMI, WC, WHtR, subcapular (SSF), and triceps (TSF)-skinfolds, and lifestyle factors in 3839 Norwegian children (1543 boys) aged 4 -16 years.

Results: Simple linear regression models showed an increase of all anthropometric measures with low parental education and irregular meals, and a decrease with the intake of sweets. WC and BMI also increased with fruit and vegetable intake and decreased with soda intake. The presence of a TV in the bedroom was positively correlated with all measures except WC, and physical activity was negatively correlated with SSF and TSF. In a fully adjusted model with interactions all anthropometric measures were still higher with a low parental education and irregular meals. WC, WHtR and BMI were positively correlated with a higher intake of vegetables, WC, SSF and BMI were negatively correlated with the intake of sweets and BMI also with soda consumption. The presence of a TV in the bedroom and physical activity were associated with a lower SSF, but physical activity also with a higher WHtR. There was a significant interaction term that indicated a higher BMI and WC when children who were more physically active also had a TV in their bedroom.

Conclusions: SSF was the only anthropometric measure to show the expected decrease with physical activity and increase with a measure of a sedentary lifestyle. The results for WC, WHtR, and BMI were inconsistent.

T-P-3700
Birth Weight Modifies Associations Between Physical Activity and BMI Trajectories Over 14 years
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Background: Obesity-related outcomes are more strongly associated with low physical activity in individuals with abnormal birth weights, but this hypothesis has not been tested in longitudinal studies.

Methods: We used data from the National Longitudinal Study of Adolescent Health, a nationally representative sample of adolescents followed 14 years over four waves (1994-95, 1995-96, 2001-02, 2008-09) into adulthood (n=7,353 females, 7,079 males). In gender-stratified parallel process growth models, we examined latent trajectories in Body Mass Index (BMI) across Waves 2 to 4 and moderate to vigorous physical activity (MVPA) across Waves 1 to 4, adjusting for sociodemographic characteristics. To determine if estimated effects of MVPA trajectory on BMI trajectory differed in those born low or high birth weight (LBW, HBW) compared to normal birth weight (NBW), we included interaction terms between LBW or HBW with MVPA intercept and slope.
Results: Overall, MVPA decreased and BMI increased over time. In females and males born NBW, greater Wave 1 MVPA [coeff (95% CI): Males: -2.9 (-7.4, 1.6); Females: -2.2 (-4.6, 0.2)] and smaller decrease in MVPA [coeff (95% CI): Males: -0.14 (-0.26, -0.01); Females: -0.40 (-0.62, -0.18)] were associated with less dramatic BMI increase over time. In males, these associations were similar among those born LBW, and stronger among those born HBW, although interactions were not significant. In females, these associations were positive among those born either HBW or LBW (e.g., interaction p for Wave 1 MVPA=0.009, for MVPA slope=-0.09 in LBW).

Conclusions: Longitudinal associations between MVPA and BMI from adolescence to adulthood varied according to birth weight and sex. These findings have implications for the potential role of early life factors in heterogeneity of responses to physical activity.

T-P-3701-DT
Cardiovascular disease risk factor correlates of physical activity and sedentary behavior patterns in U.S. youth
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Background: Physical activity (PA) and sedentary behavior are associated with cardiovascular disease (CVD) risk factors in youth; however, little is known about associations between patterns of PA and sedentary behavior, and CVD risk factors. This study used latent classes (LC) to investigate associations of youth PA and sedentary behavior patterns with CVD risk factors.

Methods: Data were from youth ages 6 to 17 in the National Health and Nutrition Examination Survey (NHANES) (2003-2006). Accelerometer data (ActiGraph 7164) were used to derive LCs describing average counts/minute (CPM, an indicator of total volume) and percent (%) of wear time in moderate-to-vigorous physical activity (MVPA) and sedentary behavior. Four LCs were identified for CPM, MVPA, and sedentary behavior, respectively. Waist circumference (WC), systolic blood pressure (SBP), diastolic blood pressure (DBP), and high-density lipoprotein cholesterol (HDL-C) were studied as continuous variables using multiple linear regression. Covariates included age, gender, race/ethnicity (non-Hispanic White/non-Hispanic Black/Mexican American/Other), poverty-to-income ratio, and smoking.

Results: The 3,984 eligible participants had a mean age of 11 years, spent 50% of the day in sedentary behavior, spent 5% of the day in MVPA, and had an average of 516 CPM over a 7 day period. The LCs showed several associations with CVD risk factors. Compared to the least active CPM class, the most active CPM class had an 8 mg/dL (95% CI: 2.70, 13.32) higher HDL-C. Additionally, compared to the least active CPM class, youth one CPM class higher had a 2 cm (95% CI: -3.52, -0.25) lower WC. Compared to the least active MVPA class, youth two MVPA classes higher had a 6 cm (95% CI: -8.46, -3.50) lower WC, a 5 mmHg (95% CI: -8.93, -1.44) lower SBP, and a 6 mg/dL (95% CI: 0.95, 10.69) higher HDL-C. The sedentary LCs were not associated with the CVD risk factors.

Conclusions: The pattern of higher MVPA and total volume of PA was associated with several CVD risk factors.

T-P-3702
Climate, Season, and Physical Activity among U.S. Adolescents
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Background: Little is known about how adolescent physical activity varies across the United States by season and climate region.

Methods: We studied 10,920 youth, age 9-15 years in 2004, from the longitudinal Growing Up Today Study 2. To assess climate, we grouped the contiguous U.S. states into 9 climatically consistent regions. We assessed physical activity on the 2004, 2006, 2008, and 2011 surveys by asking hours/week each adolescent engaged in 15 to 18 activities by season. Moderate to vigorous physical activity (MVPA) was modeled as hours/week, and dichotomized into >= vs. < 7 hours/week (meeting national guidelines). We used longitudinal linear mixed effects models and marginal models to examine the associations of season, climate region, sex, and age group with MVPA levels over time.

Results: Median MVPA was 7.2 hours/week (interquartile range 2.5, 13.5), and 47% of adolescents had < 7 hours/week. After adjusting for climate region, age group, race/ethnicity, weight status, and sex, adolescents had 3.81 fewer MVPA hours (95% confidence interval (CI) -3.92, -3.70) in winter than in summer, and almost 2 times the odds of not meeting MVPA recommendations during winter (odds ratio (OR) =1.97, 95% CI 1.91, 2.03). Those living in the South were 31% less likely (95% CI 28%, 35%) to meet activity guidelines than in the Northeast after adjusting for season, and 52% less likely during the summer (95% CI 33%, 74%). Boys were more likely than girls to meet guidelines, with the difference being largest during the summer (OR=1.49, 95% CI 1.40, 1.59) and smallest during the winter (OR=1.26, 95% CI 1.18, 1.34).

Conclusions: Regardless of U.S. climate region, season, sex, or age group, adolescents were less active in the winter than summer, and after accounting for season, those living in the Northeast were most active.

T-P-3703
Comparison of the Role of Physical Activity on Components of Metabolic Syndrome between Normal Weight and Overweight/Obese Participants of the Mexican Health Workers Cohort
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Background: There is available data regarding the association between physical activity (PA) and components of metabolic syndrome (MetS) like waist circumference, triglycerides, HDL cholesterol, blood pressure and glucose. Nonetheless, these studies do not show the effect of PA for normal weight and overweight/obese participants separately and this is important because BMI is a confusion variable due to its relation both with PA and the components of MetS. Our aim was to explore the association between PA levels and components of MetS stratified by BMI status.

Methods: This study is derived from the Mexican Health Workers Cohort. Baseline and follow up measures took place in 2004-2006 and 2010-2012 respectively. Data collected included anthropometric measures, body composition, measurement of metabolic markers, food frequency questionnaires and PA questionnaire about activities at work, leisure time, housekeeping and sports. Inclusion criteria was 18 years or older, without metabolic syndrome but with up to 2 components of MetS, without physical limitation or chronic disease that required a change in diet or weight loss...
greater than 10 kg in the last year. All analysis were stratified by BMI status.

**Results:** A total of 557 normal weight, 404 overweight and 85 obese participants met the inclusion criteria. PA (METS) was similar among groups. Before controlling for other covariates, PA was a significant predictor of glucose, HDL and blood pressure in the normal weight group, and a significant predictor of waist, glucose and blood pressure in the overweight/obese group. After controlling for weight loss during the study, energy intake, alcohol and tobacco use, education level and baseline levels of the predicted component, the effect of PA was no longer significant.

**Conclusions:** We conclude that the observed effect of PA on components of MetS is mediated by weight loss and does not appear to have a strong independent effect from BMI status.

**T-P-3704**

**Gender Differences in Effects of Motivation to Exercise on Physical Activity Levels Among College Students: A Self-Determination Theory Approach**


**Background:** Self-Determination Theory (SDT) posits that intrinsic motivation for health-related behaviors can lead to improved and sustained health behavior change. Accordingly, motivation to exercise may play an important role in understanding why less than half of college students meet recommended levels of physical activity (PA). The present study used an SDT framework to examine exercise motivation and PA outcomes in college students.

**Methods:** Participants were undergraduates at a Northeastern state university (N = 678; 57.5% female; 90.3% Caucasian). The International Physical Activity Questionnaire (IPAQ) was used to measure Low, Moderate, and Vigorous PA. Intrinsic and extrinsic motivation for exercise was measured using the Exercise Motivations Scale (EMS). A Self-Determination Index (SDI) score representing the motivational tendency of each participant was calculated, where positive values indicate more intrinsic than extrinsic motivation.

**Results:** Males (M = 13.5 ± 4.5) had significantly higher SDI scores than females (M=12.1 ± 4.7) (p<.001). Multinomial logistic regression analyses regressed IPAQ scores on SDI and gender (X² = 86.6, df=2, p<.001). As SDI scores increased, participants were less likely to be in the low (OR = .79, 95% CI [.75,.84], p<.001) or moderate PA category than the vigorous category (OR=.88, 95% CI [.84,.92] p<.001). Males were about half as likely as females to be in the low (OR = .58, 95% CI [.34,.99], p<.05) or the moderate PA category (OR = .58, 95% CI [.40,.85], p<.01) than vigorous category. There was no significant interaction between SDI score and gender (ps > .8).

**Conclusions:** The development of intrinsic motivation for PA may increase PA levels in both men and women. Consistent with prior research, compared to men, women were more extrinsically motivated to exercise and had lower PA levels. Given the drop in PA in young adulthood, future studies should explore whether women benefit from intervention strategies that promote intrinsic motivation for exercise.

**T-P-3705**

**Increasing MVPA and Decreasing Sedentary Time are Associated with 2-Year Weight Loss in Obese Persons at Risk for Knee Osteoarthritis**

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**Background:** Moderate-to-vigorous physical activity (MVPA) is recommended for weight loss; however it is unclear how activity or sedentary changes influence long-term weight loss in obese adults. Objective: We examine if changes in MVPA, light intensity physical activity, and sedentary behavior are related to weight loss over a 2 year period in obese adults with knee osteoarthritis (OA) or knee OA risk factors.

**Methods:** Objectively measured body weight, physical activity, and sedentary time were obtained from 459 obese participants from the Osteoarthritis Initiative at baseline and two years. The association between 2-year weight change and changes in physical activity (light and MVPA) and sedentary time from accelerometer monitoring were examined by multiple linear regression adjusted for demographic and health factors.

**Results:** Over 2 years, participants lost 3.48 ± 26.06 lbs., increased sedentary time (9.5 ± 64.5 minutes) and decreased both light and MVPA (-8.6 ± 64.5 minutes, -0.9 ± 14.2 minutes, respectively). Weight loss was associated with increased MVPA gains across five categories of weight change from ≥10lbs. loss (5.2 min), 5-9 lbs. loss (2.4 min), ±5lbs. (1.4 min), 5-9.9 lbs. gain (4.9 min), and ≥10lbs. gain (2.7 min) (p for trend < .001). Weight loss was also associated with less sedentary gain across five categories of weight change from ≥10lbs. loss (-7.1 min), 5-9.9 lbs. loss (7.3 min), ±5lbs. (9.1 min), 5-9.9 lbs. gain (9.5 min), and ≥10lbs. gain (25.8 min) (p for trend =.01). Weight loss had a strong but nonsignificant trend with light activity gain (p for trend = .06). All models controlled for demographics and health factors.

**Conclusions:** Small increases in MVPA and decreases in sedentary time over 2 years were associated with weight loss among obese adults with or at risk for knee OA.

**T-P-3706-DT**

**Interest in Using Compact Pedaling Devices and Treadmill Workstations among Primary Care Patients**

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**Background:** Compact pedaling devices and treadmill workstations have been shown to be effective strategies for reducing sedentary behavior in the workplace, and increasing caloric expenditure. Little is known, however, about the extent to which adults with diverse health-risk profiles would be interested in using such “active work” solutions.

**Methods:** Primary care patients at two outpatient clinics in Central Pennsylvania completed questionnaires to assess interest (“yes” vs. “no”) in using “a small pedaling device under the desk” and “walking on a treadmill with a desk attached” if these options were provided at no-cost. Demographic and health-risk factors were also assessed.

