

THE 2015 OBESITY SUMMIT

ABSTRACTS

14th - 16th April 2015
London, UK

EuroSciCon 

Obesity is widely recognized as the largest and fastest growing public health problem in the developed and developing world.

This three day event will discuss aspects of obesity development and treatment in an informal academic setting.

Discussion will include diagnosis and management, gene-environment interactions, drug discovery, fetal reprogramming and lipidomics

With plenty of opportunity for networking and debate, this informal international meeting will bring you up to date with current research and thinking regarding obesity.

This event has [CPD accreditation](#)

www.regonline.co.uk/obesity2015

This event has CPD accreditation

This abstract book will be finalised two weeks before the final event

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Day 1:

Invited Speakers Abstracts

Prevention of childhood obesity: Psychosocial perspectives and interventions

Professor Yael Latzer DSc., Professor, Faculty of Social Welfare and Health Sciences, University of Haifa, Mount Carmel, Haifa, Israel

The increase in childhood obesity may reflect genetic, psychological, environmental, and socio-cultural influences. In the first part of the presentation an updated summary of the psychosocial factors associated with this change will be discussed.

In the second part we will discuss the potential of psychosocial prevention programs to intervene, emphasizing that prevention programs should be multidisciplinary, combining the knowledge of experts from different professions, and taking into consideration the important role of the family environment and relevant influential social organizations, particularly school. Secondly, effective change is unlikely to occur without large-scale programs carried out on a public policy level.

Psychological and familial perspectives of childhood obesity

Professor Daniel Stein MD, Director, Pediatric psychosomatic department, Admond and Lily Safra Children's hospital, Chaim Shiba Medical center, Tel Hashomer, Israel

The aim of this lecture is to review up-to-date findings concerning the psychosocial status of obese and overweight children and its management. Overweight in children and adolescents may be associated with psychological and social problems such as reduced school and social performance, less favorable quality of life, societal victimization and peer teasing, lower self-and body-esteem, and neuropsychological dysfunction. Whereas community samples of obese youngsters usually do not show elevated psychopathology, clinically-referred overweight children show elevated depression, anxiety, behavior problems, attention deficit hyperactivity disorder and disordered eating. Parents' and peers' perceptions of overweight highly influence the well-being of obese children and the way in which they perceive themselves.

Modifiable early life risk factors for childhood adiposity and overweight: an analysis of their combined impact and potential for prevention

Professor Sian Robinson, Professor of Nutritional Epidemiology, MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton General Hospital (MP95), Southampton, UK

Nutritional Genomics of obesity: Reading the future:

Dr Azadeh Mottaghi, Ph.D, Assistant Professor of Nutrition, Nutrition and Endocrine Research center Research Institute for Endocrine Sciences Shahid Beheshti University of Medical Sciences, Tehran, Iran

Obesity is the commonest nutrition-related disorder and individual susceptibility to obesity strongly depends on the genetically determined patterns of energy balance regulation. Multiple polymorphic genes encoding central and peripheral determinants of energy intake and expenditure have been revealed over the past decade. Food intake control may be affected by polymorphisms in the genes encoding taste receptors and a number of peripheral signaling peptides such as insulin, leptin, ghrelin, cholecystokinin, and corresponding receptors. Polymorphic central regulators of energy intake include hypothalamic neuropeptide Y, agouti-related protein, melanocortin pathway factors, CART (cocaine- and amphetamine regulated transcript), some other neuropeptides, and receptors for these molecules. Potentially important polymorphisms in the genes encoding energy expenditure modulators (alpha and beta-adrenoceptors, uncoupling proteins, and regulators of adipocyte growth and differentiation) are also known.

In this topic, I will discuss some aspects about nutritional genomics of obesity.

Oxygen: A cause and also a tool to treat Obesity?

Dr Pedro González-Muniesa, University of Navarra Pamplona, Spain

Oxygen is indispensable for cell metabolism, and in turn, tissue oxygenation is essential for all normal physiological functions in most living creatures. Diseases as relevant as cancer, respiratory dysfunctions, and others, such as obesity (Trayhurn and Wood, 2004), are related with a poor tissue oxygenation. On the other hand, several studies have reported that appetite suppression and body weight loss are frequently observed at high altitude. Based on these findings, it has been hypothesized the possible applicability of hypoxia and hyperoxia for the treatment of obesity and related disorders (Quintero et al, 2010).

Balancing the Scales: Promoting healthy weight management without blame or shame

[Dr. Sara FL Kirk](#), PhD, Applied Research Collaborations for Health (ARCH) School of Health, Human Performance Dalhousie University, Halifax, NS, Canada

The management of obesity has primarily focused on individual behaviour with little attention to social, cultural and environmental influences. A person's weight is a sensitive topic to address, and individuals who are obese or overweight are often marginalized, highly stigmatized in society and personally blamed for their condition, by both the broader public and the health professionals they seek support from. This presentation will share the findings from a study that explored obesity management from the perspectives of individuals living with obesity and a variety of health professionals, using drama to convey the key findings.

Normal-Weight Obesity

Professor Francisco Lopez-Jimenez, Mayo College of Medicine Director, Preventive Cardiology Cardiovascular Division, Department of Medicine Director of Research, Dan Abraham Healthy Living Center Mayo Clinic, Rochester, UK

Shared Genetics between Obesity and Depression

[Dr Margarita Rivera](#), Institute of Psychiatry, Lecturer in Psychiatric Genetics, King's College London, De Crespigny Park, Denmark Hill, London, UK

Obesity and depression are leading causes of disease burden and disability, as well as major public health concerns worldwide. Both conditions are highly prevalent and major risk factors for chronic physical diseases such as type 2 diabetes, cardiovascular disease and hypertension. The reason why both disorders tend to cluster together is not well understood. There are many factors driving this observation, such individual lifestyle choices, socioeconomic factors, psychosocial stress, disparities in health care, medication, as well as biological factors. The talk will highlight the evidence of shared genetics effects that may contribute to the link between obesity and depression.

