

Friday November 6 -12:00-1:00PM

T-P-LB-3855

Costs and Outcomes of Offering Greater Access to Bariatric Surgery for Morbid Obesity. Cohort Study and Cost-Utility Analysis

Alison Fildes *London* , Judith Charlton *London London*, A Toby Prevost *London London*, Helen Booth *London London*, Mark Ashworth *London London*, Peter Littlejohns *london london*, Marcus Reddy , Omar Khan , Caroline Rudisill *London London*, Martin Gulliford *London London*

Background: Bariatric surgery (BS) offers important benefits yet its role in obesity management remains controversial. Access to BS is often limited in publicly funded health care systems possibly due to perceptions of the costs of BS and the resources required to offer it more readily. We aimed to evaluate the costs and outcomes of offering greater access to BS as a treatment for morbid obesity in adults. **Methods:** A cost-utility analysis was informed by a cohort study including electronic primary health records of 3,054 obese participants who received BS, and 259,006 participants who did not receive BS. Analyses estimated health outcomes and health care costs in relation to BMI category and morbidity. A probabilistic Markov model was employed to conduct a cost-utility analysis comparing discounted costs and quality adjusted life years (QALY) for BS against standard non-surgical management for obesity. **Results:** In persons with morbid obesity aged 20 to 74, BS was associated with increased total life years accumulated over a lifetime of 6.097 (95% range 6.022-6.171) per participant. Time lived with diabetes mellitus decreased by 8.320 (8.123-8.502) years per participant. Incremental costs associated with BS were £15,258 (£15,184-15,330), including costs of surgical procedures of £9,164 per participant. Incremental QALYs were 2.142 (2.031-2.256) per participant. The estimated cost per QALY gained was £7,129 (£6,775-£7,506). Net monetary benefits at £30,000 per QALY were £49,016 (£45,731-£52,412) per 1000 participants. Estimates were similar across gender, age and deprivation subgroups. BS was slightly more cost-effective in patients with morbid obesity and diabetes at £6,176 (£5,894-£6,457) per QALY, and slightly less cost-effective in severe obesity, £7,675 (£7,339-£8,037). **Conclusions:** BS is cost-effective relative to standard weight management across a wider range of BMI levels than currently recommended, and is more cost-effective in diabetes, with results robust to gender, age and deprivation differences.

T-P-LB-3856

Roux-en-Y gastric bypass improves glucose-responsive insulin release in the Wistar fatty rat

Keisuke Maruyama *Kyoto Kyoto*, Takashi Miyazawa *Kyoto Kyoto*, Kazuwa Nakao *Kyoto Kyoto*, Kenji Kangawa

Background: Roux-en-Y gastric bypass (RYGB) is an effective therapy for type 2 diabetes mellitus (T2DM) with obesity. Remarkably, it is possible that RYGB induces improvement of glycemic control independently of body weight loss. However, its mechanism remains unknown. **Methods:** To elucidate the mechanism of remission of diabetes mellitus after RYGB, we tried to establish RYGB model in the male Wistar fatty (WF) rat. The male WF rat is a genetic model of obesity and T2DM. The male WF rats were randomly assigned to three groups, RYGB-operated (RYGB), Sham-operated (Sham) and Sham-operated with pair-feeding (Sham-PF). In this study, approximately 80% of rats survived after surgery. We examined its blood glucose, body weight and food intake every week. At 7 weeks after surgery, we also measured blood glucose and insulin during an oral glucose tolerance test (OGTT). **Results:** Body weight of the RYGB group was reduced temporarily after surgery, and maintained approximately 90% of that of the Sham group. For 7 weeks after surgery, food intake of the RYGB group was lower than that of the Sham group. Blood glucose of the RYGB group exhibited lower level than that of the Sham group in ad libitum. To evaluate the insulin secretory capacity in our RYGB model rats, we performed OGTT after fasting. Both groups were given an oral injection of 50% glucose solution (2 g/kg). During the OGTT, blood glucose of the RYGB group maintained lower level than that of the Sham group. On the other hand, blood insulin during the OGTT was markedly higher the RYGB group compared with Sham group. Surprisingly, glucose levels were similar among the RYGB and Sham-PF groups, but insulin level of the Sham-PF was significantly lower than that of the RYGB group. **Conclusions:** These data suggest that our RYGB model improves glucose-responsive insulin release independently of body weight loss. Therefore, our RYGB model rat may be of use for elucidation of the mechanism of remission of diabetes mellitus after RYGB.

T-P-LB-3857

The effects on resting energy expenditure of long-term changes in body composition at the organ level following bariatric surgery

Dympna Gallagher *New York New York*, Nerys Astbury *Oxford Oxfordshire*, John Thornton *Mahopac NY*, Isaiah Janumala *NEW YORK,N.Y NEW YORK*, Elizabeth Widen , Tatiana Toro-Ramos *NEW YORK New York*, Alfons Pomp *New York NY*, Gladys Strain

New York New York, Anita Courcoulas Pittsburgh PA, Bret Goodpaster Orlando FL, James DeLany Pittsburgh PA

Background: Resting energy expenditure (REE) is reduced to a greater extent than expected after weight loss which may impact the failure to maintain weight loss. Whether this reduction in REE is sustained and whether REE changes may be explained by changes in body composition in the long-term remains unclear.

Methods: Bariatric surgery patients were studied before (T0) and at 12 (T12), 24 (T24) and 60 (T60) months after surgery, including REE by indirect calorimetry, fat (FM) and fat free (FFM) masses by a 3C model, and the masses of high metabolic rate organ (HMRO) (liver, kidney, spleen) by whole-body MRI. Multivariate linear regression models predicted measured REE at each time using body composition components. Model 1 included FFM and FM as predictors and Model 2 included fat, FFM and HMRO. Differences in the structure of Model 2 between time was examined by comparing direct and crossed r^2 values of each model at each time using Hotelling's t tests. **Results:** From T0 to T12, reductions occurred in body weight (mean \pm SEM; -41.9 ± 3.1 kg) ($P<0.05$). **Conclusions:** From pre-to-post bariatric surgery, high metabolic rate organ mass contributes to REE. The composition of weight change at the organ level is important for understanding REE during weight change.

T-P-LB-3858

Downregulation of mitophagy in beige adipocytes

David Taylor Los Angeles California, Roberta Gottlieb Los Angeles CA

Background: Mitochondria are subject to selective degradation via mitophagy. PINK1-parkin mediated mitophagy is the most well-characterized pathway, which targets senescent mitochondria for autophagic degradation based upon a decrease in mitochondrial membrane potential. Beige & brown adipocytes present a uniquely adapted mitochondrial environment whereby a decrease in membrane potential is functionally beneficial. Our objective was to identify how the mitophagic machinery is adapted in beiges adipocytes to prevent improper mitochondrial degradation.

Methods: Changes in expression of mitophagy proteins were monitored in fully differentiated 3T3-L1 adipocytes following treatment with rosiglitazone (Rosi) to induce a beige-like phenotype. Mitophagic activity was compared in Rosi treated cells following FCCP treatment. Mitophagic protein expression was also monitored in parkin & p62-deficient 3T3-L1 adipocytes subjected to Rosi treatment. Mitochondrial oxygen consumption was assessed using an XFp extracellular flux analyzer. **Results:** Parkin

protein levels were decreased by day 2 of rosiglitazone treatment and remained suppressed. P62 expression was increased in Rosi treated cells, reflecting a decrease in mitophagy. Mitochondrial-associated parkin was also lower in Rosi treated cells. Stimulation of mitophagy via FCCP revealed a delayed clearance of numerous mitochondrial proteins in Rosi treated cells, suggesting a downregulation of mitophagic activity. Parkin & p62-deficient 3T3-L1 adipocytes had preserved 'beiging' responses, however basal mitochondrial protein expression was disturbed. Rates of oxygen consumption were suppressed in parkin-deficient adipocytes. **Conclusions:** These data indicate Parkin-mediated mitophagy is necessary for basal mitochondrial turnover in adipocytes. Beiging of adipocytes results in a downregulation of mitophagy activity.

T-P-LB-3859

Aspartame contributes to compromised metabolic profile and body composition in rodent model of maternal obesity and their offspring

Jodi Nettleton Calgary, Nicole Cho Calgary Alberta, Teja Klancic Calgary Canada, Jane Shearer Calgary AB, Stephanie Borgland Calgary AB, Raylene Reimer Calgary AB

Background: Artificial sweeteners are found in an increasing number of food products. Recent evidence suggests a possible link between consumption of these sweeteners and impaired fasting glucose and insulin sensitivity in lean and obese models. From a maternal health perspective, these findings may have implications for the development of gestational diabetes and programming of metabolic disease in offspring, as it has been well established that maternal nutrition has long lasting effects on offspring health. Our objective was to determine the effects of maternal aspartame or stevia intake on maternal and offspring metabolic health including adiposity, glucose tolerance and insulin sensitivity. **Methods:** Female diet-induced obese Sprague Dawley rats were randomized to one of three groups during pregnancy and lactation: 1) High fat/High sugar (HFS) diet + water (WTR); 2) HFS + Stevia (STV); 3) HFS + Aspartame (APM). A fourth lean reference group was maintained on AIN93-M diet and water. Rats were subjected to oral glucose tolerance tests (OGTT) and insulin tolerance tests (ITT) at baseline, gestation day 14 and lactation day 14; offspring underwent OGTT and ITT at 9 weeks of age. Body weight and body composition (DXA) were measured. **Results:** During gestation, APM dams gained significantly more weight compared to WTR and STV dams (p **Conclusions:** Maternal consumption of APM during gestation and lactation may lead to a compromised

metabolic profile alongside weight gain and altered body composition in both mom and offspring.