**Results:** Of 441 surveys completed (88.2% response rate), 388 patients (87.9%) provided complete data on their interest in using compact pedaling devices and treadmill desks. Overall, 47.4% and 38.4% of patients aged 18-44, 36.2% and 23.9% of patients aged 45-64, and 19.6% and 7.9% of patients aged 65- plus were interested in using pedaling devices and treadmill workstations, respectively (p<.001 for difference in interest between pedaling devices vs. treadmill workstations). In logistic regression models adjusted for demographic and health covariates, younger-aged adults were more interested in using...
Pedaling devices (OR=3.7, 95% CI=1.8-7.3) and treadmill workstations (OR=7.1, 95% CI=3.0-16.8) than older adults. The logistic regression models indicated no significant difference in interest in using pedaling devices and treadmill workstations among overweight/obese vs. normal weight adults, and among adults with/without hypertension and high cholesterol.

**Conclusions:** Compact pedaling devices and treadmill workstations may serve as viable options for weight gain prevention. Interest in using these devices was similar among patients with, and without, clinical health risk factors, suggesting that “active work” solutions hold potential for chronic disease prevention among diverse at-risk groups.

**T-P-3707**

**AModerate and Vigorous Physical activity is not Associated with 2 Year Weight Change in African-Origin Adults from 5 Diverse Populations**


**Background:** Increasing population-levels of physical activity (PA) is a controversial strategy for managing the obesity epidemic, given the conflicting evidence for weight loss from PA alone per se. We measured PA and weight change in a 3 yr prospective cohort study in young adults from 5 countries (Ghana, South Africa, Jamaica, Seychelles and US).

**Methods:** 1,944 men and women had baseline data and at least 1 year of follow-up data, including anthropometry (weight/BMI), and objective PA (accelerometer, 7-day) after 3 years. PA was explored as 1-min bouts of moderate and vigorous PA (MVPA) as well as daily sedentary time.

**Results:** At baseline; Ghanaian and South African men had the lowest body weights (63.4±9.5, 64.9±11.8 kg, respectively) and men and women from the US the highest (93.6±25.9, 91.7±23.4 kg, respectively). Over the measurement period, Jamaican men and women experienced the smallest weight change (0.2±3.5 kg; -0.1±3.7 kg, respectively), compared to men and women from the Seychelles with the greatest gain (1.0±4.0 kg; 2.2±4.0 kg, respectively). Weight gain was greatest among normal weight participants at baseline vs. overweight/obese at baseline. Neither daily baseline MVPA nor sedentary time were associated with weight gain. Using multiple linear regression, only baseline weight, age and gender were significant determinants of weight gain.

**Conclusions:** From our study it is not evident that higher volumes of PA are protective against future weight gain, and our data suggest that other environmental factors, such as the food environment, may have a more critical role.

**T-P-3708**

**Motor Proficiency in Pediatric Patients with Obesity in a Multidisciplinary Weight Management Clinic**


**Background:** Children with obesity may have difficulties meeting the recommended level of physical activity due to decreased motor proficiency. This study explored the relationship between body composition and motor proficiency in children with obesity.

**Methods:** Between Oct 2014 and March 2015, 147 children, aged 5 to 20 years, had their initial visit to a multidisciplinary weight management clinic. Demographics, anthropometrics, body composition (InBody 770) and motor proficiency (Bruninks-Oseretsky Test of Motor Proficiency (BOT-2) short form) were assessed during the first visit. Kendall Tau’s were considered significant for p<0.0125 after Bonferroni correction for multiple comparisons, and U test was used to analyze group differences.

**Results:** Of the 147 patients, 61% were female, and the racial/ethnic distribution of the patients consisted of 67% Black, 18% White, 8% Hispanic, and 7% Other or Unknown. Mean age was 11.8±3.6yrs, weight was 82.7±31.1kg, height was 152±18cm, waist circumference z-score (WCZ) was 2.12±1.07, BMI z-score (BMIZ) was 2.49±0.44, and percent body fat (PBF) was 46±8%. Obesity class I (BMI 100-119% of 95th%), II (120-139%), and III (≥140%) rates were 20%, 37%, and 43%, respectively. BOT-2 score was below normal in 69% of subjects. There was a significant negative association between PBF and the BOT-2 %ile (τ=-0.171, P=0.008), while WCZ, BMIZ and visceral fat area were only nominally correlated with BOT-2 %ile (τ ranged from -0.154 to -0.124, P-value from 0.016 to 0.029). Patients with class III obesity had significantly lower BOT-2 %ile compared to children with less severe obesity (class I-II) (median [25-75%ile]: 12 [6-18] vs. 14 [8-24]; P=0.002).

**Conclusions:** Our results suggest that children with more severe obesity have greater impairment in motor proficiency than children with less severe obesity. Further studies are needed to explore whether weight loss interventions can improve not only metabolic health but also motor proficiency in pediatric patients with severe obesity.

**T-P-3709-DT**

**Objectively-Measured Physical Activity and Central Adiposity in an Overweight Adult Community-Based Cohort**


**Background:** Central adiposity, particularly visceral adipose tissue (VAT) has been positively associated with type 2 diabetes and all-cause mortality, whereas moderate-to-vigorous physical activity (MVPA) has been shown to be protective. We sought to determine the association between VAT and MVPA in a community-based sample of young African-American adults.

**Methods:** The Modeling the Epidemiologic Transition Study (METS) is a prospective cohort study examining the relationship between physical activity and weight change. During the year-3 follow-up exam, VAT and abdominal subcutaneous fat (SAT) were measured using dual x-ray absorptiometry; MVPA and sedentary behavior using accelerometry.

**Results:** Of the 265 participants (41% men), mean age (±SD) was 39±7 yr and BMI was 32.8±9.6. Waist circumference did not differ between the sexes (103±20 cm); in contrast, both VAT and SAT, 637±373 and 2022±1113 cm3, respectively, were higher among women (p<0.01). MVPA in 1-minute bouts was higher among men than women, 29±30 vs 13±13 min/d
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Conclusions: In a community-based cohort of predominantly overweight and obese African-American adults, MVPA was strongly inversely associated with all three central adiposity measures suggesting physical activity even at relatively low levels may be an important determinant of chronic disease risk. Longitudinal analyses will help clarify the direction of association.

T-P-3710
Parent Limit Setting is Associated with Child Sedentary Media Use and BMI Percentile: Baseline Results of the mFIT (Motivating Families with Interactive Technology) Study
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Background: Very few studies have examined the association of mobile technology ownership with children’s sedentary media use and BMI, as well as the role of parental limit setting in reducing media use. The goal of this research is to examine predictors of children’s BMI percentile including sedentary media time and parental limit setting.

Methods: Parents and children (ages 9-12) provided descriptive and demographic information and completed validated questionnaires assessing self-report of sedentary media time and parent report of monitoring child’s media use. Height and weight were objectively measured by trained staff. Linear regression models were used to determine associations between parenting practices and children’s sedentary media time, as well as children’s sedentary time and their BMI percentile.

Results: Parents (n=29, 42±6 years, BMI 31.1±8.8 kg/m2, 100% owned >1 mobile device) spent an average of 3.6±2.6 hours on weekdays engaged with sedentary media. Children (n=29, 10±1 years, BMI 74.7±28.8 percentile, 93% owned >1 mobile device) spent an average of 2.9±3.0 hours on weekdays using sedentary media. Children’s use of social media was high, where 67% had an account on YouTube, 29% on Instagram, 14% on Pinterest. Regression models showed that parental media limit setting scores were associated with lower child sedentary media use during the week (b=−1.35, p=0.01), but not on the weekend. Additionally, higher child sedentary media time on weekdays was associated with higher child BMI percentile (b=3.64, p=0.04).

Conclusions: Parent rules about media usage are associated with lower sedentary media time, and child sedentary time is associated with greater BMI percentile. Future research is needed to better understand how best to use mobile technology to decrease sedentary media use, as well as to support active media time (e.g., physical activity apps).

T-P-3711
Parental Education and Perception of Outdoor Play Time in Preschool Children

Background: The purpose of this study was to assess the parents’ reported preschool children play outdoor both, during the week days (WK) and at weekend (WEND), as well as to examine the associations with socioeconomic position.

Methods: The sample consisted on 485 (girls: n=223) healthy preschool children, aged 3 to 6 years recruited from kindergartens located in the metropolitan area of Porto, Portugal. Physical Activity (PA) was assessed for 7 consecutive days by accelerometer. The time playing outdoors, during WK or WEND, was derived from parental report. Anthropometric data (weight and height) was collected following standardized protocols. Socioeconomic position was assessed by Parental Education (PE), according to the Portuguese education system.

Results: On average, there was a tendency for differences on time spent playing outdoor either WK or WEND but not for Total PA (TPA) in both genders. However, regression analysis showed that after adjustment for age, BMI and TPA in both sexes the associations were significantly established only between low PE (LPE) and high PE (HPE) group either at WK or WEND. However, no statistically significant association was found for boys at WK (p=0.06).

Conclusions: Our findings suggested that SES may influence children’s time in outdoor play activities especially at weekend. This may have implications for future interventions with this age group.

T-P-3712-DT
Predictors and Grade Level Trends of School Day Physical Activity Achievement in at-risk Children in the U.S.
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Background: Achievement of optimal levels of school moderate-to-vigorous physical activity (MVPA) is paramount to decrease risk of chronic disease in children from low-income families. The purpose of this study was to examine the predictors and grade-level trends of school day MVPA achievement in at-risk children.

Methods: Data were collected during Fall Semester 2014 and analyzed on 1,232 children (Mean age = 8.83 ± 1.64 years; 625 girls, 607 boys; 60% Hispanic) recruited from three “Title I” schools from the Mountain West region of the U.S. Children wore pedometers for one week and a stratified random subsample (n = 533) also wore accelerometers to record sedentary behaviors and MVPA. Generalized linear mixed models were employed to calculate odds ratios (ORs) for achieving school day MVPA standards (≥ 30 min/day) from various predictors and to determine odds of achievement across grade levels, accounting for school and classroom clustering.

Results: Odds of meeting daily MVPA standards were 3.02 times greater if a student achieved at least 6,000 steps during the school day (p < 0.01), and were 55.08% lower for every 1% increase of total time spent in sedentary behavior (p < 0.001). There were also 26.01% lower odds meeting the daily standard for MVPA and 18% lower odds of meeting age and sex specific standards for BMI in cohorts separated by one older grade level (p < 0.01). A significant proportion of MVPA variance was also explained by classroom and school affiliation (Rho = 0.09 to 0.54, p < 0.001).

Conclusions: Daily steps, sedentary behaviors, grade level, and classroom and school affiliation associate with school MVPA achievement in at-risk children.

T-P-3713-DT
Profiles of Motivational Strategies Used by Professionals to Promote Exercise Behaviors
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Background: Behavior change research in obesity and exercise has focused largely on patients, less so on health professionals. However, exploring professionals’ work motivation and how it influences their practices is also relevant. For instance, need-supportive (NS) and controlling (CONT) practices have shown differential effects on patient’s motivation and behavior change. This study explore motivational profiles and related practices from the professional standpoint

Methods: Four profiles were created based on the use of NS (autonomy-support, structure, involvement) vs. CONT (negative conditional regard, intimidation, personal control, judging, excessive use of rewards) in 365 exercise professionals (172 female, experience=7.7±6.3 y); high quality (HQL, high NS, low CONT, n=85); low quality (LQL, low NS, high CONT, n=93); high quantity (HQT, high NS, high CONT, n=98); low quantity (LQT, low NS, low CONT, n=90). Differences among profiles in their motivational antecedents (self-determination (SD), job pressures, need satisfaction vs. frustration at work) and work-related burnout vs. engagement, were assessed using ANOVA with Bonferroni post-hoc comparisons

Results: Compared to LQL, HQL profile presented higher SD, higher need satisfaction (p<0.001), as well as elevated work engagement (p<0.01). Conversely, LQL showed higher perceived job pressures, need frustration and emotional exhaustion (p<0.01). The same pattern of differences was found between HQL and HQT profiles (favoring HQT, p<0.05). Comparison between LQL and LQT highlighted differences regarding perceived job pressures, need frustration and emotional exhaustion (higher in LQL, p<0.05) and SD (higher in LQT, p<0.001)

Conclusions: Professionals relying mostly on NS displayed the best motivational/emotional profiles. Combining both NS and CONT may be detraactive rather than contributive for work motivation, engagement, and prevention of burnout. Although much emphasis has been given to promoting NS, diminishing CONT seems comparably important

T-P-3714
The Association between Executive Cognitive Control and Measures of Physical Fitness and Body Composition among Ethnic Minority Children
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Background: Studies have shown that physical fitness levels, specifically aerobic fitness, in children impact their performance on executive cognitive control tasks. The associations between executive cognitive control and other markers of physical fitness and health-related variables have yet to be examined. Furthermore, no studies have explored gender or ethnic variations in children.

Methods: We explored whether executive cognitive control varied by gender in relation to measures of physical fitness and body composition in 212 ethnic minority children (mean age = 9.8 years). Participants performed a flanker task to measure executive cognitive control and several physical fitness tests including: two-minute walk, vertical jump, one-minute curl-up, and handgrip strength test. Body composition variables included: body mass index, percent body fat, waist circumference, and sagittal height. A hierarchical multiple regression analysis was used to predict variation in flanker task reaction time by body composition variables, after controlling for age. Analyses were stratified by gender.

Results: Gender-stratified models significantly predicted executive cognitive control as measured by flanker task reaction time for both boys (F(10,111)=10.40, p<0.001, R2=0.51) and girls (F(10,99)= 8.26, p<0.001, R2=0.48). Among boys, faster reaction time, indicating greater cognitive control, was associated with increased age (β=−0.60.01; p<0.001, R2=.36) and smaller waist circumference (β=−0.27; p<0.001, R2=0.15). Among girls, faster reaction time was associated with increased age (β=−0.40.17; p<0.01, R2=0.33) and greater distance covered on the two-minute walk (β=−0.40.17; p<0.01, R2=0.15)

Conclusions: Our findings indicate that among ethnic minority children, executive cognitive function is positively related to aerobic fitness in girls and negatively related to central fat distribution in boys, independent of other measures of physical fitness or body composition. Future longitudinal research exploring directionality is warranted.