Changing the Face of Childhood Physical Activity: Active School Yard, Active Home

[Professor Edward R. Laskowski](#), M.D., Professor, Department of Physical Medicine and Rehabilitation Co-Director, Mayo Clinic Sports Medicine Center, Mayo Clinic, Rochester, MN, USA

Childhood obesity is a significant global problem. The potential solutions are multifactorial, with involvement of schools, youth and community groups, and families all playing an important role. Specifically examined will be the role of families and the powerful impact that modeling in the family has on children's health behaviors.

Implications of epigenetics in diabetes syndrome

[Dr Assam El-Osta](#), Epigenetics in Human Health and Disease Laboratory, Epigenomics Profiling Facility, The Alfred Medical Research and Education Precinct, Baker IDI Heart & Diabetes Institute, Melbourne, Victoria, Australia

Metabolic memory is the name given to the phenomenon whereby previous exposure to such metabolic perturbations has long-lasting patho-physiological effects, well after the event has dissipated. Vascular complications remain the major cause of mortality and morbidity in diabetes with increasing evidence that prior glycemic exposure is a major determinant of susceptibility and progression of these disorders. Although epigenetic changes are an appreciated non-genetic factor, its role in metabolic memory still remains poorly understood.

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

RELATIONSHIP BETWEEN BODY MASS INDEX AND LEFT ATRIAL APPENDAGE THROMBUS IN NON-VALVULAR ATRIAL FIBRILLATION

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The contribution of obesity as a risk factor for stroke in atrial fibrillation remains unclear. We tested the hypothesis that patients with increased body mass index (BMI) would be at increased risk for the development of left atrial appendage thrombus (LAAT) in non-valvular atrial fibrillation (NVAf).

Consecutive, anticoagulation naïve patients with NVAf referred for a transesophageal echocardiogram between January 1, 2007 and October 21, 2009 were approached for study participation. Within a group of 400 anticoagulation naïve NVAf patients (mean age 63 ± 15 years, 28% women; BMI normal 18%, overweight 31%, obese 22%, morbidly obese 29%) the prevalence of LAAT was 17% and evenly distributed. Despite a higher CHADS₂ score and a higher prevalence of both hypertension and diabetes mellitus, elevated BMI was not an

independent predictor of LAAT when analyzed as either a continuous variable, across BMI WHO categories, a dichotomous variable stratified at values above vs. below 27 kg/m², or BMI stratified on atrial fibrillation duration.

Despite a higher prevalence of major risk factors for thromboembolism, the prevalence of LAAT was not increased in overweight, obese, and morbidly obese patients. This suggests that obesity may be protective of the thrombotic complications of this dysrhythmia.

A MISSENSE VARIANT IN ID3 IS ASSOCIATED WITH DECREASED BMI AND DECREASED CHANGE IN BMI OVER TIME

M Svendstrup, EVR Appel, TIA Sørensen, LH Ängquist, TVS Ahluwalia, N Grarup, T Hansen, H Vestergaard

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Background/aim

The ID3 protein is involved in adipocyte differentiation and angiogenesis. In a mouse model, *Id3* expression was increased in the visceral adipose tissue (VAT) after a high-fat diet leading to increased body mass index (BMI) and VAT mass while *Id3* knock-out mice showed decreased BMI and VAT mass.

Our hypothesis was that a missense variant (rs11574) in *ID3* causing a reduced binding capacity of the protein would lead to less adipose tissue expansion and thereby decreased fat mass and BMI. We further hypothesized that the role of ID3 in adipose tissue expansion might be reflected in changes in BMI over time.

Method

A cohort of obese men (N=671) and a randomly selected group (N=794) from the draftboard of Copenhagen were examined phenotypically at mean age 20 and 46 and genotyped at mean age 46. Replication was done in two larger cohorts from population based studies in Copenhagen (N=6242 and 2875 respectively).

Results

We found a statistically significant association in the random sample between rs11574 and decreased BMI at mean age 20 (effect size per risk allele = -1.21 % (95 % CI: -2.34 % – (-0.07 %)), p = 0.0368) and mean age 46 (effect size per risk allele = -1.999 % (95 % CI: -3.41 % – (-0.56 %)), p = 0.00658). Furthermore we found a borderline significant difference in BMI change over an average time span of 26 years (effect size per risk allele = -1.12 % (95 % CI: -2.29 % – 0.07 %), p = 0.0649). The association to a decreased BMI and to change in BMI over time was replicated and found statistically significant in the largest of the replication cohorts. In the other replication cohort the association to a decreased BMI was only borderline statistically significant.

Conclusion

This is the first time a variant in ID3 has been found to be associated with decreased BMI in humans. We believe that the association to a decreased BMI and possibly also to BMI changes reflects a role of ID3 in human adipose tissue expansion.

BODY SHAPE SILHOUETTES AS A MARKER OF OBESITY IN AN ADULT AFRICAN POPULATION

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Background: This study aimed to assess whether a culturally relevant body image instrument (a series of 9 silhouettes portraying body shapes of increasing sizes) can accurately predict adiposity as measured by four standard markers of adiposity: body mass index (BMI), waist circumference (WC), waist-to-hip ratio (WHipR), waist-to-height ratio (WHeiR), and total body fat percent (BF) to predict obesity in adult men and women living in a country of the African region.

Methods: Population-based cross sectional survey in the Seychelles including 1240 participants aged 25-64 years. Participants were asked to report which of 9 silhouettes best reflected their current weight. Body weight, height, waist circumference and hip circumference were measured. The accuracy of self-reported silhouettes to predict markers of adiposity, as well as obesity (BMI ≥ 30 kg/m²), was analysed by gender-specific stratified analysis and receiver operator characteristic (ROC) analysis.