T-P-LB-3860

Maternal prebiotic intake improves metabolism of offspring exposed to maternal obesity and a lifelong obesogenic diet

Heather Paul *Calgary Alberta*, Stefan Urbanski, Raylene Reimer *Calgary AB - Alberta*

Background: Obesity-related conditions, such as non-alcoholic fatty liver disease (NAFLD), are increasing in parallel with the obesity epidemic. Of particular interest is the link between increased susceptibility to obesity and NAFLD in offspring exposed to an adverse early-life environment. In the context of obesity, intake of the prebiotic oligofructose is linked with reduced fat mass and improved glucose tolerance. Thus, the addition of oligofructose to a suboptimal maternal diet may mitigate adverse programming in offspring of obese dams. **Methods:** Diet-induced obese female Sprague-Dawley rats were randomized to either: 1) High-fat/sucrose ad libitum (HFS) or 2) High-fat/sucrose diet + 10% oligofructose (OFS) during pregnancy and lactation (n=16/group). A lean control (LC) group was fed a standard AIN-93 diet throughout the study. At weaning, pups were placed on the high-fat/sucrose diet, serving as a metabolic challenge to unmask programmed risk/protection. At 24 weeks, offspring glucose tolerance and insulin sensitivity was assessed via oral glucose and insulin tolerance tests (OGTTs and ITTs), and body composition was assessed via DXA. Histological scoring of livers for steatosis, inflammation, and fibrosis is being performed. **Results:** Maternal diet affected offspring glucose levels during both the OGTTs and ITTs (p **Conclusions:** Maternal prebiotic intake in the context of maternal obesity may improve offspring metabolic parameters associated with obesity and its comorbidities.

T-P-LB-3861

Do changes in circulating acylcarnitines co-vary with increases in shivering and non-shivering thermogenesis in the cold?

François Haman *Ottawa Ontario*, Mary-Ellen Harper *Ottawa Ontario*

Background: During cold exposure, thermogenesis is increased involuntarily by the activation of non-shivering thermogenesis (NST) and/or shivering thermogenesis (ST). While cold-acclimated mice inhibit to a large extent ST by increasing the volume and activity of brown adipose tissue (BAT), ST in surface

and deep muscles remains present even during mild cold exposure in humans (Blondin et al., 2015). Therefore, finding a whole body marker of changes in ST could help better understand factors that affect the relative contribution of both thermogenic processes.

Methods: Because shivering muscles are highly reliant on lipids for energy production, the purpose of this study was to explore whether changes in circulating acylcarnitine (AC) concentrations were related to changes in ST under three conditions: 1) during a 24h cold acclimation in mice known to reduce substantially the contribution of ST (n=7, male wild-type), 2) during mild shivering in glycogen depleted (LOGly) and loaded healthy men (HIGly; n=5) and 3) during moderate shivering in healthy men with normal glycogen reserves (n=6). **Results:** In mice, results showed that while heat production was constant over 24h at 4°C, total circulating AC decreased from 30.0±1.2 to 21.2±0.7 as ST subsided. In men, during mild shivering, AC were more than 2-fold in LOGly and HIGly at baseline and during the cold. However, only AC with chain length between 6 and 12C increased significantly during cold exposure in both LOGly (0.87±0.08 to 1.11±0.15) and HIGly (0.40±0.03 to 0.52±0.05). In contrast, when ST is intensified during moderate cold exposure in men with normal glycogen reserves, circulating levels of all AC increased by 1.3 to 1.5-fold (0.87±0.08 to 1.11±0.15). **Conclusions:** Together, this initial work indicates that while circulating of AC co-varies with changes in ST and lipid oxidation in mice and humans, much work remains to clearly establish whether these changes are sufficient to provide a good marker of ST activity under all cold exposure conditions.

T-P-LB-3862

Eicosapentaenoic Acid (EPA) Supplementation Regulates Hepatic Carbohydrate and Lipid Metabolism

Kembra Albracht-schulte *Lubbock Texas*, Latha Ramalingam *Lubbock Texas*, Nishan Kalupahana *Peradeniya Central*, Naima Moustaid-moussa *Lubbock Texas*, Preethi Gunaratne *Houston Texas*, Cristian Coarfa, Kimal Rajapakshe *Houston TX*

Background: Non-alcoholic fatty liver disease (NAFLD) is a rising epidemic and affects more than 70% of obese patients. Omega-3 polyunsaturated fatty acids, such as eicosapentaenoic acid (EPA), are potent hypotriglyceridemic and anti-inflammatory agents. Our laboratory has previously reported that EPA prevented and reversed high fat (HF) diet-induced obesity, insulin resistance, inflammation and hepatic steatosis. However, the mechanisms mediating the effects of omega-3 fatty acids in NAFLD are not completely understood. **Methods:** Liver isolated from C57BL/6J mice fed HF diet, either with EPA (HF-EPA) or without (HF) were

used for analyses of gene and protein expression. Global miRNA profiling was performed to identify potential target miRNAs and genes influenced by EPA. Additionally, dose- and time-dependent studies of EPA effects were performed using a clonal liver cell line, human hepatoma HepG2 cells. **Results:** EPA significantly reduced expression of genes in fatty acid synthesis, gluconeogenesis, inflammation, and insulin signaling pathways and increased expression of genes in beta-oxidation. HepG2 cells treated with 50 μ M EPA for 24 h showed similar outcomes in gene and protein expression analyses. Preliminary miRNA profiling showed 30 differentially expressed miRNAs in liver from HF-EPA compared to HF fed mice. Specific candidate miRNAs regulated by EPA were identified for further validation and include miR-21, 19 and 101 with previously documented roles in inflammation. **Conclusions:** Beneficial effects of EPA in NAFLD are mediated in part by alteration of fatty acid and carbohydrate metabolism in mouse liver. Additional studies are warranted on the candidate miRNAs that we identified as potential mediators of EPA effects in NAFLD.

T-P-LB-3863

Validation of the doubly-labeled water method using integrated cavity output spectroscopy

Edward Melanson *Aurora Colorado*, Tracy Swibas *Aurora CO*, Victoria Catenacci *Aurora CO*, John Speakman *Aberdeen Scotland*, Elena Berman *Mountain View CA*

Background: The doubly-labeled water (DLW) method is the gold standard methodology for determination of free-living energy expenditure, a key component of energy balance and crucial for understanding the underlying etiology of obesity risk. Traditionally, isotope enrichments have been determined by isotope ratio mass spectrometry (IRMS). New technologies are emerging for determination of isotope enrichments including laser spectroscopy. We have previously shown that an alternative laser methodology (off-axis integrated cavity output spectroscopy: OA-ICOS) provides comparable data to IRMS in the analysis of standard waters over the same range of enrichments as used for DLW studies. Here we validated the use of OA-ICOS for measurement of energy demands by comparing estimates of carbon dioxide (CO₂) production using the DLW method and OA-ICOS to simultaneous whole-room indirect calorimetry (IC) measurements over a period of 7 days **Methods:** 12 subjects (5 male, 7 female; age=24 to 63 yrs.; body mass index=19.4 to 46.4 kg/m²) were studied for 7 consecutive days in the IC. Prior to entry on the first day, subjects consumed an oral dose of 0.25 g H₂¹⁸O (95% APE) and 0.14 g 2H₂O (99.8% APE) per kg of total

body water (estimated as 73% of fat free mass). Urine samples were obtained daily, and the samples on day 1 and 7 were used to measure average CO₂ production using OA-ICOS. **Results:** Estimated CO₂ production over the 7 days by IC averaged across all 12 subjects was 413.6 L/day (sd = 69.4). In comparison the average CO₂ production by DLW-OA-ICOS (Schoeller equation A6, two point method and plateau technique) was 400.6 L/day (sd = 74.5). The absolute average discrepancy (accuracy) was 3.11 % (sd = 7.79%) and the individual precision was 6.57% (sd = 4.91%). **Conclusions:** These levels of accuracy and precision are comparable to those achieved in previous validation studies using DLW-IRMS. Off-axis integrated cavity output spectroscopy provides a valid and viable alternative to IRMS for DLW studies in humans.

T-P-LB-3864

A high-protein weight loss diet attenuates the weight loss-induced improvement in insulin sensitivity

Gordon Smith *St Louis MO*, Jun Yoshino *St. Louis MO*, Dominic Reeds *st louis mo*, Samuel Klein *St. Louis MO*, Bettina Mittendorfer

Background: High-protein diets are often recommended during weight loss therapy to minimize the loss of lean body mass. The overall health benefit of high protein intake, however, is uncertain because increased plasma amino acid availability is associated with insulin resistance. **Methods:** We conducted a randomized controlled trial in 18 obese women (age: 57.6 \pm 1.0 y, BMI: 35.1 \pm 0.8 kg/m²; mean \pm SEM) to evaluate the effect of dietary protein intake on body composition and insulin sensitivity after moderate (~10%) diet-induced weight loss. Subjects were randomized to either a low-calorie (LC) diet containing 0.8 g protein/kg body weight/day (n=9) or a LC-high protein (HP) diet containing 1.2 g protein/kg body weight/day (n=9). Total body fat-free mass (FFM) was evaluated by using dual energy X-ray absorptiometry and insulin sensitivity was evaluated by using the hyperinsulinemic-euglycemic clamp technique before and after the intervention. **Results:** Compliance with the diet prescription was very good: protein intake (assessed by food record analysis) was 0.83 \pm 0.04 g/kg/d in the LC and 1.23 \pm 0.04 g/kg/d in the LC-HP groups and urinary nitrogen excretion rate was ~50% greater (**Conclusions:** A high-protein weight loss diet attenuates the weight loss-induced decline in FFM but eliminates the beneficial effect on insulin sensitivity. These data have important implications for appropriate macronutrient composition of diet therapy for insulin-resistant obese people.