T-P-3715
The Influence of Physical Activity and Race on the Relationship between Obesity, Metabolic Health and Neighborhood Disadvantage in Pre-Pubertal Children

Background: The influence of physical activity and race on the relationship between obesity, metabolic health and neighborhood disadvantage in pre-pubertal children is unclear.

Methods: Healthy, pre-pubertal ( Tanner-2) children [N=96; Age: 8.06 (SD 0.78); Male= 51 (53%); African American= 26 (27%); Caucasian= 70 (73%); Obese: 21 (22%)] were measured for body mass index z-score (z-BMI), total body fat (DXA), visceral adipose tissue [VAT (magnetic resonance imaging)], subcutaneous adipose tissue intrahepatic [SAT (magnetic resonance imaging)], (IHL) and intramyocellular lipid [IMCL (proton magnetic resonance spectroscopy)] and insulin resistance (HOMA-IR). Moderate to vigorous physical activity (MVPA) was collected using a 7-day accelerometer protocol. Participants with valid waking-wear time (≥3 days of ≥8 hours) were included in the analysis. Neighborhood Concentrated Disadvantage Index (CDI) was characterized using each child’s census tract of residence. Factor analysis, using varimax rotation, was used to calculate sample-dependent CDI measures. Spearman’s rank correlations examined relationships, accounting for gender, race and physical activity.

Results: Child z-BMI (-0.393, p=0.005), body fat (-0.401, p=0.004) and SAT (-0.411, p=0.008) were negatively associated with CDI, after adjustment for sex and race. Further adjustment for MVPA did not alter these relationships (z-BMI -0.426; body fat -0.432; SAT -0.46); and CDI was not significantly related to MVPA (-0.023, p= 0.848). When stratifying by race, the inverse relationships between z-BMI,
body fat and CDI remained significant in Caucasian children only; SAT and CDI were inversely related in African American children only.

**Conclusions:** MVPA was unrelated to CDI in this cohort of healthy, pre-pubertal obese and non-obese youth, and did not influence inverse relationships between weight status and CDI. Racial disparities were observed in relationships between body fat, SAT and CDI, which are in need of further investigation.

**T-P-3716**

**The role of rapid lifestyle trajectories across 18 years in modernizing China in the pathway to BMI**

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**Background:** Over the past 18 years, China has experienced unprecedented rapid modernization, increases in obesity and major changes in diet and physical activity behaviors. There is substantial variation in current lifestyle behaviors and the rates of behavior changes. Few studies have examined the complex pathway from these lifestyle behaviors to BMI while addressing both present day lifestyle behaviors as well as the rate of change.

**Methods:** We used data from the China Health and Nutrition Survey (CHNS), a study of 9 Chinese provinces across 7 waves of data from 1991 to 2009 (n=5,329). Sex-stratified growth models were used to estimate individual 18-year BMI trajectories. We estimated the association between four lifestyle behavior trajectories (occupational and domestic physical activity, caloric intake, and % kcal from animal source food) with our derived BMI trajectories during this same time period.

**Results:** Both 2009 behaviors as well as the rate of 18-year change strongly impacted weight trajectories. Caloric intake in 2009 was related to BMI in 2009. For males higher 18-year rate of change in caloric intake was associated with a higher rate of change in BMI. For females, 2009 physical activity level showed no association with 2009 BMI, although the 18-year rate of change in occupational activity was strongly associated with a more rapid increase in BMI. For males, the 18-year rate of change in occupational and domestic physical activity was not related to rate of BMI change but higher 2009 occupational and domestic physical activity was associated with lower BMI in 2009.

**Conclusions:** Current (and rate of change in) diet and activity behaviors were associated with BMI trajectories and our findings suggest that regardless of current behavior, slowing the rate of change in diet and activity behaviors may positively influence BMI. Policies and interventions that work to slow, not just reverse modernization-related declines in physical activity and diet may be an impactful strategy to reduce obesity.

**T-P-3717**

**Adverse Family Experiences during Childhood and Adolescent Obesity**


**Background:** Adverse experiences during childhood have been linked to a wide range of adult morbidity. By measuring the association between adverse family experiences (AFE)s in childhood and adolescent obesity, we will shed light on how this societal issue is detracting from the health of our children in the pediatric obesity epidemic.

**Methods:** Cross sectional analysis of data from the 2011-2012 National Survey of Children’s Health, consisting of a nationally representative sample of families from the United States. Weighted estimates representing 31,258,575 children were based on interviews with 42,239 parents. Parent report of 9 psychosocial risk factors that affect children was used to measure AFEs during childhood. Parent-report of child height and weight was used to calculate adolescent overweight and obesity.

**Results:** Of children included in the sample, 30.5% have experienced ≥2 AFEs. The prevalence of obesity among children experiencing ≥2 AFEs was 20.4%, compared with 15.6% among children with 1 AFE, and 12.5% among those who reported no AFEs. Adjusted proportional odds logistic regression models controlled for child, parent, household, and neighborhood characteristics. Children ages 10-17 who had ever experienced ≥2 AFEs in childhood were more likely to be both overweight (AOR 1.8; 95%CI 1.49, 2.16; p<0.001), and obese (AOR 1.8; 95% CI 1.47, 2.17; p<0.001) than those who had never experienced an AFE.

**Conclusions:** Results from this national sample indicate that adolescents ages 10-17 who are exposed to adverse family experiences in childhood have higher rates of overweight and obesity. These results identify a pattern of potentially modifiable risk factors for childhood obesity, providing a framework for shaping policy and practice to support a resilient generation of children.

**T-P-3718-DT**

**Association between parent dietary, physical activity, and sedentary behavior and child dietary, physical activity, sedentary behavior and weight status in Delhi, India**

Blanche Greene-Cramer Austin TX, Melissa Harrell Austin TX, Deanna Hoelscher Austin TX, Nalini Ranjit Austin TX, Shreela Sharma Houston Texas, Monika Arora Gurgaon Haryana, Vinay Gupta Gurgaon Haryana, Gaurang Nazar Gurgaon Haryana

**Background:** Childhood obesity has increased dramatically around the world over the last thirty years, particularly in lower and middle income countries (LMICs) like India (Gupta et al., 2012). The etiology of childhood obesity is complex and multifaceted. Research from the West shows us that parents play an important role in creating and shaping adolescents’ eating and physical activity (PA) environments, however this research does not exist for LMICs (Kalakanis et al., 2001; Patrick & Nicklas, 2005; Patrick et al., 2013). This paper examines parent dietary, PA and sedentary behaviors and their association to child weight status and behaviors in Delhi, India.

**Methods:** The study was cross-sectional by design and collected anthropometric and behavioral-psychosocial measures from 6th and 8th grade children and parents in 6 private schools in Delhi, India. Mixed-effects logistic regression models were used to test for associations between child weight status and parent dietary, physical activity, and sedentary behaviors. Linear regression models were used to test for association between child dietary, physical activity, and sedentary behaviors (dep var) and parent dietary, physical activity, and sedentary behaviors (ind var) while controlling for parent and child demographics.

**Results:** Parent energy-dense (ED) food and sugar-sweetened beverage (SSB) consumption were significantly associated with child overweight/obesity (ED was negatively associated: OR=0.70, p=0.26; while SSB was positively associated: OR=1.63, p=0.018). All parent dietary behaviors were

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T-P-3719-DT

Association between parent weight status and child weight status among private school children in Delhi, India
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Background: Studies from western countries suggest that parental weight status is a major risk factor for child and adolescent obesity (Burke, Beilin, & Dunbar, 2001; Keane, Layte, Harrington, Kearney, & Perry, 2012; Whitaker et al., 2010). There have been no studies published on the relationship between parent and child/adolescent weight status in India. With rates of adult overweight and obesity rising rapidly in India, it will be important to accurately describe the relationship between parent and child weight status in order to identify potential points for prevention and intervention programs.

Methods: The study used cross-sectional data collected from 6th and 8th grade parents in private schools in Delhi, India. Student height and weight were measured using standardised protocols. Parents self-reported height and weight. Child weight status was determined using the WHO 2007 international growth reference and parent weight status was calculated using WHO and Asian-specific cut-points. Mixed-effects logistic regression models were conducted to examine the association between child weight status and parent weight status, adjusting for child demographic factors and child behaviors.

Results: Overall, 29.6% of the children were overweight/obese based on the international growth reference while 77.7% of parents were overweight/obese using Asian-specific cut points (compared to 58.4% using standard BMI cut-points). Children whose mother was overweight or obese being 1.55 times more likely to be overweight/obese compared to children whose mother was underweight or healthy weight (95% CI: 1.26-1.92). This association was even stronger for boys, who were more than two times more likely to be overweight/obese than boys if their mother was overweight/obese (OR=2.13, 95% CI: 1.39-3.27).

Conclusions: Parent weight status was found to be the strongest predictor of child weight status, with maternal weight status being more strongly associated with child weight status than paternal weight status, particularly for boys.

T-P-3720

Associations between Modifiable Determinants and Mental Well-Being among Australian Primary School Children
Lynne Millar Geelong Victoria, Tine Bach-Andersen Copenhagen SV N/A, Mary Malakellis Geelong Victoria, Claudia Strugnell Geelong Victoria, Joshua Hayward Geelong Victoria, Bridget Morrissey , Boyd Swinburn Auckland Auckland, Steven Allender Geelong Vic

Background: Early years are critical to future physical and mental well-being. This paper contributes evidence to our understanding of the relationship between diet, physical activity (PA), screen time (ST), sleep and weight status with mental well-being among Australian children.

Methods: Cross-sectional data from 2,561 (50% girls) primary school children (Grades 4 and 6), mean age 11 years, participating in a cluster randomized controlled trial were analysed. Measured anthropometry and self-report behaviors were collected. Data reduction on the dietary items identified healthy and unhealthy diet factors. Linear regression tested relationships between well-being (measured by the PedsQL) and healthy diet tertiles, unhealthy diet tertiles, PA, ST, sleep and weight status (WHO growth standards) while controlling for age, socioeconomic position, language spoken at home, study condition and gender with clustering by locality included to account for study design.

Results: Average PedsQL was 78.8 units (scored 0-100: higher scores indicated better well-being). Compared to low levels of healthy diet, moderate (2.7; p<0.001) and high levels (2.1; p=0.022) were positively associated with well-being. Meeting guidelines for sleep (≥10 hours: 2.2; p=0.003), PA (5-6 days 2.9; p=0.003 and 7 days 3.10; p<0.001) and ST (5-6 days 1.8; p=0.028 and 7 days 3.5; p<0.001) were also positively associated with well-being. An inverse association was observed between high levels of an unhealthy diet (-4.3; p<0.001) and overweight/obesity (-3.8; p<0.001) with well-being.

Conclusions: Efforts to build solid foundations from which children can thrive need to be wide-ranging while encompassing multiple determinants simultaneously. Results within this sample suggest that healthy diets need to be encouraged at the expense of diets containing energy dense and nutrient poor foods, that PA needs to take precedence over ST, and that healthy sleep habits be promoted.

T-P-3721

Associations between Weight Tracking Frequency and Psychosocial Outcomes at 12 Months in a Randomized Behavioral Weight Loss Trial
Jennifer Linde Minneapolis Minnesota

Background: Some weight control experts argue that frequent body weight tracking may carry adverse psychosocial consequences, yet scant data have been reported on the effects of differential weight tracking frequencies on psychosocial outcomes over time.

Methods: 339 adults were randomly assigned to track weight daily, weekly, or never during a 12-month behavioral weight loss program. Participants completed surveys and height/weight measurements at baseline, 6, and 12 months. Depession, anxiety, body image, binge eating, and barriers to weight tracking were assessed at the same time points; participants assigned to weigh reported weight tracking perceptions at 6 and 12 months. Repeated measures models assessed differences over time and by weighing frequency condition.

Results: Mean age of participants was 46.5 years; the sample was 65% female. Mean baseline body mass index was 33.0 kg/m2, and 4% of the sample reported binge eating symptoms at baseline. Study retention at 12 months was 82%, and participants achieved mean weight loss of 8%. There were no differences in changes in depression, anxiety, body image, or binge eating by weighing frequency condition over time (p=29-.76). On average, depression and anxiety remained in the low normal range over the intervention. Body image suggested a neutral to slightly unfavorable opinion of physical appearance at baseline but transitioned to a slightly favorable opinion over time (p<.0001). Rates of binge eating had
increased marginally by 12 months (p=.07) but the sample rate remained low at 8%. There were no differences by condition in perceptions or barriers scores. Barriers declined significantly by 12 months (p<.0001); perceptions were highly favorable at 6 months and showed a slight decline by 12 months that was statistically significant but not clinically meaningful (p<.001).

Conclusions: The study was highly successful at assigning weight self-monitoring at varying frequencies without adverse psychosocial effects.

T-P-3722 Associations of Emotional Awareness and Temperament with 1-Year Changes of BMI and Fat Mass in Non-Overweight and Overweight Adolescents

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Background: Emotion regulation (ER) and temperament difficulties are associated with young children’s BMI and weight problems. Adolescence is a critical developmental period for emotional and physical growth. Yet, it is unclear if ER and temperament are prospective predictors of weight or fat change during adolescence.