Results: Men had an average BMI of 26.2 kg/m² compared 28.9 kg/m² in women. Self-reported silhouettes were strongly and linearly associated with BMI, BF, WC, WHeiR, and WHipR in both men and women. Silhouettes were able to predict obesity (BMI ≥ 30 kg/m²) similar to other adiposity markers with AUC in men/women of 0.91/0.89, as compared with BF 0.94/0.94, WC 0.94/0.94, WHeiR 0.96/0.94, WHipR 0.79/0.65. The difference

between self-reported silhouettes and measured BMI was not associated with age or socio-economic status; but was positively associated with BMI, suggesting under-reporting of self-perceived silhouettes amongst obese subjects.

Conclusions: An ethnically adapted body shape silhouette instrument was a reliable tool to assess adiposity. Such figural drawing can serve be a valuable tool to assess obesity in general purpose-surveys that do not include anthropometric measurements.

WHAT IS THE PUBLIC HEALTH IMPACT OF PLASTIC PACKAGING IN OUR FOOD ENVIRONMENT?

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Introduction

The last 40 years has witnessed multiple major **changes** in the UK food environment in relation to: food purchasing, food preparation, and food consumption. Food is purchased less frequently (often weekly), in larger quantities, by car, from out of town supermarkets. Instead of time and effort spent preparing food in the home, food preparation is outsourced as a separate economic activity to the 'food industry'. Interestingly, this outsourcing food preparation is made possible by most food being packaged in clear plastic film, plastic pots, tubs, trays or bottles, which results in less communal food consumption which is frequently accompanied by multi-tasking - watching TV, surfing the internet, walking, driving, phoning, etc.

These major changes have occurred alongside changing patterns of health (rise in obesity, and diet-related non-communicable disease) and multiple technological and social changes (including a vast global food industry and transportation network). Though many relationships between these changes and obesity have been explored (Foresight, 2009), no UK national level public health intervention/ solution has been implemented which has been effective in tackling obesity.

What we do know

We know that 951k tonnes of plastic packaging is added into the UK food market each year (Grocery Retail - WRAP). We know that this amount (i) increases yearly (ii) is lower in societies with lower prevalence of obesity. We also know that (iii) high quality food environments and healthier diets are all associated with **low plastic packaging food environments**. We intuitively equate high nutritional quality food and food consumption with fresh food, freshly prepared, eaten at a leisurely and relaxed pace, communally, without multi-tasking and with non-plastic food plates, cutlery etc.

What we don't know

Despite this knowledge (i-iii) there is little understanding of the relationship between our highly saturated plastic packaging food environment and the poor food behaviours which contribute to obesity.

What is needed?

In order to inform future public health strategies, there is a need to understand how plastic packaging affects food purchasing, preparation and consumption patterns and behaviours, at all levels (individual, groups/families/homes, communities and nationally). This needs to be understood within the broader context of the food industry's drive to 'atomise' society (so that all consumers buy one of everything). If (as we hypothesise), our current high energy dense/ saturated plastic packaging food environment does contribute to poor food choices and behaviours, then methods of creating healthy, safe, low plastic packaging food environments need to be identified and rigorously tested.

This talk concludes by describing methods currently being developed at the University of Sheffield.

FATTER CHILDREN: ARE THEY AT INCREASED RISK? DO THEY REALLY EAT MORE? DO WE MEASURE THEM CORRECTLY?"

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PURPOSE: We explored data from the Australian Lifestyle of our Kids (LOOK) longitudinal study to contribute to our understanding of the causes and outcomes of obesity in healthy pre-adolescent children. We investigated the validity of the use of body mass index (BMI) in growing children; tested the popular notion that overweight children consume more calories than lean children; and explored the possibility that even the incidental year to year changes occurring in body composition during childhood can influence risk of developing chronic disease in later life.

METHODS: Repeated measurements were made in 469 children (51% girls) at ages 8,10, and 12y for height, weight, percent body fat (%BF, dual energy x-ray absorptiometry), fasting serum low- and high-density lipoprotein cholesterol (LDL-C and HDL-C), triglyceride (TG), glucose and insulin (for computation of the homeostatic model of insulin resistance HOMA-IR), physical activity (PA, pedometers); fitness (multi-stage run), and dietary intake of carbohydrate, sugar and fat (recall and record). Data were analysed using general linear mixed models, adjusting for potential confounding variables including pubertal development and socioeconomic status.

RESULTS: Firstly we found that mean BMI increased linearly from 8 to 12 years of age but mean %BF plateaued between 10 and 12y, indicating that use of BMI as a proxy for %BF is problematical. Secondly, overweight and obese children did not consume more energy, fat, carbohydrate or sugar than lean children, their adiposity being explained by their being less physically active ($p<0.001$), and children who reduced their PA over the four years increased their %BF ($p = 0.04$). Thirdly, longitudinal relationships revealed that in boys, with every 1 unit increase in %BF LDL-C increased 1.3% (95% CI: 0.9%-1.8%, $p<0.001$); and for girls the increase was 0.8% (0.3%-1.2%, $p=0.003$). In addition, we found a positive longitudinal relationship between TG and %BF ($p<0.001$) in girls, and a negative longitudinal relationship between HDL-C and %BF ($p=0.03$) in boys. Finally, in relation to risk of developing Type 2 diabetes, we showed that for every 1 unit increase in %BF, HOMA-IR increased 2.2% (95% CI 0.04-4) in girls and 1.6% (95% CI 0-3.2) in boys; and in boys HOMA-IR was decreased by 3.5% (95%CI 0.5-6.5) if their PA increased by 2100 steps/day.

CONCLUSIONS: Researchers making use of BMI in paediatric studies may need to reconsider their methods; while BMI may have its place in some epidemiological studies as a rough proxy for obesity it is seriously misleading in longitudinal studies in children. We may also have to reconsider the general assumption that fatter children eat more than lean children as this did not hold true in our cohort; physical activity was the main source of variation in the adiposity of healthy children. Finally, our data point to the importance of early attention to body composition even in healthy 8 to 12 year-olds, because blood lipids and glucose control are already sensitive to the incidental year to year changes in their %BF.