T-P-LB-3865**Eicosapentaenoic acid Increases Thermogenic Markers in Brown Adipose Tissue from High Fat Fed Mice and in Cultured Brown Adipocytes**

Mandana Pahlavani *Lubbock Texas*, Fitia Razafimanjato *Lubbock TX*, Nishan Kalupahana *Peradeniya Central*, Shane Scoggin *Lubbock TX*, Latha Ramalingam *Lubbock Texas*, Naima Moustaid-moussa *Lubbock Texas*

Background: Brown adipose tissue (BAT) plays a key role in energy expenditure through its thermogenic function. Therefore, BAT activation may prevent and/or treat obesity. Interestingly, subcutaneous white adipose tissue (WAT) also has the ability to differentiate into brown-like adipocytes. Our laboratory has previously reported that eicosapentaenoic acid (EPA) reduces high fat (HF) diet-induced obesity and insulin resistance in mice, independent of energy intake; however, EPA effects on BAT are still not clear. We hypothesize that these effects are mediated in part by BAT thermogenesis. **Methods:** BAT and WAT were harvested from C57BL/6J mice fed with HF supplemented with or without EPA, for 11 weeks. We also conducted in vitro studies using HIB 1B clonal brown fat cells were treated with EPA. Gene and protein expression were measured in BAT, WAT and HIB 1B cells via qPCR and immunoblotting, respectively. Extracellular flux analyzer (Seahorse) was used to determine glycolytic activity via extracellular acidification rate (ECAR). **Results:** BAT from HF-EPA mice expressed significantly higher levels of thermogenic genes such as PRDM16 and PGC1-alpha and higher protein levels of uncoupling protein 1, compared to HF mice. Similarly, HIB 1B cells treated with EPA showed significantly higher mRNA expression of thermogenic markers. In contrast, WAT expressed very low levels of these markers with no significant responses to EPA. Moreover, ECAR was significantly elevated in HIB 1B cells treated with EPA which suggests increased glucose metabolism. **Conclusions:** Our results demonstrate a novel role for EPA in preventing obesity via activation of BAT, adding to its known beneficial anti-inflammatory effects.

T T-P-LB-3866**A review over evaluation methods of response to obesity therapies – Are scientific and medical communities too “weight-centered”?**

Flavio Cadegiani *Brasilia DF*

Background: Body weight(BW) has always been the main outcome in most studies that evaluate weight loss strategies, despite of the importance of other aspects of obesity for multiple risks, like abdominal circumference, neck circumference, total body fat percentage and visceral fat. In this review, a literature research for all obesity therapies was made to find out how many have opted for other outcomes than body weight as a way to evaluate obesity response to therapies. **Methods:** A research was made at PUBMED database by using exact expressions “obesity therapy”, “obesity intervention”, “weight loss intervention” and “obesity treatment”, from the begging of data until Aug. 13, 2,015. Beyond these expressions, combinations between “obesity” (always included in the search), “therapy”, “intervention” or “treatment” (one of these three), “body fat”, “visceral fat” and “circumference” (one of these three) were searched. Inclusion criteria were articles in English, clinical or surgical intervention evaluation in humans as the main goal, and clinical outcomes evaluated. Articles not fulfilling criteria were excluded. **Results:** 13,873 articles were found. 8,712 were doubled and 104 were not in English, remaining 5,057. From these, 1,356 were not clinical studies with humans (26,8%) and 1,989 (39,3%) did not evaluate clinical outcomes. It remained 1,712 studies. Weight loss was directly evaluated in 1,625 studies (94,9%) and indirectly evaluated by BMI reduction (997, 63,6%) and excess of weight loss (157; 9,2%). Other analyzed outcomes were waist circumference (273; 15,9%), visceral fat loss (75; 4,4%) and body fat loss (139; 8,1%). Only 17 studies did not evaluate BW direct or indirectly among the proposed outcomes. **Conclusions:** Chosen outcomes for evaluating response to obesity therapies need to be improved, once other aspects than BW are linked to risks, as WC, and also therapies may have been undervalued due to a lack of boosting weight loss, like physical exercise.

T-P-LB-3867**The Relationship of Internal and External Psychological Functioning with Self-Compassion in a Sample of Patients Seeking Bariatric Treatment**

Kathleen Verba *Tulsa Oklahoma*, Carrie Winterowd *Stillwater OK*, Jenny Sheader Wood *Owasso ok*, Tonya Hammer *Tulsa Oklahoma*

Background: Obesity is a worldwide concern and the number of overweight individuals continues to rise. Bariatric surgery significantly and favorably impacts psychological functioning of many formerly obese individuals immediately following surgery and for many subsequent years. Pre-bariatric surgery patients routinely undergo psychological assessments to evaluate psychological functioning and enhance post-surgery

outcomes. Individuals of larger size often experience weight stigmatization that may impact psychological functioning and self-perception. Self-compassion is a way of looking at distressing and disappointing events in a non-evaluative manner. Though self-compassion is linked to positive psychological outcomes, the construct embraces the awareness of both positive and negative psychological experiences. **Methods:** Archival data from one hundred and twenty pre-bariatric surgery patients from a psychologist's clinic was used in this study. The patients were referred to psychologist by bariatric surgeon in order to determine psychological readiness for bariatric surgery. The patients completed the Minnesota Multiphasic Personality Inventory (MMPI-2-RF), Self-Compassion Scale (SCS), and demographic information. These inventories were part of requirements for pre-bariatric psychological screening. **Results:** Multiple regression analyses were conducted to explore the linear relationship of psychological functioning (internal and external) with self-compassion. The results indicated that self-compassion is a predictor of greater psychological functioning ($R^2=.388; F(2,117)=37.141; p<.001$). **Conclusions:** This study found a relationship between psychological functioning and self-compassion. Identifying self-compassion as an indicator or predictor of mental health functioning among pre-bariatric patients may further the understanding of patients' psychological functioning as patients journey towards health and wellness.

T-P-LB-3868

Endoscopic sleeve gastropasty: results from a single center registry

Reem Sharaiha *New York New York*, Alexander Sarkisian *New York NY*, Nikhil Kumta *New York NY*, Andrea Benvenuto *New York NY*, Rekha Kumar *New York NY*, Michel Kahaleh *New York New York*, Alpana Shukla *New York New York*, Louis Aronne *New York New York*

Background: Endoscopic sleeve gastropasty employs endoscopic suturing for gastric volume reduction. This procedure offers a potentially reversible and minimally invasive option for the treatment of obesity. **Methods:** This single center registry includes patients who underwent ESG by a single endoscopist and were followed by the Comprehensive Weight Control Center. All procedures were performed using the Apollo OverStitch and tissue helix (Apollo Endosurgery, Austin, TX). Guidelines for suturing were marked using argon plasma coagulation. Running sutures, with 6-12 stitches each, were placed to create a sleeve in the gastric body; the sutures started sequentially in the antrum to the fundus. Interrupted stitches were then placed to ensure complete

closure and to reinforce the sleeve. Patients received dietary and lifestyle counseling after the procedure; medications were added at weight plateau at the discretion of the physician. **Results:** A total of 56 patients (mean age 42.9 yrs, 70% female) underwent ESG, the majority were Caucasian (41.1%). A median of 10 running sutures, each with 4-8 tissue stitches, was used per procedure. There was one significant adverse event (leak leading to fluid collection, managed by IR drainage). Mean weight loss was 8.4%, 15%, 16.4%, and 18.7% at 1, 3, 6 and 12 months respectively ($p=0.185, 0.28, 0.347$ and 0.289 at 1, 3, 6 and 12 months respectively), and for BMI. **Conclusions:** Endoscopic sleeve gastropasty is safe and effective in this single center registry analysis.

T-P-LB-3869

The NEW Kids(TM) (Nutrition, Exercise and Weight Management) pediatric obesity program outcomes utilizing pediatric nurse practitioners and a registered dietitian

Denise Kilway *Pewaukee WI*, Stacey Lerret *Milwaukee WI*

Background: The CDC reports that 25% of all children in the United States are overweight or obese (CDC, 2013). The financial cost of obesity in the United States is 3 million dollars annually (CDC, 2010). The NEW Kids (Nutrition, Exercise and Weight Management) program at the Children's Hospital of Wisconsin is an outpatient clinic with a unique model of care utilizing pediatric nurse practitioners (PNPs) and a registered dietitian (RD). Patients are ages 2-18 years of age, referred by their primary health care provider and have a BMI $>85\%$ with one or more obesity related co-morbid medical diagnosis. This program uses intense medical and nutritional educational interventions. **Methods:** Children's Hospital of Wisconsin IRB approved retrospective chart review was conducted to gather information including: demographics, number of visits between March, 2012 and September, 2013, growth parameters including height, weight BMI at initial and follow-up visits and initial and subsequent laboratory tests were also collected including: Fasting total cholesterol/LDL/HDL/Triglycerides, Insulin level, glucose, HgbA1c, and ALT, AST. **Results:** One hundred fifty two charts reviewed, more females (91) versus males (61), more school age children (6-12 years = 107) than adolescents (13-17 years = 35) or preschoolers (2-5 years = 10) were seen. On initial visit averages: weight=76.4 kg, height=148.4 cm, BMI = 33.2 and BMI z-score = 2.5 When comparing initial and end biometrics the average differences were: Weight -0.7 kg, height +1.4 cm, BMI = -0.3 and BMI zscore = -0.429. **Conclusions:** The initial data illustrates biometric differences at the beginning and end outcomes of a PNP and RD

intensive educational and medical intervention for childhood obesity. The data continues to be analyzed. This data may support utilizing a PNP and RD focusing on a medical and educational approach in a community or primary health care setting on a wider scale to impact more children with obesity.