Methods: We studied 70 healthy adolescents (13-17y; 81% female) who were overweight (57% BMI≥85th%ile) or normal-weight (43%) over a 1-year period. At baseline, teens completed the Difficulties in Emotion Regulation Scale (DERS; 6 subscales) to assess ER strategies. Parents described adolescents’ temperament on the Early Adolescent Temperament Questionnaire (EAT-Q; 12 subscales). At baseline and a 1-year follow-up, fasting weight and height were measured to calculate BMI. Body composition was assessed by air displacement plethysmography. Multiple regressions were used to examine the relationships of ER and temperament dimensions with change in BMI and fat mass, controlling for baseline BMI or fat mass, puberty, age, height, sex, and race. Overweight status was evaluated as a moderator.

Results: Adjusting for all covariates, neither ER nor temperament were significantly associated with adolescents’ changes in BMI or fat mass (p=.09-.91). However, overweight status was a significant moderator (p=.02) of the relationship between ER-emotional awareness and changes in fat mass. Only among non-overweight adolescents, difficulties in emotional awareness were related to greater increases in fat mass 1-year later (β=2.5, SE=.75, p<.01). The weight status by temperament interactions were non-significant (p>0.5).

Conclusions: Emotion regulation difficulties may be associated with greater adiposity gain during adolescence in non-overweight teens, whereas temperament characteristics were unrelated to adiposity gain during adolescence. Future studies are required to elucidate the potential mechanisms that explain this emotional-cognitive factor’s potential impact on adiposity during adolescence.

T-P-3723 Associations of Perceived Social Support with Risk Factors for Postpartum Weight Retention

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Background: Psychological and behavioral risk factors contribute to post-partum weight retention (PPWR). Modifiable determinants of these risk factors are unclear. The aim of the current study was to examine associations of partner and friend/family social support with these risk factors.

Methods: 1356 women in Project Viva provided self-reported data at 6 months postpartum on demonstrated risk factors for PPWR: walking, moderate and vigorous physical activity (PA), TV viewing, sleeping, fiber and trans-fat intake, and depressive symptoms. Using logistic regression adjusted for maternal race/ethnicity, socio-demographics and pre-pregnancy BMI, we examined the independent cross-sectional associations of partner and family/friend support (Turner Support Scale, range 0-15 points) with each risk factor, dichotomized according to previous analyses.

Results: Mean partner support was 12.8 (SD 2.3) and family/friend was 12.9 (SD 2.5). 56% of the women walked ≥30 min/d and 40% engaged in moderate PA. 88% slept ≥6 h/d, 67% watched TV <2 h/d and 6.4% reported incident depression. Each 5-point increment in partner support was associated with higher odds of walking ≥30 min/d (OR 1.36; 95% CI 1.01, 1.82), consuming sugary drinks over fruits or vegetables. Students and parents’ perceptions toward school lunch service varied significantly and between schools. Most students reported enjoying PA but spend little time in organized sports or playing outside, due to heavy study burden. Children favored high-calorie snacks including chips, fried food and sugary drinks over fruits or vegetables. Students and parents’ perceptions toward school lunch service varied significantly and between schools, in terms of price, quality, nutritious options, taste, and program transparency. The imbalanced school lunch often lead to child overeating of dinner. Parents...
made recommendations for improving school food service and increasing physical activity during and after school.

**Conclusions:** Our findings will help develop family-targeted, school-based health promotion interventions. Intervention framing must consider the unique Chinese social, cultural and economic context and parent-child differences.

**T-P-3725**

**Children’s Genetic Risk for Obesity Evokes Parental Feeding Behavior: Evidence for Ene-Environment Correlation**


**Background:** Parental feeding behaviors (restriction/pressure) are widely assumed to have a causal influence on a child’s weight; however, interest has grown in the idea that the child’s weight may also ‘elicit’ feeding behaviors in the parents. Longitudinal data support this interpretation but cannot definitely identify causation. A novel approach is to examine associations between the child’s genetic risk for obesity and parental feeding behaviors (gene-environment correlation).

**Methods:** Data were from the Twins Early Development Study. Polygenic risk scores (PRS) were created for 3154 unrelated children by summing 28 common obesity SNPs weighted for their effects on BMI from a meta-analysis. PRS were calculated from parent-reported height and weight at 10 years using UK 1990 reference data. Correlations and polynomial contrasts tested associations between the PRS and parental feeding behaviors.

**Results:** The number of obesity risk alleles ranged from 11-32 (mean=21.4; s.d=2.88) and, as expected, the PRS was correlated with BMI SDS (r=0.169, p<0.001). Consistent with the gene-environment correlation hypothesis, child PRS was significantly positively associated with parental ‘restriction’ (r=0.069, p=0.001) and negatively associated with ‘pressure’ (r=-0.094, p<0.001). Effects were linear across the PRS distribution (p<0.05).

**Conclusions:** Results suggest an evocative gene-environment correlation, whereby heritable characteristics in the child ‘elicit’ parental behavior. This finding suggests that part of the observed association between children’s BMI and parental feeding style is due to parents responding to genetically determined characteristics of their child.

**T-P-3726**

**Combination of Weight and Stress are Associated with Abundances of Gut Microbes**

Tiffany Carson Birmingham Alabama, Bradford Jackson Birmingham Al, Ranjit Kumar Birmingham Alabama, Elliot Lefkowitz Birmingham AL, Casey Morrow Birmingham Alabama, Monica Baskin Birmingham Alabama

**Background:** While the gut microbiota is associated with obesity, many additional factors are also thought to influence gut microbial composition including diet and stress. The extent to which each of these factors collectively influence the gut microbiota remains unclear. The purpose of this study was to evaluate the effects of weight status and stress on gut microbial composition among generally healthy black and white women.

**Methods:** Participants completed demographic surveys, anthropometric measures, and provided self-collected stool samples for analysis of gut microbiota. Stress was measured using validated survey instruments. Participants were classified into four categories based on combining stress level (low vs. high) and obesity classification (non-obese vs. obese; BMI ≥30). Fecal DNA was collected and isolated from a wipe. Microbiome analysis was performed using MiSeq DNA sequencing targeting the V4 region of the rRNA gene; bioinformatics used QIIME. Relative Ratios (RR) of taxa abundance were estimated using generalized linear models adjusting for race and age.

**Results:** Participants were 104 overweight/obese women (58 black, 46 white). Mean age and BMI of participants were 39.6 years and 31.0 kg/m2, respectively. No differences were observed for gut microbial diversity (p=0.12) or overall microbial composition (p=0.57) when comparing obesity-stress groups. However, we observed statistically significant (p<0.05) obesity-stress interactions after adjusting for race and age, for taxa abundance of Fusobacterium, Clostridium, Lactobacillus, Porphyromonas, and Succinivibria.

**Conclusions:** Our findings suggest that stress may affect the abundances of gut microbes differently in obese and non-obese individuals. The heterogeneity of these effects should be further explored by longitudinal examinations in future stress management and obesity interventions.

**T-P-3727**

**Competitive Use of Social Norms to Influence Weight Loss**

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**Background:** Numerous studies demonstrate that social norms of populations play an important role in the promotion of healthy behavior. Individuals who perceive their overweight social contacts as trying to lose weight will themselves have greater weight loss intentions. The social norms of a population can create positive change through standardizing valued attitudes and behaviors within a group. Weight loss interventions may be more successful when they increase the perception of the value of weight control among workers’ close contacts. Thus, weight loss behavior could be positively influenced by those social norms that dictate and motivate workers to adopt healthier eating habits.

**Methods:** A weight loss contest was designed to motivate obese law enforcement personnel to lose weight in the “Battle of the Badges” competition. This intervention used Lindora’s Lean for Life program: a 10-week calorie restricted, low-fat, moderate carbohydrate diet, promoting weight loss behavior and cognitive change. Nutrition education, behavioral change, and non-food related coping skills were also provided to all participants during their 3-5 clinic visits per week. The weight loss results and other biological parameters among these groups were evaluated.

**Results:** A total of 77 participants, with an average BMI of 37, started the program. 99% of participants lost 5% or more of their beginning body weight, 84% lost 10% or more and 29% lost 15% or more. An average weight loss of 13% (average of 33 lbs each) was achieved with an average BMI reduction of 5 units. Triglycerides were reduced by 65 mg/dL, LDL reduced by 23 mg/dL, total cholesterol reduced by 39 mg/dL; HgbA1C reduced by 0.3%, and there was a 12 point drop in systolic BP, and a 5 point drop in diastolic BP.

**Conclusions:** Use of competitive pressures derived from social norms that promote and value weight loss behaviors among obese co-workers can produce enhanced weight losses. This concept could be used in workplace settings to help obese workers lose weight.
Correlation Between Parenting Style and Family Environment in Obese and Overweight Children from South Italy
Teresa Buccheri Messina Italy

**Background:** Parenting is a combination of activities, behaviors and processes that work individually and together to mold child outcomes. Parents are models for children; they basically shape their children into adults through their world of influence. Parenting style may affect family environment. In particular authoritative parenting style tends to produce better environmental family contexts, while authoritarian and permissive parenting styles are associated with dysfunctional contexts. The purpose of the correlational research was to determine the relation between parenting style and family environment in obese and overweight children from South Italy (Sicily).

**Methods:** Participants included 52 families: 32 obese and overweight children aged between 5 and 11 years old (8.59 ± 1.86), 20 normal weight children aged between 5 and 11 years old (7.80 ± 2.14) and their parents (47 mothers and 30 fathers) aged between 22 and 54 years old (39.77±6.18). Measures were: The Family Nutrition and Physical Activity Screening Tool to provide a comprehensive evaluation of family environment examining multiple domains such as family diet, physical activity, screen time, sleep, and family schedule; Parenting Styles and Dimensions Questionnaire (PSDQ) to assess specific constructs of parenting. Data were compared with nonparametric Kendall tau correlation coefficient by using SPSS.

**Results:** The study showed a positive correlation between authoritative parenting style and family environment and a negative correlation between authoritarian parenting style and family environment (τ = .264 p < 0.01; τ = .226 p < 0.05).

**Conclusions:** The authoritative parenting style characterized by control, inflexibility, poor communication and detachment towards their children would seem to be associated with a dysfunctional environment (obesogenic environment). The authoritative parenting style characterized by the balance between rules and affection correlates with more adaptive social outcomes.

T-P-3729
Determining the Self-esteem in Obese Patients Attending Outpatient of General Hospital Area Family Medicine Unit No. 8 Dr. Gilberto Flores Izquierdo Mexican Institute of Social Security

**Background:** Obesity can have physical or psychological consequences, within these last, we have emotional distress, loss of self-esteem and high levels of anxiety and depression. However, it is not well established whether obesity participate in the detriment of self-esteem. We investigated the level of self-esteem in obese adult patients attending the outpatient of General Hospital Area Family Medicine Unit N° 8 in the Federal District.

**Methods:** Cross-sectional descriptive study. Inclusion criteria: age greater than 18 years, Mexican Institute of Social Security obese patients, regardless of gender or occupation. Sample: 234 patients, confidence interval: 90%. Instrument: Coopersmith Self-Esteem Inventory (for adults). All obese patients were determined the level of self-esteem by Coopersmith Self-Esteem Inventory. It was analyzed self-esteem levels according to gender, age, education, occupation, type of obesity and marital status in these patients.

**Results:** Obese adults had high average levels of self-esteem, it was obtained that the women had high self-esteem compared with men. Also, the school and marital status were directly related to higher levels of self-esteem. Nevertheless, the fourth decade of life showed low self-esteem, similarly these low levels it were observed with obese patients unemployed and patients with obesity class I.

**Conclusions:** Our results show the first evidence indicating positive levels of self-esteem in obese adults attending the outpatient HGZ / UMF No. 8. Furthermore, it was shown that levels of self-esteem may increase or decrease in obese patients depending on some factors including gender, age, education, occupation, type of obesity or marital status.

T-P-3730
Does Physical Activity Self-Efficacy Mediate the Relationship between Family Environment and Fitness in Overweight and Obese Adolescents?
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**Background:** Very little is known about how dimensions of the family environment might affect fitness levels in overweight and obese adolescents and whether this putative relationship is mediated by physical activity self-efficacy.

**Methods:** We evaluated the potential associations between three domains (cohesion, expressiveness, conflict) of the Family Environment Scale (FES) and fitness using recovery heart rate (RHR) from a 3-minute submaximal (YMCA) step test in 339 overweight or obese adolescents seeking weight loss treatment. We also explored potential associations between physical activity self-efficacy (PACE) and RHR and between FES domains and PACE. Further, we examined the potential mediation of the putative relationship between FES domains and RHR by PACE.

**Results:** We found that PACE cohesion scores were associated with RHR (β=1.34, s.e.=0.67; p=0.04) when adjusted for age, gender, race, BMI, parental education and income, which suggests lower cohesion in the family environment is associated with lower fitness. In addition, we found that PACE scores were marginally associated with RHR (p=0.08) and that FES cohesion scores were associated with PACE scores (p=0.07) in adjusted models. Additional formal mediation analyses using FES and PACE scores as well as latent variable structural equation modeling (SEM) are underway and will be presented.

**Conclusions:** Our preliminary results suggest that lower cohesion in the family environment contributes to lower physical activity self-efficacy and lower fitness as measured by RHR.