TOWARDS SPECIFIC CUT-OFFS FOR ABDOMINAL OBESITY AS CARDIOMETABOLIC RISK FACTOR IN BLACK AFRICANS: A STUDY IN BENIN (AFRICA) AND HAITI (CARRIBBEAN)

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Background: The current obesity epidemic now also affects low-income countries primarily as a result of the nutrition transition fueled by globalization and urbanization. Abdominal obesity is a cardiometabolic risk factor and a component of the metabolic syndrome. Waist circumference (WC) and waist-to-height ratio (WHtR) cut-offs for abdominal adiposity have not been validated in black Africans. The multicentric study of TRANSNUT on the nutrition transition and associated cardiometabolic risk in West Africa and the Caribbean provided an opportunity to assess specific abdominal obesity cut-offs for African and Africa-descent groups of adults.

Methods: The cross-sectional study conducted in the largest cities of Benin and Haiti, Cotonou and Port-au-Prince respectively, included 217 women and 235 men aged 25 to 60 years and exempt from a diagnosis of diabetes, hypertension or cardiac condition. Cardiometabolic risk (CMR) biomarkers were the metabolic syndrome components (high blood pressure, high fasting glycemia, high triglyceride concentrations, low HDL-cholesterol), as well as a high atherogenicity index (total serum cholesterol/HDL-cholesterol ≥ 4 in men and ≥ 5 in women), and insulin resistance set at the 75th centile of Homeostasis Model Assessment (HOMA-IR) for the whole sample. WC and WHtR thresholds that best predicted at least two highly prevalent CMR biomarkers were identified in men and women with ROC curves and the Youden index.

Results: High blood pressure (23.2%), insulin resistance (26.0%) and a high atherogenicity index (59.5%) were the most prevalent CMR biomarkers in both population groups. Since low HDL-cholesterol was present in more than 75% of the subjects whereas high triglyceride concentrations were uncommon, the atherogenicity index was preferred to these lipid components of the metabolic syndrome as marker of CMR. Optimal WC cut-offs were 80 cm and 94 cm in men and women, respectively. While the existing generic cut-offs are higher for men than for women (94 cm vs 80 cm), we found exactly the reverse in Africans. This is consistent with previous studies in South African blacks. As regards WHtR, the existing generic cut-off of WHtR (0.50) appears valid for African men, but it has to be higher (0.59) for African women. With the optimal WC cut-off, the prevalence of abdominal obesity was not significantly different in men and women (45.1% vs 36.1%, respectively), whereas with the generic cut-offs the prevalence would reach 74.5% in women, compared to 14.9% in men. Both indicators of abdominal obesity performed better in men than women, based on the area under the curve and the Youden index.

Conclusion: The findings of the present study suggest that abdominal obesity cut-offs may need to be increased for African women, but further research is needed. There is no apparent benefit in using WHtR instead of WC, at least in women, since the generic cut-off of 0.50 is not appropriate.

Poster Presentation Abstracts

Poster abstracts will be finalised weeks before the event

PARENTAL INFLUENCES ON WITHIN AND OUTSIDE SCHOOL PHYSICAL ACTIVITY LEVELS AMONG HIGH SCHOOL CHILDREN OF PAKISTAN

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We aimed to determine the relation of parental influences on school going children's physical activity and exercise behaviors. This was a cross sectional study performed in an urban setting in Pakistan. A sample of 246 girls and 255 boys in grade six to ten attending private and government school was selected through simple random sampling method. The number of male or female and selection from government or private schools was decided based on the probability proportional to size. We found that about 40% students used some active means to travel to their school and >50% students performed some kind of exercise or sporting activity. They spent about 6.2 and 5.3 hours on moderate and hard physical activity. Half of the parents of the students were involved in some kind of physical activity 4 times in the week before the interview. Parental support in students' being physically active was statistically significantly related with being in nuclear family, having a perception of better athletic ability, participation in games and exercise in and out of school and performing moderate exercises (P value <0.05). In conclusion a significant number of children and their parents were found to be physically active. Parental support in physical activity was highly statistically related with children's being physically active both within and outside schools.

Key words: Physical activity, exercise, parents, children, schools.

ASSOCIATION OF SELF-REPORTED WEIGHT CONTROL BEHAVIOR WITH SELF-PERCEIVED IDEAL WEIGHT AND SOCIO-ECONOMIC STATUS IN THE SEYCHELLES

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Background: Healthy behaviour promotion plays a major role when dealing with global obesity epidemic. Weight control behaviour may depend on a number of personal and environmental variables. We assessed the associations of self-reported weight control with self-perceived ideal weight, socio-economic status (SES) and actual body mass index (BMI) in the Seychelles (Indian Ocean, Africa region).

Methods: Study was an examination survey in a sex and age stratified random sample of the population aged 25–64 comprising 1240 persons (participation rate of 73%). Weight control behaviour was assessed based on whether a person reported to make none, some or important efforts to control his/her weight currently. Self-perceived ideal weight was assessed using an instrument with 9 silhouettes of increasing body shapes. Socio-economic variables were obtained using a questionnaire and anthropometric data were measured, association was assessed using multivariate model.

Results: Overall, 19.3% male participants and 38.7% of female participants were obese (BMI ≥ 30 kg/m²). In multivariate analysis, exerting “important” effort to control weight was associated with higher socio-economic status and younger age but was not associated with BMI and ideal body shape silhouette. Doing “some” effort to control weight was associated with higher socio-economic status and BMI and, only in women, with ideal body shape. A limitation is that self-reported behaviours are prone to social desirability bias.

Conclusions: The association between weight control and high socio-economic status is consistent with a shift of obesity towards persons with low socio-economic status. The fact that obese persons do not report weight control behaviour more often than lean persons suggest that lean persons make efforts to prevent weight gain. The findings have implications for weight control programs.