T-P-LB-3870**Reduced quantity and quality of skeletal muscle mass in children with Prader-Willi Syndrome: a congenital model of sarcopenia.**

Camila Estefani Orsso *Edmonton Alberta*, Michelle Mackenzie *Edmonton Alberta*, Carla Prado *Edmonton Alberta*, Angela Alberga *Calgary Alberta*, Andrea Haqq *Edmonton AB*

Background: Prader-Willi Syndrome (PWS) is a genetic syndrome associated with unfavorable alterations in body composition such as reduced lean mass and increased adipose tissue. However, detailed analysis of adipose tissue distribution (subcutaneous, visceral and intermuscular) and skeletal muscle mass in PWS children has not been conducted. The aim of this study was to describe adipose tissue distribution and skeletal muscle mass in PWS children. **Methods:** Abdominal T1-weighted magnetic resonance imaging (MRI) was performed, and images were analyzed using Slice-O-Matic. Subcutaneous adipose tissue (SAT) was identified using the “watershed” tool. Visceral adipose tissue (VAT), intermuscular adipose tissue (IMAT), and skeletal muscle mass (SM) were identified using a threshold technique. IMAT was manually identified. Volume (cm³) of each tissue was automatically computed, and then converted to liters. Total adipose tissue volume (TAT) was calculated as a sum of SAT+VAT+IMAT volumes. **Results:** PWS group (N=10) and controls (N=10) had similar age (11.18±4.1 years and 13.7±3.0 years, respectively) and BMI z-scores (0.58±0.8; 0.80±0.6; p=0.491). No differences were observed in SAT, VAT, IMAT and TAT volume between PWS and controls. Skeletal muscle mass was significantly lower in PWS (1.91±0.9 liters) compared to controls (3.4±0.9 liters) (p=0.002), and remained different when corrected for height in squared meters (p=0.001). VAT/SAT was similar between groups (PWS=0.38±0.1; Control=0.47±0.1; p=0.105). TAT/SM was significantly higher in PWS group (PWS=2.34±0.9; Control=1.48±0.7; p=0.022). IMAT/SM was also significantly higher in PWS (PWS=0.16±0.0; Control= 0.10±0.0; p=0.001). **Conclusions:** PWS children presented with reduced SM compared with controls, but similar abdominal TAT volume. The greater IMAT/SAT ratio found in PWS could relate to a poorer quality of SM, indicating myoesteatosis. This body composition phenotype suggests a unique congenital model of sarcopenia.

T-P-LB-3871**Feasibility of a hybrid in-person/virtual group visit model in weight management for adolescents**

Susan Woolford *Ann Arbor Michigan*, Bethany Gaffka *Ann Arbor MI*

Background: Pediatric multidisciplinary weight management group programs typically require frequent in-person visits. This presents a barrier to participation for families. Video conferencing offers the possibility of interacting with groups without the need for in-person clinic attendance. Little is known regarding the feasibility of a hybrid in-person/virtual group visit model in weight management for adolescents. **Methods:** In March 2015 the MPOWER CONNECT program was launched. Based on the in-person, Michigan Pediatric Outpatient Weight Evaluation and Reduction (MPOWER) program, it was designed to deliver content via online video conferencing. Feasibility was assessed by feedback from providers and participants. **Results:** Participants (n=40) ranged in age from 13 – 18 years old. All were above the 95th percentile for BMI and privately insured. Change in weight: Mean change in weight to date is -3.45 lbs. Technology Challenges: The most familiar video conferencing platforms to participants were not HIPAA compliant or did not allow group video conference calls. HIPAA compliant platforms that allowed groups only resulted in acceptable video quality if the groups were limited to 5 participants/computers or fewer. Participant/Provider Feedback: Families appreciated that participation only required in-person visits on a monthly basis and opportunities to interact with providers online. However, a significant minority of patients struggled to interact with the technology utilized in the program (the video conferencing and goal setting platform, the mobile activity and food monitoring app, the social media site, and the program specific website with online videos). **Conclusions:** A hybrid in person/virtual group visit model has the potential to promote weight loss among adolescents, while decreasing the burden for frequent clinic visits. However, technological challenges and the nuances of virtual group interactions should be explored further.

T-P-LB-3872**Establishing School Day Pedometer Step Count Cut-points using ROC Curves in At-Risk Children**

Timothy Brusseau *Salt Lake City Utah*, Ryan Burns *Salt Lake City Utah*, James Hannon *morgantown WV*

Background: Pedometers are more feasible than accelerometers for physical activity assessment in large samples of school-aged children. No research has established pedometer step count cut-points that discriminate children that meet optimal physical activity during school hours. The purpose of this study was to determine step count cut-points that associate with 30 minutes of school day moderate-to-vigorous physical activity (MVPA) in elementary school-aged children. **Methods:** Participants included 1,053 school-aged children (Mean age = 8.4 (1.8 years)) recruited from three Title I elementary schools. Physical activity was assessed using Yamax DigiWalker CW600 pedometers and ActiGraph wGT3X-BT triaxial accelerometers that were concurrently worn during school hours. Receiver operating characteristic curves were used to determine pedometer step count cut-points that associated with accelerometer-measured 30 minutes of MVPA during school hours. Overall step count diagnostic ability was estimated using the area under the curve (AUC). Cut-points were determined for the total sample and within sex and age groups using the maximum Youden's J statistic (J max). **Results:** For the total sample, the AUC was 0.77 ($P < 0.001$) with a cut-point of 5,505 steps (J max = 0.46, Sensitivity = 63%, Specificity = 84%). Step counts showed greater diagnostic ability in girls (AUC = 0.81, $P < 0.001$; Cut-point = 5,306 steps) compared to boys (AUC = 0.72, $P < 0.01$; Cut-point = 5,786 steps). **Conclusions:** Pedometer step counts showed good diagnostic ability in girls and fair diagnostic ability in boys for discriminating children that met 30 minutes of MVPA during school hours.

T-P-LB-3873

Physical Activity Mediates the Relationship between BMI and Cognitive Function, and Sedentary Time and Cognitive function: Cross-Sectional Analysis of the Canadian Community Health Survey

Alina Cohen *Toronto*, Chris Ardern *Toronto Ontario*, Joe Baker *Toronto ON*

Background: Engagement in physical activity (PA) is protective against cognitive decline whereas, obesity and increased sedentary time are associated with impairments in cognitive functioning. To date, little is known about how these relationships may vary across the life course. The aim of this study was to investigate the inter-relationships among PA levels, sedentary time, obesity, and cognitive functioning scores in younger (30-59y) and older (60-80+y) Canadian adults. **Methods:** Cross-sectional data of 48,041 participants ($\geq 30y$) were examined from the 2012 Canadian Community Health Survey. Cognitive functioning was measured using the cognitive attribute of the Health Utilities Index. PA level

was assessed using the Physical Activity Index and BMI was calculated as weight (kg) per height (m²). Sedentary time was approximated as the total number of hours per week engaging in sedentary activities, with categories ranging from less than 5 hours to 45 or more hours per week. All measures were self-reported. To assess the inter-relationship between PA, sedentary time, BMI and age on cognitive functioning, general linear models and mediation analyses were used. **Results:** Increased BMI, greater sedentary time, and decreased PA were related to lower cognitive functioning scores ($p < 0.001$). **Conclusions:** Higher levels of PA act to preserve cognitive functioning both independently and by way of reducing BMI and sedentary time.

T-P-LB-3874

Impact of Active School Design on School-Time Sedentary Behavior: A Longitudinal Study

Jeri Brittin *Omaha NE*, Leah Frerichs *Chapel Hill NORTH CAROLINA*, John Sirard *Amherst MA*, Nancy Wells *Ithaca NY*, Beth Myers, Jeanette Garcia *Boston MA*, Dina Sorensen *Charlottesville VA*, Matthew Trowbridge *Charlottesville VA*, Terry Huang *New York New York*

Background: While patterns of sedentary accumulation have been associated with key health indicators, few longitudinal studies have addressed school built environments' relationships to students' sedentary behavior. **Methods:** This natural experiment determined whether an elementary school environment, holistically designed to promote physical activity, had impact on students' school-time sedentary behaviors. The intervention group in Virginia wore accelerometers prior to and 14 months after moving to the newly designed school. Measures from a socio-demographically similar group at New York State schools served for comparison. To address maturation effects, a distinct same-grade group wore accelerometers at the follow-up time point at the intervention school. **Results:** Adjusting for gender and race/ethnicity, results included a non-significant downward trend ($p=0.3056$) in intervention group daily sedentary time, compared to an increase in the comparison group ($p < 0.001$). **Conclusions:** Active classroom design strategies were effective in nudging children to move more during the school day.

T-P-LB-3875

Reallocation of time from prolonged sedentary activity to non-prolonged sedentary, non-locomotive, or locomotive activity is associated with beneficial effects on metabolic risk factors in overweight/obese Japanese adults

Hiroyuki Sasai *Tsukuba Ibaraki*, Yoshio Nakata *Tsukuba Ibaraki*, Kiyoji Tanaka *Tsukuba Ibaraki*

Background: Although the detrimental effects of sedentary time on metabolic risk factors are well known, whether shifting from sedentary activity to other activity types provides health benefits remains unclear. Therefore, this study aimed to examine the cross-sectional associations between the reallocation of time from prolonged sedentary activity to non-prolonged sedentary, non-locomotive (lifestyle), or locomotive activity and metabolic risk factors in overweight/obese Japanese adults. **Methods:** Overweight/obese Japanese adults ($n = 440$, 114 men, 52.7 ± 6.7 years) who underwent baseline measurements in one of three weight-loss randomized trials (UMIN000001259; UMIN000010505; UMIN000014428) wore a tri-axial accelerometer at their waist for 2 weeks. The accelerometer is capable of accurately classifying sedentary, non-locomotive, and locomotive activities. Time spent in sedentary activity was further segregated into prolonged (accumulated in bouts ≥ 30 min) and non-prolonged (accumulated in bouts < 30 min). **Results:** Independent of potential confounders, substituting 30 min/day of prolonged sedentary time with an equal amount of non-prolonged sedentary time was associated with lower waist circumference ($\beta = -0.55$, 95% confidence interval [CI]: $-0.94, -0.16$ cm). Reallocation of time to non-locomotive and locomotive activities was beneficially associated with lower diastolic blood pressure ($\beta = -0.41$, 95% CI: $-0.81, -0.02$ mm Hg) and higher HDL cholesterol ($\beta = 1.47$, 95% CI: $0.32, 2.63$ mg/dL). **Conclusions:** Substituting time spent in prolonged sedentary activity with other less-sedentary activities was favorably associated with metabolic risk factors. Interventions targeting a small shift in activity types may be feasible and beneficial for sedentary overweight/obese adults.