T-P-3731
Emotion Regulation Outcomes are not Universal: An Investigation of Racial Differences in Emotional Eating Across Weight Status
Kate Krauthaber Ypsilanti Michigan, Ashley Wiedemann Ypsilanti Michigan, Tamara Loverich Ypsilanti Michigan

**Background:** We examine the racial and cultural differences in emotional eating and emotional regulation outcomes among different racial backgrounds. The emotional eating in young people has been related with different psychological, biological, and social factors. The relationship between race and emotional eating behavior is not yet well understood. In this study we aimed to explore the racial differences on emotional eating behavior and emotional regulation outcomes.
Background: Recent research suggests that difficulties in emotion regulation contribute to patterns of overeating. Little is known about the relationships among race, overweight status, and eating related emotion regulation strategies.

Methods: Undergraduate students (n=857) completed an online survey including self-reported height and weight, emotional eating (Emotional Eating Scale), weight related experiential avoidance (Acceptance and Action Questionnaire for Weight-Related Problems), and emotion regulation (Emotion Regulation Questionnaire). Two (Weight Status; Normal Weight: NW vs. Overweight: OW) X 2 (Race; White vs Black) ANOVAs were conducted to explore differences in emotional eating and emotion regulation.

Results: Weight-related experiential avoidance differed significantly by race and weight status F (3, 633) = 11.42, p<.001. Post hoc comparisons using the Tukey HSD indicated that the mean scores for the AAQW were significantly different for NW Blacks (M = 59.23, SD = 2.69) compared to all other groups, while OW status did not differ by race. OW Whites reported greater emotional eating (M = 30.90, SD = 1.36) when compared to NW Whites (M = 26.78, SD = 1.17). Blacks reported higher levels of emotion suppression (M = 15.65, SD = 5.18) when compared to Whites (M = 14.56, SD = 4.77). No other differences in emotion regulation were found by weight status.

Conclusions: Findings suggest that racial differences in eating behavior may differ as a function of emotion regulatory strategies. Culturally tailored interventions that take into account differences in emotion regulation may be warranted to more effectively address emotion related eating in African Americans.

T-P-3732
Examining Binge Eating Disorder and Food Addiction in Individuals with Overweight and Obesity
Valentina Ivezaj New Haven Connecticut, Marney White NEW HAVEN CT, Carlos Grilo New Haven Connecticut

Background: Binge eating disorder (BED) and food addiction (FA) are associated strongly with obesity but the nature and significance of such comorbidity is unclear. Preliminary evidence suggests that treatment-seeking patients with obesity and BED report high frequencies of FA, and the co-occurrence of BED and FA may represent a more disturbed BED subgroup. This study aimed to 1) identify the frequency of BED and FA in a community sample of individuals with overweight and obesity, and 2) to compare clinical characteristics in four subgroups of persons with overweight/obesity: those with BED, those with FA, those with both, and those with neither.

Methods: Participants were 506 individuals who met criteria for overweight/obesity (BMI>25) who completed a web-based survey with established measures of eating and health behaviors. Most were female (n=418; 83.1%) and White (n=408; 81.0%); mean age and BMI were 38.0 (SD=13.1) years and 33.6 (SD=6.9), respectively.

Results: Among the 506 participants with overweight/obesity, 43 (8.5%) had BED, 84 (16.6%) had FA, 51 (10.1%) had both BED+FA, and 328 (64.9%) had neither (Control group). The three groups with eating pathology (BED, FA, and BED+FA) had significantly greater disturbances on all measures (i.e., eating disorder psychopathology, depression, impulsivity, and self-control) than the Control group. The BED and FA groups differed little from each other, except on core features related to each construct. The FA group reported significantly higher depression scores than did the Control (p=0.001) and BED (p=0.01) groups. The BED+FA group also reported significantly higher depression scores than the Control (p=0.001) group.

Conclusions: In persons with overweight/obesity, over one-third met criteria for BED, FA, or both BED+FA and the presence of these forms of disordered eating was associated with greater pathology. FA and the co-occurrence of FA+BED may signal a more disturbed subgroup in individuals with overweight/obesity.

T-P-3733
Examining Differences in Food Cravings by Smoking Status
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Background: Weight gain is frequently reported when people quit smoking and concern of weight gain is a common deterrent to smoking cessation. Despite evidence that food cravings may increase consumption of craved foods, little is known about food cravings among smokers. The purpose of this study is to examine food cravings by smoking status and weight in adults.

Methods: Data were from 712 community volunteers (mean age=29.7+9.1 years; mean BMI=27.3+5.5 kg/m^2; 54.8% female; 70% white) participating in a cross-sectional study on stress, self-control, and addiction. Participants completed a comprehensive assessment battery including the Food Craving Inventory, Fagerstrom Test for Nicotine Dependence, and questions about smoking history. Heights and weights were measured. We analyzed data using general linear models.

Results: Twenty-three percent of participants were former smokers and 24.3% were current smokers. The main effects model demonstrated that current smokers reported higher food cravings than never or former smokers, and individuals with a higher BMI reported higher food cravings. Current smokers reported significantly more cravings for high fats, carbohydrates/starches, and fast-food fats than former or never smokers. Smokers with higher levels of nicotine dependence demonstrated significantly higher general food cravings, and cravings for high fats, sweets, and carbohydrates/starches.

Conclusions: These results demonstrate the association between food cravings and cigarette smoking and suggest potential shared mechanisms. Addressing food cravings may be important to help prevent weight gain during smoking cessation and there may be greater difficulties in reducing weight and changing eating habits among smokers.

T-P-3734
Family functioning and quality of parent-adolescent relationship: Cross-sectional associations with adolescent weight-related behaviors and weight status
Jess Haines Guelph ON, Sheryl Rifas-Shiman Boston MA, Nicholas Horton Amherst Massachusetts, S. Bryn Austin Boston Massachusetts, Alison Field Boston Massachusetts, Matthew Gillman Boston MA

Background: The purpose of this study was to examine cross-sectional associations of family functioning and quality of parent-adolescent relationship with adolescent weight status and weight-related behaviors.

Methods: We studied 3900 females and 2759 males, 14-24 years old in 2011, participating in the Growing Up Today Study 2. We examined cross-sectional associations of family functioning and quality of parent-adolescent relationship, both mother and father, with adolescent weight status, disordered eating, screen time, physical activity, and intake of fast food,
assessed in 2011. We used generalized mixed models to account for intrafamilial clustering; all models adjusted for adolescent age and family structure.

**Results:** Among females, higher family dysfunction was associated with greater odds of disordered eating (adjusted odds ratio [AOR]=1.9; CI=1.6-2.2), not meeting physical activity recommendations of one hour per day (AOR=1.4; CI=1.1-1.6), eating fast food at least once per week (AOR=1.4; CI=1.1-1.6) and being overweight/obese (AOR=1.4; CI=1.1-1.6). Among males, higher family dysfunction was associated with greater odds of disordered eating (AOR=2.1; CI=1.7-2.6) and not meeting physical activity recommendations (AOR=1.4; CI=1.1-1.7). Among females, higher quality parent-adolescent relationship was associated with lower odds of disordered eating, not meeting physical activity recommendations, and eating fast food; the magnitude of associations were similar for mother and father relationship quality (AORs range from 0.6 – 0.8). Among males, higher quality father-adolescent relationship was more consistently associated with lower odds of being overweight/obese and engaging in unhealthful behaviors than mother-relationship quality.

**Conclusions:** Our results suggest that family functioning and parent-adolescent relationship quality are associated with adolescents’ weight-related behaviors and weight status and that the nature of these associations differs by adolescent gender.

T-P.3735

**Fat phobia among nutrition college students in México**

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**Background:** Despite the high prevalence of obesity and abdominal obesity in México, a recent study among medical and psychology students reported a high frequency of fat phobia. Nutritionists play a major role in the prevention and promotion of healthy behaviors (e.g., regulation weight-related parenting practices, including attitudes about eating and CB reported among college students and whether these maladaptive health behaviors varied by gender.

**Methods:** College students (N= 2680; 18.68 ± 2.23 years; 58.3% women; 74.9% white) at a large public university completed questionnaires during the first week of class including the Binge Eating Scale (BES).

**Results:** Binge eating was common (23.6% overall; 29.1% women; 17.3% men) and compensatory behaviors were also present (44.7% overall; 49.8% women; 36.9% men). The most common compensatory behaviors were to: (1) exercise for more than 1 hr to keep from gaining weight after a binge (25.3% women; 17.5% men) and (2) not eat anything for at least 24 hrs post-binge (9.4% women; 4% men). Women were more likely to endorse vomiting (7.2% vs 2.3%), taking laxatives (5.7% vs 1.5%), or diet pills (6.3% vs 2.2%) than men (p<.05).

**Conclusions:** College students appear to be susceptible to binge eating and engaging in compensatory behaviors, including men who often are not targeted by current treatment models. Given the physical and psychological consequences associated with BE and CB, these results suggest increasing awareness of and providing resources for college students engaging in these behaviors may improve the overall health of the college student population.

T-P.3737

**Gender Differences in Binge Eating and Compensatory Behaviors Among College Students**

Erin Lenz Storrs Connecticut, Mary Bugbee Storrs CT, Deborah Corman Storrs CT, Amy Gorin Storrs CT

**Background:** Weight gain is common during the first year of college, and efforts to prevent or reverse weight gain may fuel unhealthy and ineffective attempts at weight regulation, including binge eating (BE) and/or compensatory behaviors (CB). The present study examined the prevalence of binge eating and CB reported among college students and whether these maladaptive health behaviors varied by gender.

**Methods:** Participants included 345 adoption triads (the Adopted Child, Adoptive Mother, and Birth Mother) from the Early Growth and Development Study. Genetic influences on the Adopted Children’s BMIs were indexed by their Birth Mothers’ self-reported prepregnancy BMI, ascertainment at 4 months postpartum. Adoptive Mothers’ parenting practices were used as indicators of environmental influences when the children were 9 years old. Adoptive Mothers’ reported on their weight-related parenting practices, including attitudes about their children’s weight (concern and sense of responsibility), and conscious promotion of healthy behaviors (e.g., regulation of screen time, healthy food choices, regular meal times). Adoptive Mothers’ reports were used to compute their BMIs and their children’s BMI percentiles.

**Results:** Path analysis assessed the joint effects of genetic influences and Adoptive Mothers’ practices on children’s BMI. Only Birth Mothers’ BMI (beta=-.19) and Adoptive Mothers’ promotion of healthy behaviors (beta=-.15) were directly

T-P.3736

**Genetic and environmental contributions to children’s BMI at age 9 years**

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**Background:** Previous research highlights genetic and environmental contributions to children’s attainment of healthy BMIs, but often confounds these effects. This study used an adoption design to disentangle the effects of children’s genetic predispositions and parenting practices on BMIs at age 9.

**Methods:** Participants included 345 adoption triads (the Adopted Child, Adoptive Mother, and Birth Mother) from the Early Growth and Development Study. Genetic influences on the Adopted Children’s BMIs were indexed by their Birth Mothers’ self-reported prepregnancy BMI, ascertainment at 4 months postpartum. Adoptive Mothers’ parenting practices were used as indicators of environmental influences when the children were 9 years old. Adoptive Mothers’ reported on their weight-related parenting practices, including attitudes about their children’s weight (concern and sense of responsibility), and conscious promotion of healthy behaviors (e.g., regulation of screen time, healthy food choices, regular meal times). Adoptive Mothers’ reports were used to compute their BMIs and their children’s BMI percentiles.

**Results:** Path analysis assessed the joint effects of genetic influences and Adoptive Mothers’ practices on children’s BMI. Only Birth Mothers’ BMI (beta=-.19) and Adoptive Mothers’ promotion of healthy behaviors (beta=-.15) were directly

T-P.3736
associated with children’s BMI. Adoptive Mothers’ sense of responsibility predicted the promotion of healthy behaviors (beta=.23). However, Adoptive Mothers with higher BMIs expressed less responsibility for their children’s weight (beta=-.18) and were less likely to encourage healthy behaviors (beta=-.19) and were less likely to encourage healthy behaviors expressed less responsibility for their children’s weight (beta=-.18).

Conclusions: Results indicate independent genetic and environmental influences on children’s BMI, and underscore the indirect impact of the rearing parent’s BMI on child BMI outcomes. Implications for obesity prevention will be discussed.

T-P.3738 Genetic Overlap Between Obesity and ADHD Symptoms in Male and Female Adolescents

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Background: ADHD symptoms are associated with a higher risk of obesity in adolescents, especially females. ADHD symptoms and obesity are each highly heritable, but it is not known whether common (i.e., to both ADHD and obesity) genetic or environmental factors account for their association.

Methods: Participants included 393 male monozygotic, 414 female monozygotic, 276 male dizygotic, and 307 female dizygotic twins from the Swedish Twin Study of Child and Adolescent Development. Outcomes were measured at age 16-17 years and included overweight/obesity status (OB), defined as self-reported BMI > 85th sex- and age-adjusted BMI percentile, as well as Inattention (AT) and Hyperactivity/Impulsivity (HI) symptoms, defined as the presence of any parent-reported DSM-IV AT or HI symptoms. We fit bivariate behavioral genetic models to estimate additive genetic (A), shared environmental (C), and unique environmental (E) factors, as well as genetic and environmental factor correlations, for OB & AT and (separately) for OB & HI, by gender.

Results: Models including A and E (but with C parameters set to 0) fit the data well. In these models, the estimated variance due to genetic effects was high (0.75-0.92) and significantly different from 0 for all three outcomes (OB, AT, HI) in both genders. In males, the estimated phenotypic correlations for OB & AT and OB & HI did not differ significantly from 0. In females, the estimated phenotypic correlations were 0.28 (OB & AT) and 0.26 (OB & HI), with 73% (OB & AT) and 87% (OB & HI) of these phenotypic correlations due to common genetic effects and the remainder due to common unique environmental effects.