INFLUENCE OF KAEMPFEROL ON LIPID METABOLIC CHANGES IN STREPTOZOTOCIN-INDUCED DIABETIC RATS

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Abstract

Diabetes mellitus is associated with dyslipidemia, which is a significant risk factor for cardiovascular complications. This study was designed to investigate the effect of kaempferol on plasma and tissues lipid profiles in streptozotocin-induced diabetic rats. Diabetes was induced in adult male albino rats of the Wistar strain, weighing 180–200 g, by administration of streptozotocin (STZ) (40 mg/kg of body weight) intraperitoneally. The increased levels of plasma glucose and decreased levels of insulin were observed in diabetic rats and treatment with kaempferol significantly decreased the plasma glucose and increased the insulin levels towards normalcy. The levels of total cholesterol, triglycerides, free fatty acids and phospholipids were assayed in the plasma and tissues (liver, kidney and heart) besides lipoprotein-cholesterol (high density lipoprotein-cholesterol (HDL-C), low density lipoprotein-cholesterol (LDL-C) and very low density lipoprotein-cholesterol (VLDL-C)) were assayed in plasma. Total cholesterol, triglyceride, free fatty acid and phospholipid (LDL-C and VLDL-C in plasma only) levels significantly were increased in plasma and tissues, while plasma HDL-cholesterol significantly decreased in diabetic rats. Treatment with kaempferol prevented the above changes and improved towards normalcy. These results indicate that kaempferol can potentially ameliorate lipid abnormalities related to the risk of diabetes mellitus.

DOES RESISTANCE TRAINING ELEVATE ARTERIAL STIFFNESS IN PATIENTS WITH THE METABOLIC SYNDROME?

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Arterial stiffness (AS) is elevated in patients with metabolic syndrome (MetS) and central AS is a strong independent risk factor for cardiovascular (CV) events. AS can be non-invasively measured by pulse wave velocity (PWV), whereby a 1SD change in AS is associated with a 15% increase in CV risk. We have shown that aerobic exercise training in MetS can lower AS, however, it has been suggested that resistance training (RT) in healthy younger individuals actually causes an increase in AS. Any such response in MetS would further increase their risk of a CV event. Thus, it is important to identify whether RT in MetS results in an increase in AS. We hypothesize that 8 weeks of progressive RT would not increase PWV in subjects with MetS. 22 MetS and 20 healthy controls were randomized into RT or inactive group. Central AS (PWV), carotid stiffness (B-mode ultrasound), and carotid thickness (cIMT, ultrasound) were measured before and after the study, after an overnight fast, without the use of medications, and greater than 24 hours post their last exercise session. 8 weeks of RT resulted in a non-significant reduction in triglycerides (12%) and body fat (11%) in the RT MetS group. Importantly 8 weeks of progressive RT did not cause a rise in PWV, carotid AS, and cIMT in either MetS or healthy controls. Regardless of RT group, a non-significant ($p=0.08$) 16% decrease in carotid β -stiffness was found following RT. Further, we found correlations between high baseline PWV ($r=-0.7$, $p<0.01$), cIMT ($r=-0.5$, $p<0.05$), and systolic blood pressure ($r=-0.5$, $p<0.01$) with improvement in PWV pre to post. Backward elimination models showed baseline PWV ($\beta=-0.7$, $p<0.01$) as the best predictor of a decrease in PWV following RT. In summary progressive RT is a safe exercise modality for individuals with MetS to reduce CV risk factors and improve arterial function.

THE ROLE OF ANTHROPOMETRIC VARIABLES IN RELATION TO THE RISK OF BREAST CANCER IN PRE-MENOPAUSAL WOMEN LIVING IN CAPE COAST, GHANA

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Background

Breast cancer is the most frequently diagnosed cancer in women worldwide. In Ghana, breast cancer is the leading malignancy, which accounts for 15.4% of all malignancies and reports show an increase from 11.8% to 20.4% from 1974 to 1991. Risk factors such as delayed childbearing, lower parity, and reduced breastfeeding are becoming more prevalent in Ghana. Other risk factors such as lifestyle changes and genetics are important, but do not fully explain the increase of breast cancer incidence rates. Adaptation to a westernized life style, which affects the various measures of anthropometry including body mass index (BMI), waist-to-hip ratio (WHR) is being proposed as playing a major role in increasing incidences. Though positive associations have been observed between high BMI, WHR and risk of breast cancer among postmenopausal women, there are

conflicting results for premenopausal women. This study is aimed at linking these anthropometric indices of pre- and post-menopausal women to breast cancer risk, in order to examine the correlation if any between these indices and breast cancer risk in both pre and postmenopausal women. We will also determine the role of aetiological factors such as age, menarche and parity as risk factors of breast cancer in women in Cape coast metropolis.

Methods

A prospective cross sectional study based on simple random sampling involving 207 women was carried out from November 2013 to January 2014 in Cape Coast, Ghana. Questionnaires were used to obtain information on age, menarche, parity, family history of breast cancer, amongst others. Weight, height, body fat, visceral fat, muscle composition and resting metabolic rate and waist and hip measurements were taken and BMI computed automatically and cross-checked manually. Breasts were examined by the use of BreastLight for any sign of lumps and abnormality and suspicious cases referred to the Surgery department of Central Regional for further examination.

Results

The age range of the study was 20 – 60 years with 132 (63.7%) premenopausal women. The mean menarche age, body fat and BMI for pre- and post-menopausal women were 13.9 and 14.7; 38.1 and 41.9; 27.3 and 29.8 respectively. Twenty six (12.6%) of the participants had suspicious lumps with 21(80.8%) being premenopausal. Among the premenopausal women with lumps 19.1% were obese, 28.6 were overweight and 47.6 normal. For premenopausal women with lumps 86.5% had high body fat percentage (>34). For postmenopausal women with lumps 80% were obese by BMI criteria while 85.7% had high percentage body fat. 12.9% were overweight and 47.2% were normal.