T-P-LB-3876

An experiential learning activity for pre-health professional students utilizing “obesity empathy suits” in a physical activity context

Lori Klos *Milwaukee WI*, Christy Greenleaf *Milwaukee WI*, Tracy Oles-Fairchild *Milwaukee WI*, Maria Fernanda Laus *Milwaukee WI*

Background: Pre-health professional training programs may benefit from the integration of experiential learning opportunities addressing how larger bodies move in physical activity contexts, along with possible modifications to exercises and physical activity environments to improve the quality of care provided to patients/clients who are obese. **Methods:** As part of a 16-week obesity and weight management course, pre-health professional

university students ($n=53$; predominantly kinesiology majors) participated in a learning workshop led by a faculty member/fitness professional with experience working with obese clients. Two students wore gender-specific, weighted, obesity empathy suits (OES; <http://www.empathysuit.com>), and engaged in a series of activities relevant to a physical activity context (e.g., sit-ups, treadmill walking) while speaking aloud about their movement experience. The other students discussed their observations and alternative movements were presented. Students responded (in writing) to a series of open-ended questions about the learning experience, and their papers were analyzed for themes. **Results:** Students considered the OESs to be a “reasonably” realistic simulation of an obese person’s body and movements, although several limitations were noted. Students expressed increased awareness of possible environmental and biomechanical limitations for performing certain movements; and empathy towards obese individuals, particularly related to physical activity. Reflecting upon the overall experience, one student stated, “I feel like I now can physically make exercise and atmospheres more comfortable for those of larger size.” **Conclusions:** OESs have the potential to positively impact pre-health professionals’ future interactions with obese persons in physical activity contexts, but educators must carefully consider student readiness and receptivity; and frame the activity to elicit professional, respectful behavior, while minimizing overgeneralizations to all persons with obesity.

T-P-LB-3877

How are Teacher Characteristics, Structured Activity Time and Child MVPA in Early Care and Education Centers Related?

Stephanie Mazzucca *Chapel Hill North Carolina*, Dianne Ward *Chapel Hill North Carolina*

Background: Physical activity (PA) at early care and education (ECE) centers is important for preschoolers’ development. ECE teachers can facilitate PA through structured (teacher-led) PA. The effect of structured PA on moderate to vigorous PA (MVPA) is unclear. This analysis explored relationships of structured PA with teacher factors and child MVPA. **Methods:** Trained staff conducted the Environment and Policy Assessment and Observation (EPAO) for 4 days in 3-5 year old classrooms in 50 ECE centers in NC. Daily minutes of indoor and outdoor structured PA were calculated, and quartiles calculated for each. Teacher PA training was categorized as never, >1 year ago, or ≤ 1 year ago. Teachers reported confidence in promoting PA (4 items), height, weight, age, race/ethnicity, and years of ECE experience.

PA confidence score (sum of items) and BMI were calculated. Children wore ActiGraph GT1M monitors for observation days. Pate cutpoints derived MVPA minutes/day. ANOVAs evaluated differences in teacher characteristics between structured PA quartiles. GLMs estimated associations between structured PA and MVPA, controlling for wear time and teacher BMI.

Results: Between outdoor structured PA quartiles, differences existed for PA confidence and training. PA confidence increased for the first 3 quartiles, but decreased between the 3rd and 4th (F=4.40, p < .05). **Conclusions:** These data highlight important but counterintuitive differences of PA confidence and training between outdoor structured PA quartiles. Future studies should investigate these factors, their influence on children's PA levels and what training or interventions are effective to support teachers.

T-P-LB-3878

E-Mechanic: Results of a randomized controlled trial to identify the mechanisms of exercise-induced weight compensation

Corby Martin *Baton Rouge Louisiana*, William Johnson *Baton Rouge LA*, Candice Myers *Baton Rouge Louisiana*, John Apolzan *Baton Rouge Louisiana*, Conrad Earnest *College Station Texas*, Catrine Tudor-Locke *Amherst MA*, Neil Johannsen *Baton Rouge LA*, Melissa Harris *Baton Rouge Louisiana*, Timothy Church *Baton Rouge Louisiana*

Background: Exercise results in less weight loss than expected based on the increase in energy expenditure. This is termed compensation and its mechanisms are unclear. This is among the first studies designed to test for compensation with 2 doses of exercise and determine if exercise changes energy intake and metabolism. **Methods:** We randomized 198 overweight and obese adults (74% female) to a no-exercise control or one of 2 exercise groups for 6 months: a) 8 kcal/kg of body weight/week (KKW), which results in about 700 kcal of exercise/week, or b) 20 KKW or about 1,800 kcal of exercise/week. Exercise was supervised with superb compliance and no suggestions were made to modify other behaviors (e.g., food intake). Energy intake and expenditure were quantified at month 0 and 6 with doubly labeled water (DLW). Actual weight change was also measured and the amount of weight loss expected from exercise was quantified with the 3,500 kcal/lb rule. Resting metabolic rate (RMR) was measured by indirect calorimetry. **Results:** Mean (SD) baseline weight, body mass index, and age were 88.9 (16.3) kg, 31.7 (4.6) kg/m², and 47.6 (11.9) years, respectively. Expected weight loss was 0.0, 2.2 and 4.9 kg in the control, 8, and 20 KKW groups, yet mean (SEM) actual weight loss was 0.3 (0.4), 0.5 (0.4), and 1.8 (0.4) kg,

respectively. Significant compensation (expected minus actual weight loss) occurred in the 8 and 20 KKW groups (p's < .05). **Conclusions:** Exercise resulted in only 23% to 37% of expected weight loss as energy intake increased significantly (RMR did not change). Compensation appears to be primarily due to increased energy intake. The findings provide intervention targets to increase weight loss with exercise and inform future exercise recommendations.

T-P-LB-3879

Effect of Obesity on Emotional and Cardiovascular Response to Acute Psychological Stress

Li Li *Birmingham AL*, Rachel Chassan *Memphis Tennessee*, Barbara Gower *Birmingham Alabama*, Richard Shelton *Birmingham AL*

Background: There are well-known associations among obesity, cardiovascular disease and stress. However, the underlying mechanisms remain unclear. The aim of current study is to address whether obesity generates a greater risk for cardiovascular disease by increasing sensitivity to acute psychological stress.

Methods: Non-obese (BMI < 30) and obese (BMI ≥ 30) subjects were randomized to a 2-week acute psychological stress protocol. **Results:** Compared with the non-obese group, subjects in obese group had a significantly higher DBP response to the TSST, but not the SBP, MAP and HR responses. Individuals with obesity had significantly higher emotional response to stress on the irritation and fatigue using VAS. Furthermore, individuals with obesity showed lower levels of cortisol during the TSST. Leptin levels, not adiponectin levels, were significantly elevated in the obese group. **Conclusions:** Our findings suggest that greater BMI is associated with increased emotional and physiological responses to acute psychological stress, which are not caused by cortisol secretion during the TSST, indicating that other acute response elements may contribute to it. Individuals with obesity at a greater risk for cardiovascular disease may be due in part to increased acute stress response.

T-P-LB-3880

Oligofructose supplementation is associated with decreased lipopolysaccharide and plasminogen activator inhibitor-1 in overweight and obese adults

Teja Klancic *Calgary Alberta*, Jill Parnell *Calgary AB*, Raylene Reimer *Calgary AB*

Background: Metabolic endotoxemia is a pro-inflammatory and oxidative state that may contribute to the development of cardiometabolic disease in obesity. Systemic elevations of gut-derived endotoxin (lipopolysaccharide, LPS) can initiate a pro-

inflammatory signalling cascade contributing to insulin resistance and metabolic syndrome. In animals, the prebiotic fiber oligofructose (OFS) lowers plasma LPS and inflammatory cytokines. In a clinical trial we previously showed that OFS supplementation reduces body fat and improves glucose control in overweight/obese adults via changes in satiety hormone concentrations. Our objective was to perform new analysis on stored plasma samples from this trial to investigate the effect of OFS on metabolic endotoxemia and inflammation. **Methods:** The study was a randomized, double-blind, placebo-controlled trial. Forty-eight overweight and obese adults were randomly assigned to receive 21g/d of OFS or placebo (maltodextrin) for 12 weeks. Plasma metabolic (resistin, adiponectin, PAI-1) and inflammatory (LPS, IL-6, IL-1 β , TNF- α , MCP-1) markers were measured using Luminex assays (LAL assay for LPS). **Results:** Plasma LPS concentrations were reduced by 40% in the OFS group over 12 weeks compared to a 48% increase in the placebo group ($P=0.04$). Plasma plasminogen activator inhibitor-1 (PAI-1), a risk factor for thrombosis, was reduced to a greater extent in the OFS group (-17303 ± 2569 pg/mL) compared to the placebo group (-9718 ± 1779 pg/mL; $P=0.03$). There was no effect of OFS on IL-6, IL-1 β , TNF- α , MCP-1, adiponectin or resistin. TNF- α levels positively correlated with IL-6 ($R = 0.412$, $P = 0.01$) and MCP-1 ($R = 0.601$, $P = 0.01$).