Conclusions: As expected, OB, AT, and HI symptoms are highly heritable in each gender. However, phenotypic overlap between OB & AT and between OB & HI was observed only in females, with most of the overlap due to common genetic effects. Thus, obesity and ADHD symptoms appear to share common genetic risk factors, at least in females.

T-P.3739 - Withdrawn

T-P.3740 Health Perception and Mortality: Predicting Depression Responses and Near-Term Death Following a Diagnosis of Adult Onset Diabetes


Background: One common outcome of unmanaged obesity is adult onset diabetes mellitus (AODM), especially in aging populations. AODM diagnoses can involve a prescription of major lifestyle changes, many of which are made more difficult by the presence of depression symptoms. The course of depression development or amelioration following AODM onset may be predicted by a set of simple baseline factors, and may result in near-term mortality.

Methods: The current study examines a population sample of retirement-aged adults (N = 1021) to identify heterogeneous depressive symptom trajectories from 0-2 years prior to a diagnosis to 4-6 years after. Latent class growth mixture modeling is applied to this prospective data set, and used to identify predictors of individual trajectory assignment.

Results: A combination of psychosocial and demographic characteristics differentiated unique depression trajectories from a resilient subsample, characterized by no significant depression increase following AODM onset. Notably, self-perceived impact of AODM onset while controlling for age and actual health complications prospectively predicts near-term mortality in a subsample exhibiting increased depressive symptomatology following diabetes onset. However, chronically depressed individuals and those with improving depression post-AODM onset were not at increased risk of mortality compared to the resilient group.

Conclusions: While individuals are generally modally resilient to depression onset following AODM diagnoses (resilient class = 62.9% of sample), certain individuals may be depressed before and after onset (7.8%), may improve after onset (7.4%), or may worsen after onset (9.0%). Simple baseline factors can help predict an individual’s depressive response to AODM onset and, ultimately, if the individual is at an increased risk for near term mortality independent of health issues related to obesity and AODM. Mechanisms of this increased mortality merit further investigation.

T-P.3741 Honey, I shrunk the kids! Mother’s altered perception of children weight status.

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Background: The aim of this study is to identify factors affecting mothers’ misperception and to assess the role of mothers’ misperception (in terms of perception as normal of an overweight/obese child) in implementing actions changing kids’ weight.

Methods: International study investigated non-traditional factors promoting obesity in children from ten countries (Mexico, Argentina, Chile, Brazil, Italy, Germany, France, United Kingdom, Georgia and India). Children were measured and weighted and Body Mass Index (BMI) was classified according to World Health Organization (WHO) standards. Mother’s perception of children weight status was assessed using a projective test asking them what figure best represents their kids’ body size. Family’s socio-demographic characteristics and children habits were investigated by administering a validated questionnaire.

Results: A sample of 2720 kids were enrolled in the study, among overweight and obese ones, 89% and 52%, respectively, were classified as normal weight by their mothers. Odds Ratio (OR) of mothers’ misperception of overweight/obese children was significant higher for: parents with higher BMI, children who reached higher IBAI score and high family’s economic status. Additionally, overweight/obese children who are perceived as normal weight by their mothers.
Conclusions: Our findings suggest that the planning of public health policies should primarily concentrate in make parents aware of their children weight status in order to improve the effectiveness of these interventions.

T-P-3742
How Can What You Say as Parent Influence Whether Your Daughter Becomes Happily Slim by Design?
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Background: Guidance and comments on one's eating and appearance received in childhood may have long-term effects on self-image and health behavior in general.

Methods: Slim by Design registry was built for the purposes of studying characteristics and behaviours of people who do not have excess weight and never gained weight in the first place. Data from 168 registry members (72% female, age:39 years, BMI:21.7 kg/m2) were used to analyse whether parents’ comments on weight and eating were associated with health behaviour of registry members. Questions used in the analyses were: ‘Did your parents ever comment on you being overweight’, ‘Did your parents ever comment on you being underweight’, ‘Did your parents ever comment on you eating too little of certain foods’, ‘Did your parents ever comment on you eating too little of certain foods’.

Results: Of 168 registry members, 70 (42%), 97 (58%), 103 (62%) and 119 (71%) recalled their parents never commenting them eating too little certain foods, too much certain foods, being underweight or being overweight, respectively. 86 (52%) never received negative comments i.e. being overweight or eating too much. Participants whose parents never gave negative comments were older when they became aware of their weight (44% vs 24% were 15 years or older, p=.014), less likely to feel guilty after overeating (16% vs. 44%, p<.001), weighed themselves less frequently (37% vs 19% weighed on the yearly basis) and bigger proportion of them responded never being on diet (58% vs. 33%, p=.002) However, these participants had lower BMI than their counterparts (84% vs. 59% had BMI below 23, p=.001).

Conclusions: Our results suggest that parents’ negative comments on eating and appearance may be associated with more restricted health behavior and higher BMI in adulthood.

T-P-3743
Indications of Increasing Social Rejection Related to Weight Bias
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Background: Bias and stigma are well-established barriers to improving public and personal health. Bias against people with obesity has been reported to have worsened as the prevalence of obesity has increased. The present study measured changes in public attitudes about obesity and people with obesity over time.

Methods: Consecutive samples totaling 73,009 U.S. adults completed a series of anonymous, voluntary online surveys between Feb 2013 and Apr 2015. Respondents completed self-report measures assessing perceptions of obesity. Beginning in October 2014, measures of blame for obesity, social distance from people with obesity, and fat phobia (explicit weight bias) were also collected. Descriptive statistics were calculated and analyzed to identify significant trends.

Results: Explicit weight bias as measured by the Fat Phobia Scale was unchanged between Oct 2014 and Apr 2015 at a moderately high mean value of 3.6 on a 5-point scale. Social acceptance of employees, teachers, or family members with obesity decreased in the same period. Between Feb 2013 and Mar 2015, public perceptions of obesity as a "personal problem of bad choices" declined modestly.

Conclusions: These data suggest that the public increasingly understands that obesity is more than a simple problem of personal responsibility. But that understanding is not translating into improved social acceptance for people with obesity. Social acceptance of obesity in education, employment, and family relations may be declining. Continued monitoring of public attitudes is essential to determine how these trends will evolve. Weight bias remains a significant source of harm to people living with obesity and a significant impediment to progress in reducing the obesity's adverse effects.

T-P-3744
Indirect Effects of Negative Urgency on BMI: The Role of Food Addiction and Alcohol Consumption
Karen Saules Ypsilanti Michigan, Pelin Catak YPSILANTI Michigan (MI), Meagan Carr Ypsilanti Michigan

Background: The relationship between impulsivity and excessive behaviors (e.g., substance abuse, overeating) is well documented, but the mechanistic pathways underlying these associations are not well understood. Towards this end, researchers have begun to adopt a more multidimensional view of impulsivity as a construct that includes five dimensions (Cyders et al., 2007; Whiteside & Lynam, 2003: Positive Urgency (PU), Negative Urgency (NU), Lack of Premeditation, Lack of Perseverance, and Sensation Seeking. Urgency refers to the tendency to respond rashly when experiencing emotions, either positive or negative. Recently, Murphy et al. (2014) demonstrated that the association between NU and BMI is mediated by “food addiction (FA),” a relatively new construct capturing parallels between a type of excessive eating and addictive behaviors, more generally. Because NU has been associated with a number of addictive behaviors, we expanded on Murphy et al. by considering the possibility that the path from NU to increased BMI could be mediated by more than one type of addictive behavior.

Methods: Using online survey data from a convenience sample of 532 college students (Mean age = 21.1 yrs, 71% female, 63.5% Caucasian), we explored the relationships between UPPS impulsivity dimensions, food addiction (Gearhardt et al., 2009), alcohol consumption (average drinks per day * number of drinking days = drinks per month), and BMI.

Results: The sample had a mean BMI of 25.5, consumed a mean of 37.5 drinks per month, and had a mean of 1.7 FA symptoms, with 10% meeting full FA criteria. In a combined regression model, using the bootstrapping approach (Preacher & Hayes, 2004), the indirect effects of NU on BMI were significant for paths mediated by both Food Addiction and Alcohol Intake, but the direct path from NU to BMI was not significant.

Conclusions: Results suggest that NU may drive different addictive behaviors that lead to increased BMI, and NU may be a worthy target of obesity prevention efforts.

T-P-3745-DT
Is parental stress associated with obesity in their offspring? Findings from the Study of Latino Youth (SOL Youth)
Background: Chronic stress is associated with obesity in adults but whether parental/caregiver stress is associated with obesity in their offspring has not been widely examined. Furthermore, there is scarce information about the role of parental/caregiver stress on child weight status in Hispanic/Latino populations.

Methods: The study included a sample of Hispanic/Latino children and their caregivers (N=473) from the SOL Youth study, a multicenter study that enrolled children aged 8-16 from four cities (Bronx, Chicago, Miami, and San Diego). Half of the children were girls, 55% were ≤12 years old, and 73% were born within the 50 US states. Child overweight (BMI >85th-94th age-, sex- specific percentile) and obesity (BMI >95th) were defined following CDC guidelines. Parental/caregiver chronic stress was assessed by the Chronic Stress Burden Scale, an 8-item measure of ongoing stressors in important life domains (e.g., work, relationship) lasting >6 months. The odds ratio (OR) for the association between parental/caregiver stress and child obesity was adjusted for child age, sex, place of birth, and field center.

Results: Twenty-two percent of children were overweight and 28% were obese. Twenty-two percent of parents did not report any chronic stressors, 48% reported 1-2, and 29% reported ≥3 stressors. The prevalence of obesity in the child increased with number of parental stressors from 20% among those without parental stressors to 34% among those with ≥3 stressors. After model adjustment, children whose parents reported ≥3 stressors were twice as likely to be obese than children whose parents reported no stressors (OR=2.13; 95% CI: 1.2-3.9). Parental/caregiver stress was not associated with their child being overweight.

Conclusions: These findings suggest that parental/caregiver chronic stress is related to obesity in their offspring. Obesity prevention and treatment interventions may need to address parental/caregiver psychosocial stress to improve outcomes.

T-P-3747

Mothers and Fathers Encourage Girls to Diet Differently, but it is Father Encouragement to Diet That is Associated with Girls’ use of Unhealthy Weight Control Behaviors

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Background: Parental encouragement to diet (EtD) promotes weight gain during adolescence. However, less is known about differences in how mothers and fathers encourage their daughter to diet, and the independent and cumulative influence of these practices on girls’ use of unhealthy weight control behaviors (UWCB).

Methods: Participants were 149 15y non-Hispanic white girls and their parents. Parents completed the Parent Encouragement of Child Weight Loss Scale; girls completed the French Weight Loss Scale; girls’ height/weight measured in triplicate. Latent Class Analysis (LCA) was used to determine patterns of mother and father EtD; regression was used to evaluate independent and cumulative effects of mother and father EtD on girls’ use of UWCB.

Results: LCA revealed that mothers and fathers had distinct patterns of EtD. Mothers with moderate levels of EtD (26% of mothers) talked about and modeled dieting and exercise behaviors, while mothers with high EtD (29%) talked about and modeled dieting and exercise, and put girls on exercise plans. In contrast, fathers with moderate levels of EtD (32% of the fathers) talked about and modeled exercise behaviors, and fathers with high EtD (13%) expressed weight concerns directly to daughters, talked about and modeled dieting and exercise, and put girls on diet and exercise plans. 45% of mothers and 55% of fathers practiced no EtD. Regression analyses revealed that after adjusting for girls’ BMI, only fathers’ use of direct EtD practices (e.g. putting daughter on a diet plan) predicted daughters’ use of UWCB.

Conclusions: Fathers and mothers may encourage girls to diet in different ways; fathers may be more direct, explicitly expressing their weight concerns and putting their daughter on a diet and exercise plan. However, more direct encouragement from fathers may put girls at risk for using UWCB. Fathers who are concerned about their daughter’s weight may need
**T-P-3748**

**Obesity as a Disease: Effects on Weight-Biased Attitudes and Beliefs**

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**Background:** In June 2013, the American Medical Association (AMA) decided to designate obesity a disease. Proponents predicted the decision would lead to reduced weight-related stigma, whereas opponents predicted designating a third of the population as “diseased” would exacerbate stigma.

**Methods:** To determine the effects of defining obesity as a disease on explicit and implicit weight-biased attitudes and weight-biased beliefs, female undergraduates were randomly assigned to one of two groups. Participants in the disease group (n = 71) read an article describing obesity as a disease caused by biology and genes; participants in the lifestyle group (n = 75) read an article describing obesity as the result of personal choices, including over-consumption of food and inactivity. Change in beliefs about the controllability of weight was examined as a potential mediator of the relationship between group and explicit weight-biased attitudes; and body mass index (BMI), health orientation, and fitness orientation were examined as potential moderators.

**Results:** Results revealed a significant interaction between time and group on weight-biased beliefs. Participants in the disease group exhibited stronger beliefs that obesity is outside a person’s control from pre- to post-exposure, whereas participants in the lifestyle group exhibited a weakening in these beliefs. Contrary to hypotheses, change in beliefs about the controllability of weight did not extend to weight-biased attitudes.

**Conclusions:** Although only time will reveal the natural consequences of the AMA’s decision to designate obesity a disease, awareness is likely insufficient to elicit change in attitudes, particularly implicit attitudes, which are more resistant to change. Obesity is a complex and multi-determined condition; the most effective public health messages may be those that recognize factors both within and outside of a person’s control, thereby simultaneously reducing weight-related stigma and promoting healthful weight-control behaviors.