Conclusion

Our results on BMI indicated that women who were overweight or obese during premenopausal ages were at lower risk of breast cancer however, women who were overweight or obese during postmenopausal period were significantly at higher risk of breast cancer. Also, body fat and BMI showed a high risk of breast cancer in postmenopausal obese women compared to premenopausal women with no significant association in both groups. The results provide further evidence that age at menarche as breast cancer risk was significantly associated with postmenopausal women compared to premenopausal women. We found that both pre and post-menopausal nulliparous women were at increased risk for developing breast cancer. The study was able to provide strong support for a positive association between body fat, visceral fat and breast cancer risk in pre and postmenopausal obese women. The results provide further evidence that the risk of breast cancer increases with reproductive factors such as decreasing age at menarche and increasing age at first pregnancy.

Day 2:

Invited Speakers Abstracts

Regulation of energy balance by novel adipokines

[Associate Professor G. William Wong](#), Center for Metabolism and Obesity Research, Johns Hopkins University, School of Medicine, Baltimore, MD, United States

We aim to understand how organs and tissues in the body coordinate the complex metabolic networks and circuitry to maintain proper energy balance, failure of which will result in metabolic disorders such as obesity and type 2 diabetes. Specifically, we focus on elucidating the role of a novel family of adipose-derived hormones (CTRPs) in controlling glucose and fatty acid metabolism. The function of one such hormone will be presented in greater details to illustrate complex tissue crosstalk underlying the integrated control of whole-body metabolism.

Dietary supplements for weight loss: a review of current evidence.

[Dr. Igbo Onakpoya](#) MD MSc, Research Fellow in Evidence-based Practice & Pharmacovigilance, University of Oxford, Nuffield Department of Primary Care Health Sciences, New Radcliffe House, Radcliffe Observatory Quarter, Woodstock Road, Oxford, UK

Hundreds of dietary supplements are currently marketed as weight loss aids, but the evidence for effectiveness for most of these is uncertain. The purpose of this review is to critically appraise and evaluate the evidence for effectiveness and safety of the most commonly available weight loss supplements, as well as discuss the implications of the findings for the consumer, future research, and clinical practice.

Role of bile Acids agonists for metabolic disease and obesity

Dr Giovanni Rizzo, [iDNA Ltd](#)/University College London, UK

Bile acids (BAs), well known for their role in the solubilization and digestion of lipid-soluble nutrients, have emerged as pleiotropic signaling molecules with systemic endocrine functions. BAs are agonists of mainly two receptors the Farnesoid X Receptor (FXR, NR1H4), with nuclear localization, and the G protein-coupled bile acid receptor-1 (GPBAR1, TGR5), localized into the cell membrane. Other nuclear receptors have been shown to be slightly modulated by BAs. Signalling via FXR and TGR5 modulates not only BA homeostasis, but also triglyceride, cholesterol, glucose and energy homeostasis. BA-derivative drugs are currently being tested in clinical trial for several therapeutic indications.

Treatment of obesity using the addiction model

Robert Pretlow, MD, MSEE, FAAP, Director, Weigh2Rock.com - Online Weight Loss for Teens and Tweens; Director, W8Loss2Go App for treatment of Child/Adolescent Obesity, eHealth International, Seattle, USA

Traditional "lifestyle" interventions for obesity have yielded disappointing results. Previous research has revealed an addictive relationship of obese individuals with highly-pleasurable foods. This presentation will examine whether a treatment approach based around an addiction model is practical for weight loss. A novel obesity intervention using addiction medicine techniques will be described, which focuses on staged withdrawal from problem foods and snacking, plus progressive reduction in small increments of weighed amounts of foods consumed at meals. Data from three studies involving 110 obese individuals will be included. Motivation was challenging, although subjects were surprised that they did not miss subtracted food.

Kuwaitis hold the gold medal in the prevalence of obesity

Dr. Abdulwahab Naser Al-Isa, Faculty of Medicine, Kuwait University, Safat, Kuwait

Novel resistin mutant acting as resistin antagonist - a new tool for research and eventual therapy of insulin resistance, metabolic syndrome, T2DM and CVD by systemic or local applications

[Professor Arie Gertler](#), PhD, The Hebrew University of Jerusalem, The Robert H. Smith, Faculty of Agriculture, Food and Environment, Israel

Resistin promotes inflammation, CVD and insulin resistance associated with energy homeostasis impairment. In the present work we aimed to block resistin action in mice fed high fat diet (HFD) that are prone to obesity and inflammation, and attempt to reverse these metabolic disorders. For this purpose, we have developed and purified to homogeneity recombinant human resistin mutant (C6A) that acts as resistin antagonist (RA) in cell bioassays. RA application in mice fed high fat diet (HFD) led to a significant decrease in body weight of HFD mice mainly due to loss of visceral fat. Importantly, RA treatment completely restored glucose tolerance and insulin-responsiveness in HFD mice as evidenced by glucose and insulin tolerance tests and attenuated HFD-induced inflammation.

Obesity and gastrointestinal disorders in children

Dr Dinesh S. Pashankar, MD, Pediatric Gastroenterologist, Associate Professor of Pediatrics, Fellowship Program Director, Director, Pediatric IBD Program LMP 4091 A, New Haven, CT, US

Obesity in children is associated with multiple health problems including endocrine, hepatic, cardiac, musculoskeletal, and psychosocial issues.

The data on association of obesity and gastrointestinal disorders are limited and our group has been studying in last few years.

We have shown higher prevalence of constipation, gastroesophageal reflux and irritable bowel syndrome in obese children compared to the control group.