Conclusions: OFS supplementation, independent of any other lifestyle changes, reduced LPS and PAI-1 levels in overweight and obese adults. Because higher PAI-1 and LPS levels contribute to the complications of obesity, increased OFS intake may help to delay/prevent comorbidities associated with obesity.

T-P-LB-3881

Patterns of Moderate to Vigorous Physical Activities in Physical Education Classes Between Groups of BMI

Jose Ribeiro *Porto Porto*, Manuela Costa *Porto Porto*, Tânia Oliveira *Porto Porto*, Gustavo Silva *Porto Portugal*, Maria Santos *Porto Porto*, Jorge Mota *Porto*

Background: The current guidelines for physical activity (PA), in school-aged youngster's, advocate 60 minutes of daily moderate to vigorous PA (MVPA). School-based Physical Education (PE) is the most widely available source to promote physical activities among young people and the guidelines recommend that at least 50% of class time should be spent in MVPA. Aim of this study was to analyze, comparatively, PA levels in PE classes between groups of Body Mass Index (BMI). **Methods:** The sample comprised 455 young volunteers aged between 10 and 18 years (14.23 ± 2.64), composed by 200 boys and 255 girls. PA was assessed using Actigraph GT3Xs accelerometer. Data were

analyzed with specific software and activity determined according to Evenson et al. (2008). T-test and general linear model were used to assess differences in PA levels in PE classes between groups of BMI (normal weight and overweight), adjusting for possible confounders. **Results:** On average, normal weight participants present higher percentages of time in MVPA (32%) when compared to overweight/obese subjects (26,7%), even when adjusting for possible confounders, such as gender, type of sports present in PE lessons and age. Only 11,4% of normal weight students meet the recommendation for 50% of classes' time spent in MVPA when compared to only 3,1% from the overweight/obese subjects ($P < 0.05$). **Conclusions:** Overweight/obese students are less active than their normal weight counterparts in PE lessons, particularly in MVPA intensities. Only a small percentage of PE students accomplish the 50% recommendations in MVPA, and therefore strategies should be implemented in order to use the few options that students have in school to be active, and adapt new approaches in PE that will increase their participation in MVPA during PE lessons. Supported by Project: PTDC/DTP-DES/1328/2012 (FCOMP-01-0124-FEDER-028619); and Research Center supported by: PEst-OE/SAU/UI0617/2011.

T-P-LB-3882

Body fat percentage and nutritional and physical activity knowledge in Adolescents

Jose Ribeiro *Porto Porto*, Vera Ferro-Lebres *Bragança Trás os Montes*, Gustavo Silva *Porto Portugal*, Jorge Mota *Porto*, Pedro Moreira *Porto Porto*

Background: Knowledge enhancement has been referred as a mean to improve nutrition and physical activity, and reduce obesity. The objective of this work was to identify the difference of nutrition and physical activity knowledge according body fat and physical activity levels in adolescents. **Methods:** A cross sectional study with 734 adolescents was designed. Body fat was measured using electric bioimpedance, physical activity data were objectively measured by accelerometer. Adolescents were divided in 2 physical activity groups: high and low physical activity; 2 body fat groups: normal fat and overfat and 4 groups resulted from the combination of body fat and physical activity. Nutrition and physical activity knowledge were assessed by questionnaires.

Results: Body fat percentage revealed that 30.8 % of adolescents were overfat or obese, and daily moderate to vigorous physical activity was in average 47.9 (SD=27.49) minutes. High physical activity adolescents presented higher physical activity knowledge ($p=0.044$) and the overfat/ low physical activity group

scored the worse on experts' nutritional recommendations knowledge. **Conclusions:** Knowledge is not the single factor in the obesity equation, but it seems essential to reduce overfat and obesity. Interventions that address several nutrition and physical activity determinants should be designed. Supported by Project: PTDC/DTP-DES/1328/2012 (FCOMP-01-0124-FEDER-028619); and Research Center supported by: PEst-OE/SAU/UI0617/2011.

T-P-LB-3883**Obesity and nutrient intake associated with Big Five personality traits**

Yeojun Yun *Seoul Yangcheon-gu*, Han-Na Kim *Seoul Seoul*, Songe Kim *Seoul Seoul*, Yuni Choi *Jung-gu Seoul*, Yoosoo Chang *Seoul Gyunggi*, Seungho Ryu *Seoul Korea*, Hyung-Lae Kim *Seoul Seoul*

Background: The overweight rate followed by overnutrition is increasing rapidly throughout all over the world particularly in developed countries, which led to the increased prevalence of non-communicable diseases such as obesity. Healthy diet habit plays a key role in the prevention and treatment of obesity, which is thought to get influence by personality traits. A large population in Korea was studied to find this complex correlation between obesity, nutrient intake and personality traits.

Methods: Big Five personality model consisted with Neuroticism, Extraversion, Openness to experience, Agreeableness, and Conscientiousness was investigated in the relation of nutrient intake and BMI level. A Korean healthy population with total 3,606 including men (n=940; mean age 39.9±9.2) and women (n=2666; mean age 34.5±6.1) from the Kangbuk Samsung Hospital Cohort Study datasets was used for this study. NEO PI-R for personality and FFQ for nutrient intake were assessed. **Results:** High conscientiousness was associated with lower total calorie intake, which was correlated with lower BMI especially in women. High extraversion was significantly associated with high BMI in men and women, which was the predictor of high calorie intake in men. In addition, extraversion had the positive relation with sodium intake in men and women. In women, however, the predictor for high calorie intake was not extraversion, but neuroticism and openness to experience with no association with BMI. The high extraversion women were related with higher protein intake, which could be connected to the positive correlation between BMI and protein in women, while BMI was positively correlated with fat consumption in men. **Conclusions:** The findings indicate that the distinct patterns of nutrient intake influenced by personality traits existed clearly in different gender population, which was correlated with obesity risk. It may need to

consider psychological aspects for the nutritional policy, which might contribute to the prevention of obesity.

T-P-LB-3884**Divergence of Patient and Clinician Perceptions of Obesity and Weight Management**

Lee Kaplan *Boston MA*, Angela Golden *Munds Park AZ*, Patrick O'Neil *Charleston SC*, Joseph Nadglowski *Tampa Florida*, Theodore Kyle, Ronette Kolotkin *Durham NC*, Michelle Look *San Diego CA*, Ching Lum *Plainsboro NJ*, Morten Donsmark *Sjborg n/a*, Nikhil Dhurandhar *Lubbock Texas*

Background: Obesity is a chronic disease associated with significant morbidity, for which few affected individuals receive adequate medical care. The ACTION (Awareness, Care & Treatment In Obesity Management) study was designed to identify barriers reported by people with obesity (PWO) and clinicians that may hinder the initiation of such care. **Methods:** Focus groups including 43 PWO (class I: N=14; class II: N=13; class III: N=16) and individual interviews with 24 clinicians (12 primary care providers and 12 obesity specialists) were conducted, transcribed, and coded thematically. **Results:** 75% of PWO perceived themselves as 'healthy,' although nearly three-quarters had obesity-related comorbidities. While PWO and clinicians considered obesity a combination of disease and lifestyle, their primary emphases differed widely; 65% of PWO considered obesity primarily a lifestyle issue, and 88% of clinicians considered it a disease. Motivation was perceived as a key barrier to weight loss by both PWO and clinicians (77% vs. 75%, respectively); limited patient understanding of their condition less so (35% vs. 42%). Relative to clinicians, PWO more often cited barriers of food habits (88% vs. 38%), social relationships (79% vs. 38%) and feeling deprived while dieting (56% vs. 8%), and less often cited limited patient understanding of how to lose weight (9% vs. 58%). Importantly, PWO indicated that developing health complications or receiving a "wake-up call" in relation to their health would motivate them to address their obesity. **Conclusions:** Perceptions of obesity appear to vary between PWO and clinicians. This discordance may be a barrier to effective communication and treatment, and thus contribute to suboptimal patient-clinician interactions. This qualitative association provides the basis for quantitative examination of these perceptions and their causes, the understanding of which could enhance patient-clinician collaboration in the treatment of obesity.

T-P-LB-3885

Maternal feeding practices and fussy eating in toddlerhood: a discordant twin analysis

Alison Fildes *London*, Holly Harris *Brisbane Queensland*,
Kimberley Mallan *Brisbane Queensland*, Jane Wardle *London*
London, Clare Llewellyn *London London*

Background: Parental feeding practices are thought to play a causal role in shaping a child's fussiness; however, a child-responsive model suggests that feeding practices may develop in response to a child's emerging appetitive characteristics. We used a novel twin study design to test the hypothesis that mothers vary their feeding practices for twin children who differ in their food fussiness, in support of a child-responsive model. **Methods:** Participants were mothers and their 16 month old twin children (n=2026) from Gemini, a UK twin birth cohort of children born in 2007. Standardized psychometric measures of maternal 'pressure to eat', 'restriction' and 'instrumental feeding' as well as child 'food fussiness' were completed by mothers. Between-family analyses used Complex Samples General Linear Models to examine associations between feeding practices and 'food fussiness'. Within-family analyses examined if twin-pair differences in 'food fussiness' were associated with differences in maternal feeding practices using linear regression models. **Results:** Between-family analyses indicated that 'pressure to eat' and 'instrumental feeding' were positively associated with 'food fussiness', while 'restriction' was negatively associated with 'food fussiness' (all p values < .05). **Conclusions:** Mothers appear to adjust their feeding practices according to their toddler's emerging characteristics, suggesting a bidirectional responsive relationship between parental feeding practices and fussy eating. Specifically, the fussier toddler is pressured more than their less fussy co-twin, and is more likely to be offered food rewards.