**T-P-3749**

**Obesity is Related to Poor Academic Performance in College Students**

Magdalena Pasarica Orlando Florida, Stephen Berman Orlando Florida, Michael Lee Orlando Florida, Mary Schmidt-Owens Orlando Florida, James Schaus Orlando FL, Bertha Nash Orlando Florida

**Background:** Obesity has been related to poor academic performance in children and adults, however there are no studies in the college age population. Exercise and healthy diet reduce obesity and we hypothesize that they are related to academic performance. We studied these relationships in college students.

**Methods:** This is a retrospective analysis of a survey completed by a random sample of college students enrolled at the University of Central Florida in 2014. The survey was part of the American College Health Association-National College Health Assessment. A total of 714 students participated. Subjects were 24 ± 7.6 years old and 73% were females. Relationships between variables were assessed with a Spearman Rho correlation or a Pearson’s Chi-square as appropriate. Statistical tests with a p < .05 were considered statistically significant. All statistical analyses were conducted using SPSS 22.0.

**Results:** A total of 714 students participated. Subjects were 24 ± 7.6 years old and 73% were females with a body mass index (BMI) of 25±5.8 kg/m2 (range 13.8-58.5). BMI (calculated by reported weight and height) and self-perceived weight status were inversely correlated with academic performance (Rho = -.11, p = .004; Rho = -.08, p = .04, respectively). These relationships were significant for females (p = .02 and p = .01), but not for males (p=.2 and p=.7). Interestingly in both males and females, neither frequency of physical activity nor consumption of fruits and vegetables was related to academic performance (p=NS).

**Conclusions:** Obesity and self-perceived weight status is related to poor academic performance in college students. These relationships are significant only in females, however this may be due to larger female sample size. Surprisingly, healthy lifestyle does not influence academic performance in college students.

**T-P-3750**

**Obesity: Inaccuracy of Weight Categorization among College Students**

Mary Bugbee Storrs CT, Erin Lenz Storrs Connecticut, Amy Gorin Storrs CT, Deborah Comman Storrs CT

**Background:** People tend to underestimate their own weight, but it is not known whether people can accurately categorize their weight status. This study examined whether college students’ self-reports of weight and height are consistent with how they categorize their weight status and whether reporting patterns differ by gender.

**Methods:** College students at a large public university (N=2690; 18.67 ± 2.15 years; 58.4% women; 74.1% white) reported their height, weight, and self-categorization of weight status (e.g., underweight, normal weight, slightly overweight). Body Mass Index (BMI) was calculated based on self-reported height and weight and compared to self-reported weight categorizations.

**Results:** There were discrepancies between self-reported height and weight data and perceived weight status (p<.01). Women were more likely to overestimate their weight as slightly overweight or very overweight, when their BMI suggested they were underweight or normal weight (p<.01) when their BMI suggested they were overweight or obese. Additionally, male students reported a desired weight that was +1.1 lbs (+15.6) greater than their actual weight, whereas females reported a desired weight that was -9.8 lbs (-13.6) less than their actual weight (p<.01).

**Conclusions:** Accurately assessing weight status appears to be difficult for college students. Inaccurate perception of weight and weight status may significantly impact motivation to lose weight and engage in healthier behaviors during this critical developmental period. Interventions that improve weight status recognition may be needed for college students.

**T-P-3751**

**Optimism, Cynical Hostility and Weight Cycling among Postmenopausal Women in the Women’s Health Initiative**

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Background: Evidence suggests that psychological factors play a role in obesity. While the association between weight gain and increased morbid outcomes and mortality is clear, it is less so for weight cycling. We previously demonstrated optimism is associated with higher diet quality in a sample of postmenopausal women from the Women’s Health Initiative (WHI) Observational Study.

Methods: Here we evaluate the association between optimism (measured by the Life Orientation Test-Revised) or cynical hostility (a sub-scale of the Cook-Medley questionnaire), and weight change in WHI clinical trial participants (n=20,370), a sample with clinic measured annual body weights. Women were classified as weight gainer (45%) or weight cycler (20%), depending on change in measured body weights over 6 year follow-up (12% were classified as both weight gainers and cyclers). Logistic regression was used to compare gainers to non-gainers and weight cyclers to non-cyclers.

Results: Each 5-point increase in, optimism yielded 6% lower odds of being classified as a weight gainer or a weight cycler; cynical hostility was associated with 9% and 7% higher odds of classification as a weight gainer or cycler, respectively. However, obese women in the highest quartile of hostility had a 14% lower risk for weight cycling.

Conclusions: These data suggest optimism and cynical hostility influence weight change in postmenopausal women. Obese women who scored higher on cynical hostility demonstrated lower risk for weight cycling. This may reflect lower interest in weight management among obese postmenopausal women, thus reducing their risk for weight cycling. Future efforts in weight management may benefit from more robust evaluation of these psychological traits.

T-P-3752
Parents Using Food as a Reward for ‘Good Behavior’: Individual Differences and Associations with Child BMI z-score.
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Background: Parents routinely are cautioned against using food as a reward; however, data on this topic are scarce. We tested whether parental use of food as a reinforcer (FAR) was associated with higher child BMI z-score. Secondary aims examined whether: (1) the frequency of FAR implementation was associated with its perceived effectiveness, and (2) child genotype influences the effectiveness of FAR strategy.

Methods: A cross-sectional twin design, with 4- to 8-year olds, was conducted. This included 30 MZ and 29 DZ, same-sex twin pairs. Using an original questionnaire, parents rated the frequency with which they reward child ‘good behavior’ with food on a 7-point scale [from 1=‘Never’ to 7=‘Always’]. Effectiveness of FAR was also assessed by parent-report on a 7-point scale [from 1=‘Completely Ineffective’ to 7=‘Completely Effective’]. Child weight and height were directly assessed in a body composition laboratory.

Results: The distribution of FAR scores was positively skewed. In fact, only ~8% of the children were exposed to FAR ‘often’ or ‘very often.’ The modal response was ‘sometimes’ (~33%). FAR implementation by parents was not related to child sex, race, age, or maternal BMI (p>0.05). More frequent FAR use was associated with higher child BMI z-score (r=0.18, p=0.04). Interestingly, parental use of FAS was not related to the strategy’s perceived effectiveness (r=0.13, p>0.05). Effectiveness of FAR to control child behavior was more similar among MZ than DZ twin pairs (r=0.52 vs. 0.26), suggesting a genetic influence on this susceptibility (heritability = ~52%).

Conclusions: Parental use of FAR was associated with higher child BMI z-score. Children vary in the extent to which food is an effective operant reinforcer, which may have theoretical implications for studying obesity risk.

T-P-3753-DT
Pathways to Obesity: A socio-ecological examination of the relationship between school climate stressors and weight status.
Chandria Jones Rockville Maryland, Adam Milam Baltimore MD, Katrina Debnam Baltimore MD

Background: Socio-ecological factors related to stress can place youth at an increased of obesity. In particular, youth are exposed to a variety of school-related stressors (e.g. safety, bullying, academics, etc). Using a novel observational measure, the School Assessment for Environmental Typology (SAfETy), this study examines the association between school climate stressors and weight status.

Methods: The SAfETy provides an observational tool for measuring school physical environment indicators theorized to be linked with behavioral and academic outcomes. Data came from the Maryland Safe and Supportive Schools (MDS3) project. Observations were conducted in 58 schools in 12 different districts across the state. Students in the same schools (n=28,582) completed an online, anonymous school climate survey during the same timeframe. Multi-level structural equation modeling (SEM) was used to explore the association between these variables and obesity.

Results: School stressors were modeled as a latent variable with three indicators: delinquency, physical safety, and whole-school connectedness. At the individual level, lower levels of school stress were associated with a decreased likelihood of being overweight after controlling for gender, age, race, and physical activity (β = -0.221; p = 0.014). At the school level, opportunities to participate in sports was associated with decreased likelihood of being overweight (β = -0.506; p = 0.039); the percentage of students with free and reduced meals (proxy for poverty) was associated with increased likelihood of being overweight (β = 0.101; p < 0.001). The presence of healthy snacks and availability of soda at the school-level was not associated with being overweight.

Conclusions: Findings suggest that stress related to school climate can play a role in the health and weight status of youth. More research is needed to understand the mechanisms by which school climate stressor affects weight status and how interventions can be developed to help youth deal with stress.

T-P-3754-DT
Post-Partum Parenting Stress & Depressive Symptoms Influenced by Weight in First-Time Mothers
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Background: We evaluated how weight influences report of stress & depressive symptoms during the first year postpartum in first time mothers.

Methods: 123 first time mothers were followed for one year...
Conclusions: started normal & became overweight, significant predictors of compared to mothers in other BMI categories. For those who (n=17) had significantly increased DP & stress at 12m Mothers with normal Pre-BMI who were overweight at 12m higher stress at 2m & 6m and GWG (R^2=.623, p<.000). 12m parenting stress was predicted by: GWG, DP at 2m, & total 12m parenting stress (X=10±20, t=4.3, p<.01). There were no significant differences between enrolled & completer subjects on baseline or 6m variables. For all mothers, DP at 12m was independently predicted by: GWG, DP at 2m, & total 12m parenting stress (R^2=.695, p<.000). 12m parenting stress was predicted by higher stress at 2m & 6m and GWG (R^2=.623, p<.000). Mothers with normal Pre-BMI who were overweight at 12m (n=17) had significantly increased DP & stress at 12m compared to mothers in other BMI categories. For those who started normal & became overweight, significant predictors of DP at 12m (R^2=.73, p<.001) were higher DP at 2m, less education, & BMI≥25 at 12m.

Conclusions: Weight change resulting from pregnancy and not lost during the 1st year postpartum appears to contribute to report of depressive symptoms and parenting stress. Mothers who fail to return to normal Pre-BMI report more distress than those who return to Pre-BMI, whether they began in the normal, overweight or obese range. These findings suggest that GWG is a stressor for new mothers.

T-P-3755-DT Predicting Psychological Symptoms Using Parental Perception of Well-Being in Treatment-Seeking Children and Adolescents with Obesity
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Background: Peer victimization is high among children with overweight and obesity and is associated with negative psychological sequelae. Parental concern for their child’s emotional well-being is another established predictor of psychological outcomes. Examining these constructs together could inform screening tools for psychosocial concerns in youth with obesity.

Methods: Caregivers of 117 youth with obesity (BMI-z M=2.55, SD=2.62), ages 2-18 years (M=11.6, SD=3.6), 65% female, 63% Black, 20% White, 17% Other, seeking treatment in a multidisciplinary outpatient pediatric obesity clinic, completed the Pediatric Symptom Checklist-17 and questions about concern for their child’s emotional well-being and child’s experience with bullying. Multigroup Path Analysis using Mplus 7.1 examined associations among peer victimization, parental concern for emotional well-being and internalizing, externalizing, and attention symptoms while controlling for BMI-z and stratified by sex.

Results: In males, parental concern predicted only internalizing (β=.21; p<.05), while victimization predicted internalizing (β=.40; p<.01) and attention symptoms (β=.40; p<.01). Model comparisons indicated only one significant sex difference: a stronger path between parental concern and internalizing symptoms for male compared to female youth.

Conclusions: Separate patterns of association among peer victimization, parental concern, and psychological symptoms exist for male and female youth with obesity. However, given that these patterns differ minimally across sexes, programs should screen both boys and girls for parental concern about their child’s well-being and peer victimization as proxies for emotional and behavioral problems, especially when a full evaluation is not feasible. Such information could be instrumental in guiding intervention implementation.

T-P-3756 Psychological and physical determinants of overweight and obesity in high stress workplaces
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Background: We hypothesized that psychological and physical conditions of employees in high stress workplaces may be co-risk factors for developing overweight and obesity (OW&O) and maybe modified by the worker’s response to occupational stress. We developed 4 conceptual models of the interrelationship of psychological health (PH), obesity, work related musculoskeletal disease (MSD) and health behavior (HB).

Methods: Data from two cross-sectional worksite studies, 316 correctional and 99 nursing home OW&O employees were analyzed to assess psychological and physical mechanisms between HB and OW&O. Specifically depression and emotion for correctional officers and MSD pain for nursing home employees were tested as mediators using structural equation modeling between healthy life style and OW&O.

Results: In Correctional officers higher reported stress had a negative association with sleep quality (B=0.23, p=0.001), and positive emotional characteristics were associated with better diet quality (B=0.163, p=0.006), exercise quality (B=0.322, p<0.001), and sleep quality (B=0.318, p<0.001). BMI was negatively related to diet (B=-2.167, p<0.001) and exercise quality (B=-0.129, p<0.001). Nursing home employees, reported higher rate of MSD (p<0.05). Higher levels of obesity was associated with lower current physical activity (B=-0.288, p<0.001), moderate and vigorous physical activity (B=-0.336, p<0.001; β=-0.199, p<0.05; respectively). Level of obesity and severity of LBP was also associated with lower physical function (B=-0.315, p<0.001; β=-0.175, p<0.001; respectively).

Conclusions: Understanding the psychological and physical determinants of health behavior are important for addressing obesity epidemics in high stress work environments.

T-P-3757 Psychosocial Stress May Affect Risk for Type 2 Diabetes by Increasing Chronic Inflammation

Background: Psychosocial stress may contribute to development of diseases such as obesity, metabolic syndrome, and type-2 diabetes through altered glucose metabolism and chronic inflammation. The purpose of this study was to
investigate the associations between indices of metabolic health and perceptions of depression, stress, and discrimination in women.