Family Management of Obesity

Diane Berry, PhD, ANP-BC, FAANP, The University of North Carolina at Chapel Hill, Carolina, USA

Family obesity is increasing at an alarming rate in the United States and globally. Management of family obesity starts with diagnosis. Developing a program of nutrition and exercise education and coping skills training and partnering parents and children together to manage their weight is imperative for successful outcomes. As parents manage their weight and assist their children to make healthy nutrition and exercise choices family management of obesity improves over time. Parents must be trained to role model and be the source of education and positive support if the family is to be successful in improving their health.

The transition from wasting to obesity in HIV Infection: corollary of success or regression to the mean?

Dr. Julian Falutz MD, FRCPC, Director, HIV Metabolic Clinic, Senior Physician, Division of Geriatrics, McGill University Health Centre, Canada

Oxidative stress and platelet activation in obesity

Professor Giovanni Davì, Professor of Internal Medicine, Director of Post-graduate School of Haematology, Coordinator of Ph.D. Program in Aging Sciences, "G. d' Annunzio" University Foundation, Center of Excellence on Aging, Via Colle dell' Ara 66013, Chieti Scalo, University of Chieti, Italy

Obesity is a risk factor for atherothrombosis. Increased platelet activation, as reflected by the urinary excretion of the enzymatic metabolite of TX, 11-dehydro TXB₂, characterizes obese subjects. The direct correlation with the urinary F₂-isoprostane 8-iso-prostaglandin (PG)F₂ α suggests a link between lipid peroxidation and platelet activation in this setting. The cause-and-effect relationship between the two is demonstrated the downregulation of these metabolites following weight loss or insulin sensitizers, suggesting as well an involvement of visceral fat and/or insulin resistance as main drivers of such biochemical abnormalities. Consistently, enhanced platelet reactivity and lower-than-expected response to low-dose aspirin has been reported in obese subjects.

Obesity and the skeleton

Professor Juliet Compston, University of Cambridge, UK

Until recently obesity was believed to be protective against fractures. However, recent studies indicate that fractures in obese postmenopausal women make a substantial contribution to the overall fracture burden in this population. The effect of obesity on fracture risk is site-dependent, with protection against hip and wrist fractures but increased risk of ankle and lower leg fractures. Risk factors for fractures in the obese are similar in many respects to those in the non-obese population, although increased risk of falling and reduced mobility are likely to play a prominent role.

Oral Presentation Abstracts

NUCLEUS ACCUMBENS DEEP BRAIN STIMULATION AS TREATMENT OPTION FOR BINGE EATING DISORDER?

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Maastricht University, Dep of Neuroscience, Maastricht, the Netherlands⁴

Binge eating disorder (BED) has been postulated to arise from mesolimbic dopaminergic system changes, presumably homologous to those seen in drug addiction. Deep Brain Stimulation (DBS) is regarded as a relatively novel but promising surgical treatment of addiction. Because of potentially similar circuitries underlying drug addiction and BED, we aimed to investigate Nucleus Accumbens DBS as treatment option for BED. Wistar-rats had electrodes placed in the Nucleus Accumbens core (NAcc core), lateral shell (NAcc lShell) or medial shell (NAcc mShell) and were adapted for several weeks to high fat food (HFF) binge eating protocol, with one-hour food deprivation preceding a one hour access to HFF (binge) at the penultimate hour before the dark phase. DBS was applied either before and/or during the binge and was varied in stimulation currents and frequencies.

With respect to the NAcc core, the most striking results were achieved when stimulating with a current of 250 μ A before binge at 10Hz (intake = 61%, $p=0.0076$), while no effects were found when stimulation was performed during the binge. DBS in the NAcc lShell showed strongest suppression of the binge when stimulating with either 125 or 250 μ A during binge at 50Hz (intake =56%, $p=0.00331$), but no effects were observed when stimulation was performed before the binge. No significant results were achieved when stimulating NAcc mShell.

These data indicate that DBS of the NAcc core suppresses the “wanting” aspects of bingeing whereas DBS of the NAcc lShell suppresses “liking” aspects of bingeing. “Wanting” changes the food reward potency, and these aspects have indeed been found to reside in the NAcc core. Furthermore, incentive hotspots associated with “liking” have previously been identified in lateral parts of the NA. We conclude that DBS in the NAcc may be a promising tool for the treatment of BED in human patients.

Keywords: Binge eating disorder, Nucleus Accumbens, Deep Brain Stimulation

THE IMPACT OF ANTENATAL WEIGHT GAIN ABOVE AND BELOW THE INSTITUTE OF MEDICINE GUIDELINES AMONG EXTREMELY OBESE PREGNANT WOMEN

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Objective: To examine the impact of antenatal weight gain above and below the 2009 Institute of Medicine (IOM) guidelines among extremely obese pregnant women (pre-pregnancy BMI 40-50kg/m²), on the maternal and neonatal morbidities of gestational hypertension/preeclampsia (gHTN/PreE), gestational diabetes (GDM), cesarean delivery (CD), vaginal birth after cesarean delivery (VBAC), large for gestational age (LGA), macrosomia, low birth weight (LBW), very low birth weight (VLBW), and preterm birth (PTB).

Study Design: The impact of weight gain in pregnancy in the extremely obese population was assessed in this retrospective cohort study using linked birth certificate and discharge diagnosis data (All-California, Rapid-Cycle, Maternal/Infant Database) from the year 2007. Body mass index (BMI), defined as weight (in kg)/height (in meters) squared, was calculated using self-reported, pre-pregnancy height and weight. BMI categories were defined using the World Health Organization (WHO) International Classification System. Adjusted odds ratios with 95% confidence intervals were calculated for adverse maternal and neonatal outcomes, as a function of antenatal weight gain. The specific outcomes of interest included gHTN/PreE, GDM, PTB, CD, VBAC, LBW, VLBW, LGA (>4000g), and macrosomia (>4500g). The primary independent variable, weight gain, was treated as a categorical variable with three categories assessed: weight gain below IOM recommendations (≤10 lbs), weight gain within recommendations (11-20 lbs), and excessive weight gain (≥21 lbs). Weight gain within 2009 IOM guidelines (11-20 lbs) served as the reference group. Due to the potentially shorter period of time for gestational weight gain in pregnancies delivering prematurely, weight gain for the analyses of PTB and LBW was standardized to a 40 week gestation.