T-P-LB-3886**Grandma Knows Best: Maternal perceptions of grandparents' influence on child snacking and parental feeding authority**

Yasmeen Bruton *Philadelphia Pennsylvania*, Christine Blake
Columbia South Carolina, Kirsten Davison *Boston MA*,
Alexandria Orloski *Philadelphia Pennsylvania*, Rachel Blaine
Long Beach CA, Nicholas Younginer, Nora Jones *Philadelphia*
Pennsylvania, Jennifer Fisher *Philadelphia PA*

Background: While parents have central influence on children's eating behaviors, an increasing number of grandparents participate in child feeding. The manner in which grandparents approach feeding young children as well as how that role is negotiated with parents is unclear. The purpose of the study was to explore

maternal perceptions of grandparents' influence on preschool aged children's snacking and parental authority in child feeding.

Methods: Participants were 55 ethnically-diverse, low-income mothers of preschool aged children 3 to 5 years of age. A qualitative design was employed where semi-structured interviews were used to examine mothers' schemas around child snacks and the context of snacking. Interviews were recorded and transcribed verbatim. Analyses used NVivo 10 to identify major themes using a grounded-theory approach. Participant demographics and household food security were assessed by self-report. **Results:** Three major themes emerged regarding mothers' perceptions of grandparents. First, many mothers described supportive or positive aspects of grandparents' involvement in child feeding: 1) building bonds with grandchildren, 2) providing healthy foods, and 3) setting limits. Second, grandparents were perceived as being unsupportive in: 1) offering "junk foods" and 2) being permissive regarding the types, frequency, and portion sizes of snacks offered to children. Third, these perceptions were juxtaposed with the perception that grandmothers often challenged mothers' authority in child feeding. **Conclusions:** Findings suggest that grandparents may have important roles in family dynamics around feeding among low-income families with young children.

T-P-LB-3887**Indications for bariatric surgery – Are some doctors going too far?**

Flavio Cadegiani *Brasilia DF*

Background: Studies have consistently tried to enlarge indications for bariatric surgery toward lower Body Mass Index (BMI) and diabetes correction regardless of BMI. However, not the same effort has been made on clinical modalities. A lack of attempt to optimize clinical therapies, by associating different safe and effective drugs, promotion of an intensive surveillance and multidisciplinary clinical approach, might be an important reason why surgical option has increased. The last Obesity Society (TOS) guideline recommends that surgery should be offered to patients with a BMI > 40kg/m² or >35kg/m² with comorbidities, and refractory to other therapies. However, many patients have been recommended bariatric surgery not fulfilling criteria. In this study, we analyze whether indications for surgery were properly made to patients who visited an obesity center. **Methods:** Patients recommended bariatric surgery by a bariatric surgeon or an endocrinologist were included. Questions about diet plan, psychotherapy or medications for obesity prior to the bariatric indication, awareness of benefits, risks and limitations and

motivation for surgery were developed and done. BMI, age, gender, comorbidities and psychiatric disorders were also evaluated. **Results:** A total of 53 patients who were recommended surgery searched the clinic. After exclusion criteria, 44 subjects were included. From these, 19 had a BMI **Conclusions:** It was demonstrated that bariatric surgery may be over and prematurely indicated, possibly because it became an easier, more profitable and definitive option, as obesity clinical approach can be complex and strenuous. Formal indications for an aggressive option like bariatric surgery should be strictly followed.

T-P-LB-3888**The Effect of Roux-on-Y Gastric Bypass Surgery on Hemoglobin A1C Varies Among Racial Groups**

Samar Hafida *Boston Massachusetts*, Caroline Apovian *Boston MA*, Wendy Anderson *Boston MA*, Donald Hess *Boston MA*, Nawfal Istfan *Boston M*

Background: Bariatric surgery is a well-established method for reversing adverse metabolic consequences associated with obesity, in particular Type 2 Diabetes (T2DM). Roux-en-Y gastric bypass (RYGB) is more effective at improving HbA1c, when compared to other bariatric surgeries. Factors influencing its success are duration of disease, age, baseline HbA1c, and weight loss. Although it is recognized that racial disparities influence weight loss outcomes, it is not known how A1c levels achieved after RYGB differ amongst various ethnic groups. We identified race as an additional factor determining A1c levels after RYGB.

Methods: A retrospective analysis of data obtained from 919 ethnically diverse subjects undergoing RYGB at Boston Medical Center between 2004 and 2009 was carried out. Changes HbA1c levels up to 2 years post RYGB among Caucasian Americans (CA), African Americans and Hispanic Americans (HA) were assessed by linear mixed model analyses. **Results:** HbA1c levels significantly decreased equally in all racial groups. However, only AA subjects had a significant increase in their A1c levels, which returned to near baseline levels 2 years after RYGB. This increase was independent of the amount of weight lost and did not relate to any detectable weight regain among AA subjects. **Conclusions:** AA may not achieve the same HbA1c lowering benefit of RYGB surgery as other racial groups. This finding may be important when making decisions about recommending RYGB in this ethnic population.

T-P-LB-3889**Self-Reported Opioid and Marijuana Use and Pain in the Year Following Recreational Marijuana in New Patients to Weight Management**

William Donahoo *Lafayette Colorado*, Frank Bauer *Denver CO*, William Mundo *Lakewood CO*, Audrey Bolanowski *Denver CO*, Adam Tsai *Denver Colorado*, Farah Husain

Background: We have previously shown that opioid use increases following bariatric surgery, especially following RYGBS and in those chronically using opioids. The reason is unknown but could be related to preoperative pain. The effect of bariatric surgery on marijuana (MJA) use is not known. Medical (MED) MJA has been available in Colorado for over a decade, recreational (REC) MJA has been legal in only the last year. In order to begin to understand the effect of MJA in the bariatric population, we sought to evaluate the change in MJA use and reason, changes in opioid use, and changes in pain in new patients coming to an obesity clinic between summer 2014 and summer 2015. Our hypothesis was that there will be a higher proportion of patients using REC MJA in June 2015 than August 2014. **Methods:** All new patients to Kaiser Permanente CO Weight Management meeting criteria for bariatric surgery and seen in August 2014 or June 2015 were evaluated. Measures included age, sex, BMI, presence of weight related comorbidities or a pain diagnosis, pain score, current opioids use, MJA use and reason (MED or REC), and alcohol use. **Results:** There were 137 patients meeting criteria seen in August 2014 and 128 in June 2015. No differences were seen in age, sex, presence of weight related comorbidities, pain diagnoses, or alcohol use. Current opioid use was seen in 12% in 2014 and 15% in 2015 ($p=0.47$), MJA use was seen in 9% in 2014 and 7% in 2015 ($p=0.55$) with 50% REC use in 2014 67% REC use in 2015 ($p=0.34$). BMI was less in 2015 than 2014 ($46 + 8$ vs $43 + 8$ kg/m², $p=0.009$) and self-reported pain at the visit was also less in 2015 vs 2014 ($1.8 + 2.8$ vs $1.3 + 2.5$, $p=0.05$). **Conclusions:** Self-reported use of MJA and specifically REC use did not increase following REC MJA legalization in new patients seeking weight loss management and meeting criteria for bariatric surgery. The effect of REC MJA on subsequent MJA use following bariatric surgery, and on metabolic and surgical outcomes in this population remains to be determined.

T-P-LB-3890**Bariatric Surgery and Type 1 Diabetes Mellitus: a Systematic Review and Meta-Analysis**

Hutan Ashrafian *London London*, Leanne Harling *London London*, Tania Toma *arkley Hertfordshire*, Christina Athanasiou *London*

London, Evangelos Efthimiou *London London*, Ara Darzi *London London*, Thanos Athanasiou *London England*

Background: Type 1 Diabetes Mellitus (T1DM) has a rising global prevalence. Although it is vastly outnumbered by Type 2 Diabetes Mellitus rates, it remains a persistent worldwide source of morbidity and mortality. Increasingly its sufferers are afflicted by obesity and its complications. Our objective was to quantify the effects of bariatric surgery on T1DM by appraising the primary outcomes of glycosylated haemoglobin (HbA1c), insulin requirements and body mass index (BMI). Secondary outcomes included blood pressure, triglycerides and cholesterol biochemistry. **Methods:** A systematic review of studies reporting pre-operative and post-operative outcomes in T1DM patients undergoing bariatric surgery. Data were meta-analysed using random effects modeling. Subgroup analysis and quality scoring were assessed. **Results:** Bariatric surgery in obese T1DM patients is associated with a significant reduction in insulin requirement (-48.95 units, 95%CI of -56.27, -41.62), insulin requirement/Kg (-0.391, 95%CI of -0.51, -0.27), HbA1c (-0.933%, 95%CI of -1.604, -0.262) and BMI (-11.04Kg/m², 95%CI of -13.49, -8.59). Surgery is also associated with a statistically significant reduction in systolic and diastolic blood pressure and a significant beneficial rise in HDL. Heterogeneity in these results was high and study quality was low overall. **Conclusions:** Bariatric surgery in obese T1DM patients is associated with a significant improvement in insulin requirement, and a significant though modest effect on HbA1c. These early results require further substantiation with future studies focusing on higher levels of evidence. This may offer a deeper understanding of diabteogenesis and can contribute to better selection and stratification of diabetic patients for metabolic surgery and future metabolic treatment strategies.