**Methods:** Perceived stress, discrimination, and depression were evaluated by Cohen Stress questionnaire, Detroit Area Study Discrimination Questionnaire, and Patient Health Questionnaire depression scale (PHQ8), respectively. Insulin sensitivity and beta-cell responsiveness were assessed using a frequently sampled intravenous glucose tolerance test. Fasting sera were evaluated for markers of inflammation, adipokines, and lipids.

**Results:** Participants were 56 healthy women age 45±14.4 years with body mass index (BMI) 29.3±7.0 kg/m2. Partial Pearson correlation analysis controlling for race and BMI was performed. Perceived stress, discrimination, and depression were positively associated with each other (p<0.05). Perceived stress was positively associated with basal and phase-2 beta-cell response, fasting insulin, and inversely associated with insulin sensitivity and adiponectin (p<0.05). Perceived discrimination was positively associated with fasting triglycerides, basal and phase-2 beta-cell response, fasting insulin, and leptin. Perceived discrimination was positively associated with C-reactive protein and interleukin-6, and inversely associated with adiponectin.

**Conclusions:** Taken together, results suggest that women who perceive greater psychosocial stress have greater chronic inflammation, which may adversely affect both insulin sensitivity and beta-cell responsiveness, putting them at greater risk for type 2 diabetes.

T-P-3758
Self-Perception of Weight and Physical Activity Status Among South Indian Adults

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**Background:** Sedentary behavior and obesity-related chronic diseases are increasing in India. To better understand self-perception of weight and physical activity (PA), and guide clinical and prevention efforts, we assessed discordance between perceived and measured weight and PA of South Indian adults.

**Methods:** A subset of 310 respondents (66% female) of PURSE-HIS, a population-based study representative of adults living in rural, semi-urban and urban areas of Chennai, India, completed questions about weight and PA; self-perception adapted from NHANES and the WHO Global Physical Activity Questionnaire. Measured height and weight and self-reported PA established weight status (WHO cutoffs: <18.5: underweight; 18.5~<23: normal weight; 23~<25: overweight; ≥25: obese) and PA status (low, moderate, high). The modified Kuppuswamy scale defined SES, using education, income, and occupation. Discrepant classification defined discordance.

**Results:** Mean (±SD) age was 52 (13) years, mean (±SD) BMI was 39 (9) kg/m2, 76% were female, 47% Caucasian, 42% African American, 10% all other ethnicities. After adjusting for age, sex, education and BMI, greater emotional eating was associated with worse sleep quality (p<0.005) and greater sleepiness (p<0.004). Greater depression was also associated with poor sleep quality (p<0.008) and greater sleepiness (p<0.001). When stratified by sex, emotional eating was associated with poor sleep quality in men (p<0.009) but not in women (p<0.06). Greater sleepiness was associated with emotional eating in both men (p<0.013) and women (p=0.05). When we adjust for depression, sleep quality is not associated with emotional eating in men or women, however sleepiness remains significantly associated with emotional eating in men only (p<0.046). Further, sleepiness is associated with greater depression in women (p<0.001) but not men (p<0.25).

**Conclusions:** Results suggest that the men may be more susceptible to the effect of poor sleep on emotional eating and this effect is partly independent of depression. A possible mediator of these sex differences is obstructive sleep apnea, which is more prevalent in men at the same BMI.

T-P-3760-DT
Substance Abuse Associated with Food Addiction in College Students

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**Background:** Substance abuse and eating disorders are among major public health issues for adolescents. Their brain’s reward system is fully developed, but not decision-making, impulse control, response inhibition and judgment ability. The
objective of this investigation was to determine whether substance abuse (SA) is associated with food addiction (FA). Since SA is a problem among college-aged students, SA associated with FA may contribute to obesity in this population. We hypothesized that students who abuse substances are at increased risk of FA due to the rewarding effects of each without the capacity to weigh the consequences.

**Methods:** Data for this cross-sectional study were collected using a web-based survey tool. Participants consisted of a convenience sample of college students, who answered all SA questions and at least 5 FA questions in our survey. Questions targeted age, sex, race, socioeconomic status, self-classification of substance abuse behavior, and FA based on the Yale Food Addiction Scale.

**Results:** 1751 students were eligible for this study. 51.5% of participants were 18-20 years old. 17.4% of total participants used ADHD medications and 51.7% used marijuana.

Participants who used ADHD medication (not prescribed to them) within the past 30 days were significantly more likely to have FA (p=0.003). Participants who used ADHD medication (not prescribed to them) or smoked marijuana within the past 30 days showed high symptomatology of FA (over 56% symptoms of FA, p=0.000; p=0.015 respectively). There was a strong association between high symptomatology of FA and substance abuse (marijuana and ADHD medication) in 18 year olds (p=0.026; 0.029) and males (p=0.000; 0.000) respectively.

**Conclusions:** Marijuana and ADHD medication abuse is associated with FA, especially in 18 year olds and males.

**T-P-3761**

The Association of Cognitive Restraint Subtypes with Food Ordering: A Randomized Controlled Trial

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**Background:** Some eating behavior patterns have been associated with body weight [flexible restraint (FR), rigid restraint (RR)], but little data exist on how these patterns may interact with how food is presented in restaurant menus to affect food ordering. We hypothesized that higher state hunger in restrained eaters would be associated with increased food intake and total energy when ordering from a complex versus a simple restaurant menu.

**Methods:** Pre-screened restrained eaters [N=31; Eating Inventory (EI) restraint score >6 men, >10 women] were randomized after an overnight fast to either a “hard” (complex design, H) or “easy” (simple design, E) menu. Self-reported hunger (SR-H) was recorded on a 20 point Likert-type scale and items ordered were summed and total ordered meal energy (kcal) calculated. FR and RR scores were derived from EI.

**Results:** Mean SR-H was 4.9, SD=4.1 overall. SR-H was significantly different between menu groups (E: M=2.60 vs. H: M=7.06, p=0.006). Number of items ordered ranged from 1-5, M=2.65, SD=1.14. Controlling for state hunger and menu design, FR was negatively associated with total energy (kcal), partial r = -0.385, p = 0.039 and number of items ordered, partial r = -0.530, p = 0.003. RR scores were not significantly associated with ordering outcomes in the same model. The significant relationship remains only for total items ordered on the E menu but remains for both number of items ordered and total energy on the H menu.

**Conclusions:** Flexible restraint eating patterns have been associated with lower body weight. Identifying the mechanism of how these behaviors may operate to restrict intake in a fasted state in high cognitive demand settings may provide insight into ways to affect food intake patterns in people who frequently eat meals at restaurants.

**T-P-3762**

The Biggest Loser Thinks Long-Term: Recency as a Predictor of Success in Weight Management

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**Background:** Only a minority of participants in behavioral weight management lose a significant amount of weight. The ability to predict who is likely to benefit from weight management can greatly improve the efficiency of obesity treatment. Identifying predictors of weight loss can also reveal potential ways to improve existing treatments. We propose a model that is based on contemporary decision-neuroscience findings on recency: the reliance on recent information at the expense of time-distant information.

**Methods:** 70 obese adults enrolled in a weight-management intervention completed a decision-making task and their recency level was estimated using a mathematical model. Impulsivity and risk-taking were also measured for comparison. Weight loss was calculated in the end of the 16-week intervention.

**Results:** We found a negative relationship between recency-affected decision making and weight loss. Consistent with our hypothesis, successful dieters had lower recency scores than unsuccessful dieters (p = 0.006). Successful and unsuccessful dieters were similar in their demographics as well as psychometric characteristics such as intelligence, general decision-making performance, risk taking, impulsivity, and delay of gratification (p ≥ 0.21). Successful dieters had a lower number of past weight-loss attempts, but including this variable in the model did not increase predictive power.

**Conclusions:** Dieters who process time-distant information in their decision making are more likely to lose weight than those who are much affected by recency. We argue that the tendency to “think long term” facilitates thinking about the future outcomes of one’s actions, and thereby contributes to behavior change and increases treatment adherence. Our findings underline the importance of choosing the right treatment for every individual, and outline a way to improve weight-management processes for more patients.

**T-P-3763**

The Impact of Weight-Related Abuse on Self-Perception and Disordered Eating: A Model of Obesity

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**Background:** Obesity affects approximately one-third of the adult population in the U.S. and is one of the primary reasons for bullying in school. While weight-related abuse (WRA) is a specific risk factor for disordered eating (binge eating, emotional eating, night eating, and unhealthy weight control) and negative self-perception, and disordered eating and negative self-perception are predictive of obesity, these relationships have not been addressed with a comprehensive model. Thus, the current study evaluated a structural equation model in which severity of WRA predicted disordered eating and negative self-perception, which in turn predicted current body mass index (BMI).

**Methods:** The model was evaluated in a sample of 371...
undergraduate students. BMI ranged from 16.42 to 48.91 (M = 26.06, SD = 5.31), with 3% of the sample underweight, and 39.4% at a healthy weight, and 39.6% met criteria overweight, 11.9% for class I obesity, 3.5% for class II obesity, and 2.7% for class III obesity. 104 participants reported onset of overweight before age 10 and 129 reported onset between 11 and 20.

**Results:** Fit indices (CFI, RMSEA, PCLOSE) showed an excellent fit. Model fit was also explored based on onset of overweight; while age of onset of overweight (childhood vs. adolescence) did not significantly affect model fit, the model fit was significantly better in individuals who were overweight before age 20 as compared to those who were never overweight before age 20. Model fit was not affected by demographic covariates.

**Conclusions:** These analyses suggest that WRA is a specific risk factor for obesity that largely acts through its effect on disordered eating and negative self-perception. Further, this model suggests that WRA may be of particular import to include interpersonal interventions that specifically target the results of abuse. Future research utilizing a longitudinal design and/or a clinical population (e.g., individuals seeking treatment for weight loss) will help to validate these findings.

**T-P-3764**

The Role of Healthy Lifestyle and Psychological Factors in Contributing to Weight Changes among First Time Mothers in Australia

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**Background:** Post-partum weight retention (PPWR) is associated with ongoing obesity among mothers. In order to address this issue there is a need to identify and understand the role of modifiable lifestyle and psychological health factors that contribute to these weight changes. This study aims to uncover these factors.

**Methods:** Data from 1,470 first time mothers, average age 32 years, participating in the first 5 waves (2 yearly) of the Longitudinal Study of Australian Children (LSAC) were analysed. A multi-level growth model was used to test relationships between BMI and daily serves of fruit and vegetables, daily alcohol consumption, smoking status, number of days p/w of 30min moderate to vigorous physical activity (PA), psychological distress (PD; as measured by the K6) and stress while controlling for parity, socioeconomic position (SEP) and age. Non-significant predictors were removed. Vegetable and alcohol consumption, stress and parity were subsequently omitted.

**Results:** Average BMI was 25.1 at wave 1 and 26.1 wave 5. Over this same time period daily fruit consumption increased from 1.2 to 1.6 serves, PA was relatively stable at 2.8 and 2.9 days p/w, and current smokers decline from 18.5% to 15.4%. The prevalence of moderate and high PD also decreased over time (wave 1: mod PD 51.3%, high PD 14.2%: wave 5: 45.8% mod PD and 11.6% high PD). Results show that as physical activity and fruit consumption increased, BMI decreased (-.02; p= .001 and -.02; p=.003, respectively). In contrast, women with initially high PD experienced greater increases in BMI as the PD continued to rise, compared to those with an initially low level of PD (.02; p< 0.001).

**Conclusions:** Efforts to treat and prevent PPWR need to target both physical and psychological health. In particular, it is not uncommon to find a healthy lifestyle reduces weight gain and hence many interventions target this. However, addressing the role of psychological distress has in contributing to weight gain now requires attention.

**T-P-3765**

Using Ecological Momentary Assessment to Examine the Association between Maternal Stress and Children’s Body Composition

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**Background:** Mothers’ experience of psychosocial stress may increase children’s obesity risk. However, research in this area has been limited by retrospective measures of maternal stress, which may suffer from recall and cognitive biases. The current study used real-time Ecological Momentary Assessment (EMA) methods to capture momentary levels of stress in mothers. The goal was to compare momentary versus retrospective measures of maternal stress in relation to children’s Body Mass Index (BMI) percentile and waist circumference.

**Methods:** Participants included mothers and their 8-12 year-old children (N = 59 dyads). Smartphone-based EMA was conducted across 7 days (up to 7 randomly-timed survey prompts per day) to measure mothers’ levels of feeling stressed and perceived stress at the moment of the prompt, and their experience of stressful events and stressors (e.g., arguments, family demands) over the past 2 hours. Mothers also completed retrospective paper questionnaires assessing usual levels of perceived, parenting, financial, and acculturative stress experienced over the past month. Children’s height, weight, and waist circumference were measured.

**Results:** After adjusting for Hispanic ethnicity, mother’s education, and days per week of mother-child cohabitation; mothers’ average momentary level of feeling stressed measured by EMA was negatively associated with children’s BMI percentile (β = -23.59, p = .044) and waist circumference (β = -6.70, p = .049). Retrospectively measured level of usual financial stress over the past month was positively associated with children’s waist circumference (β = 2.49, p = .058).

**Conclusions:** The unexpected inverse association between mothers’ average momentary stressful feelings and children’s body composition suggests that parenting practices to maintain a healthy child weight (e.g., food preparation, taking children to sports) may actually increase mothers’ feelings of stress on a momentary basis.