T-P-LB-3891

Weight Loss after Roux-En Y Gastric Bypass Surgery Reveals Novel Skeletal Muscle Promoter-Specific DNA Methylation Changes in Obese Patients

Dawn Coletta *Phoenix Arizona*, Latoya Campbell, Richard Coletta, Samantha Day, Tonya Benjamin *Scottsdale AZ*, Elena Anna De Filippis *Scottsdale AZ*, Lawrence Mandarino *Scottsdale AZ*, James Madura II *Phoenix AZ*, Lori Roust *Scottsdale AZ*

Background: The mechanisms of weight loss and metabolic improvements following roux-en Y gastric bypass (RYGB) surgery are incompletely understood but epigenetic modifications are likely to contribute. The aim of our study was to investigate skeletal muscle DNA methylation after weight loss induced by

bariatric surgery. **Methods:** Muscle biopsies were obtained basally from seven insulin-resistant morbidly obese (BMI >40 kg/m²) female subjects (45.1±3.6 years) pre and 3 months post-RYGB with euglycemic hyperinsulinemic clamps to assess insulin sensitivity. We performed reduced representation bisulfite sequencing next generation methylation and microarray analyses on DNA and RNA isolated from vastus lateralis muscle biopsies. **Results:** Significant improvements in fasting plasma glucose: 104.2±7.8 vs. 86.7±3.1 mg/dl and BMI: 42.1±2.2 vs. 35.3±1.8 kg/m² were demonstrated in the pre vs. post-RYGB, both P **Conclusions:** These results demonstrate that weight loss after RYGB alters the epigenome through DNA methylation, and highlights novel transcriptomic changes in skeletal muscle genes that may contribute to the metabolic improvements observed post-RYGB.

T-P-LB-3892

Effectiveness of Supplementation using Ferrous Sulfate for Normalization of Iron Status in Patients Following Gastric Bypass, A Pilot Study.

Nana Gletsu-miller *West Lafayette Indiana*, Renee Mischler *West Lafayette IN*, Seth Armah *West Lafayette Indiana*, Jennifer Choi *Indianapolis IN*, Arthur Rosen *West Lafayette IN*

Background: Iron deficiency resulting in anemia, fatigue and pica is common after Roux-en-Y gastric bypass (RYGB). Oral supplementation using ferrous sulfate is the first line of treatment, but its effectiveness is controversial. The objective is a pilot study to evaluate the efficacy, safety and tolerability of ferrous sulfate for treatment of iron deficiency and associated symptoms.

Methods: Women who had RYGB and are iron-deficient receive ferrous sulfate (65 mg t.i.d.) for 8 weeks. Iron status including blood concentrations of ferritin, total iron binding capacity (TIBC), soluble transferrin receptor (sTfR), and hemoglobin are determined at baseline and 2, 4, and 8 weeks. Measures of fatigue and quality of life are assessed using SF36 and Multidimensional Fatigue Inventory questionnaires. Compliance and gastrointestinal symptoms are tracked. Power analysis suggests that N=16 is required. Means of data are presented. **Results:** Of RYGB patients who were screened, 43% were found to be iron deficient. To date, 4 participants who were iron deficient have completed the study. A significant improvement in iron status was observed: ferritin (5.1 to 21.4 mcg/L, p = 0.068); TIBC (420.5 to 346.8 mcg/dL, p **Conclusions:** Early data demonstrate that supplementation of ferrous sulfate is efficacious for resolution of iron deficiency and associated anemia that occurs following RYGB, but low tolerability may limit effectiveness.

T-P-LB-3893**A Provocative Signal of Alcohol Use From the Teen-Longitudinal Assessment of Bariatric Surgery (Teen-LABS) Study**

Meg Zeller *Cincinnati OH*, Thomas Inge *Cincinnati OH*, Gia Washington *Houston TX*, Anita Courcoulas *Pittsburgh PA*, David Sarwer *Blue Bell PA*, Todd Jenkins *Cincinnati Ohio*, James Mitchell *Fargo ND*, Marc Michalsky *Columbus Ohio*, Carroll Harmon, Michael Helmtrath *CINCINNATI OHIO*, Mary Brandt *Houston TX*, Mary Evans *Bethesda MD*

Background: Emerging evidence indicates bariatric surgery, specifically Roux-en-Y gastric bypass, results in increased alcohol sensitivity and risk for alcohol use disorder (AUD) post-operatively in adults. The present data are the first to characterize adolescent patient alcohol use behaviors pre-post weight loss surgery (WLS). **Methods:** Teen-LABS is a multi-site prospective cohort study of adolescents who underwent WLS. Of 242 participants, 180 (WLS: 76.1% female; 62.2% White; Mage = 17.1+ 1.5 years; MBMI=52.6+9.0 kg/m²) completed the Alcohol Use Disorders Identification Test pre- and 1 and 2 years postoperatively. Results were compared to a cohort of 66 adolescents with severe obesity not undergoing WLS (Control: 80.3% female, 53.0% White; Mage = 16.2+1.3 years; MBMI=46.3+5.0 kg/m²). **Results:** Over 90% of participants reported no alcohol consumption in the year prior to surgery/baseline. Rates of those who subsequently consumed alcohol within the prior year increased over time (i.e., 24 months: 29.4% WLS; 25.8% Control). However, of WLS group who drank during the second post-operative year, 36% reported consuming 3+ drinks on a typical drinking day, with 41.5% consuming 6+ drinks on at least one occasion, with rates similar to Controls. Prevalence of AUD was low for both groups at 24 months. (8.9% WLS vs. 9.1% Control). **Conclusions:** Broader epidemiological surveillance demonstrates that alcohol use behaviors typically onset and increase across the adolescent and young adult period, with binge drinking common along with increased risk of alcohol-related harm (e.g., injury, death). In light of the emerging concerns from the adult WLS literature, the present data provide a provocative signal with clinical and safety implications for adolescents undergoing WLS, which warrants thorough examinations and within a developmental context.

T-P-LB-3894**Comparison of the changes in gut microbiome after medical weight loss versus bariatric surgery in a randomized trial**

Clare Lee *Baltimore Maryland*, Liliana Florea *Baltimore MD*, Cynthia Sears *Baltimore MD*, Valentin Antonescu *Baltimore MD*, James Potter *Baltimore Maryland*, Nowella Durkin *Baltimore MD*, Meghan Ames *Baltimore MD*, Melissa Scudder *Baltimore MD*, Susheel Patil *Baltimore Maryland*, Nisa Maruthur *Baltimore MD*, Jeanne Clark *Baltimore MD*

Background: Emerging evidence suggests a role of gut microbiome in human obesity and diabetes. Bariatric surgery, especially Roux-en-Y gastric bypass (RYGB), is highly effective in improving obesity and diabetes compared to medical weight loss (MWL). We hypothesized this may be partly related to the change in gut microbiome after surgery. **Methods:** We performed 16S rRNA sequencing to identify the gut microbial composition at baseline and at 10% weight loss in 12 subjects with type 2 diabetes who were randomized (1:1:1) to one of three weight loss interventions: MWL, adjustable gastric banding (AGB), or RYGB. Metastats Qiime was used to calculate taxonomic profiles from 16S rRNA reads. Metastats was then applied to analyze change in relative abundance of taxa across arms, and to calculate Bacteroidetes to Firmicutes (B/F) ratio. **Results:** All subjects were female, 75% black race with mean age of 51 and approximately 10% weight loss (6.12-9.97%). Mean hemoglobin (Hb) A1c decreased in all three arms and did not vary significantly by arm. At follow-up, subjects who underwent RYGB or AGB had increased abundance of Proteobacteria and Actinobacteria compared to MWL subjects, but there was no pattern in the change in potentially beneficial bacteria (e.g. *Faecalibacterium prausnitzii* or *Akkermansia muciniphila*) across arms. The change in B/F ratio did not differ by arm. There was no association between the change in B/F ratio and change in weight or Hb A1C.

Conclusions: This is the first randomized study on the change in human gut microbiome after surgical versus MWL. At a similar weight loss amount (~10%) and HbA1C improvement, our results suggest that there is a difference in the gut microbial composition change after surgical versus medical weight loss. The change in B/F ratio or potentially beneficial bacteria, however, did not show a pattern across arms. Larger and longer follow-up studies are needed to further explore the mechanisms of differential improvement in weight and glucose.

T-P-LB-3895**Primate fetal hepatic response to maternal obesity: Impact on WNT/ β catenin signaling and lipid metabolism.**

Sobha Puppala *San Antonio Texas*, Cun Li *San Antonio Texas*, Jeremy Glenn *San Antonio tx*, Amy Quinn *San Antonio Texas*,

Jennifer Palarczyk *San Antonio Texas*, Edward Dick , Peter Nathanielsz *Laramie Wyoming*, Laura Cox *San Antonio TX*

Background: The fetal origins of disease hypothesis in humans and animals states that the intrauterine environment is a determinant of adult disease and health. Maternal obesity (MO) increases the risk for offspring cardiovascular disease, diabetes and obesity. Programming of fetal liver development is an important metabolic target for adverse maternal nutrition. **Methods:** We developed cohorts of baboon offspring from normal weight and MO mothers. Gene expression data were analyzed using GeneSifter software. Significant differentially expressed genes were overlaid onto KEGG pathways. Fetal liver lipid content was quantified using Oil Red O staining and the Computer Assisted Stereology Toolbox (CAST). **Results:** We hypothesized that MO influences hepatic metabolic pathways during fetal development. Analysis of global gene expression at 0.9 gestation (G) showed 875 differentially expressed genes between MO and control fetuses, with 350 genes up-regulated and 583 down-regulated. Gene expression differed by sex. Overlaying differentially expressed genes onto KEGG pathways revealed that the Wnt/ β catenin signaling pathway, which is involved with hepatic lipid metabolism in obese rats, was up-regulated in MO versus control fetuses suggesting that MO influences fetal hepatic lipid metabolism. Of three differentially expressed genes related to Wnt/ β catenin signaling pathway in our dataset, frizzled homolog 5 and peroxisome proliferator-activated delta were both up-regulated and SMAD family member 4 was down-regulated. Hepatic lipid quantification of lipid by Oil Red O showed increased lipid in MO fetal livers. The MO fetal livers showed 2-fold more lipid accumulation than the control fetal livers ($p = 0.048$). **Conclusions:** Our findings suggest dysregulation of lipid metabolism via Wnt/B signaling in MO fetal livers as early as 0.9 G will result in impaired adult offspring metabolic health.