Results: The study population consisted of 9,887 extremely obese women, 31% gained ≤10 lbs, 26% gained 11-20 lbs, and 43% gained ≥21 lbs. There did not appear to be an increased odds of PTB aOR 0.94 (0.78-1.13), VLBW aOR 1.07 (0.62-1.85), or LBW aOR 1.16 (0.89-1.52) among those who gain minimal weight (≤10 lbs) during pregnancy, while minimal weight gain may be protective against gHTN/PreE aOR 0.81 (0.68-0.97), CD aOR 0.77 (0.69-0.85), and LGA aOR 0.73 (0.62-0.85). Weight gain in excess of the IOM recommendations statistically increases the odds of CD aOR 1.14 (1.03-1.26), gHTN/PreE aOR 1.43 (1.23-1.66), LGA aOR 1.54 (1.35-1.76) and macrosomia aOR 2.23 (1.67-2.98).

Conclusions: In the extremely obese pregnant population, there does not appear to be an increased odds of PTB or LBW with weight gain below IOM recommendations, while there may be a protective affect against development of gestational hypertensive disorders, need for cesarean delivery, and delivery of larger than average neonates. Women with a BMI of 40-50kg/m² may warrant separate gestational weight gain recommendation rather than adherence to a single recommendation, as is the current guideline, for all women with a BMI ≥30kg/m².

EFFECT OF A LONG-TERM AMBULATORY PERSONALIZED INTERDISCIPLINARY LIFESTYLE INTERVENTION IMPLEMENTED IN A CLINICAL SETTING ON CARDIOVASCULAR HEALTH AND WEIGHT DEVELOPMENT: SEVERE OBESE CHILDREN BENEFIT TO THE SAME EXTENT AS CHILDREN WITH Milder DEGREES OF OVERWEIGHT

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Objectives: The prevalence of childhood overweight and obesity is increasing rapidly worldwide. This is a major health problem since children with overweight and obesity are predisposed to significant health problems. Particularly the most severe obese children are at risk whereas lifestyle interventions often struggle to be effective in this group. Here we studied whether severe obese children can benefit equally from a long-term ambulatory interdisciplinary life style program as overweight and obese children.

Methods: 172 children and adolescents with overweight, obesity, severe obesity or morbid obesity according the International Obesity Task Force (IOTF) criteria (42% boys; 58% girls) were included in this non-randomized longitudinal intervention. They participated in the personalized life style intervention program of COACH (Centre for Overweight Adolescent and Children's Healthcare) where they received ambulatory, personalized guidance on a monthly basis by an interdisciplinary team.

Results: After 12 and 24 months de BMI z-score decreased significant with -0.12 ± 0.3 and -0.21 ± 0.3 respectively. Also cardiovascular risk parameters like waist circumference z-score, diastolic blood pressure, HbA1c, total cholesterol, LDL-cholesterol and paediatric non-alcoholic fatty liver index-score were significantly improved after 1year of lifestyle intervention. Most important, regarding long term weight loss and health benefits the intervention program was equally effective in morbid obese and severe obese children as compared with overweight and obese children.

Conclusion: Even severe obese children benefit from a long-term, ambulatory, personalized lifestyle intervention carried out by an interdisciplinary team in hospital setting and demonstrate significant weight loss and improvement of cardiovascular risk markers to the same extent as overweight and obese children.

OBESITY INTERVENTIONS IN EGYPT: IDENTIFYING GAPS AND HIGHLIGHTING ASSETS

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Obesity has become an alarming epidemic in Egypt by causing harm to both individuals and the society; yet there is little information on the measures taken to address this issue. The data provided on obesity in Egypt only includes measures of obesity rates, comorbidity, and threats to individuals of the society, and there is a shortage in the documentation of obesity interventions done in Egypt. However, the difficulty to find obesity programs database is due to the fact that obesity is overlooked by the Egyptian government and the culture. This study therefore aimed to map available programs and interventions, as well as exploring best practices and challenges to obesity programming. People working in NGOs, government offices, and private enterprises potentially related to obesity were interviewed to see what was being done in Egypt. They were asked about activities, interventions, or programs done in the past five years, were ongoing, or were planned for the next 5 years. However, through out the research it has become clear that the lack of the interventions is not the major concern that is faced in the realm of obesity.

Amongst the remarkable findings, it became clear that the society is still not fully aware of obesity as an epidemic and a morbid state, accordingly there is not need to deal with obesity as such. Furthermore, the culture encourages obesity in multiple ways, whether through the eating habits, exercise, or even back to the view of obesity. Moreover, between policy violation, the impact of the culture on obesity, and the almost nonexistent focus on obesity, it is clearly noticeable that awareness on obesity should be spread on all levels. Not just promoting weight loss, or giving people tips to stay healthy, but educate people about obesity, the dangers of obesity, and consequently prevention methods; in order to develop the healthy culture.

Poster Presentation Abstracts

Poster abstracts will be finalised weeks before the event

TRAJECTORIES OF BMI FROM 7 TO 19 YEARS OLD: IS THERE A TRANSITION TO OBESE?

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Introduction:

Childhood obesity is linked to adult obesity. There might be a transition point in puberty. We aim to describe the BMI trajectories from age 7 to 19, and examine the turning point of BMI.

Approach:

Data for this study came from the Child and Adolescent Long-Term Behavior Evolution (CABLE). The study sampled children from grade 1 (cohort 1) and grade 4 (cohort 2) in 2001, and followed them annually. The height and weight were measured to grade 6. Height and weight were also asked since grade 4. Group-based trajectory method was used for the analysis. After identified the groups, multivariate analysis was used to account for repeated measures.

Results:

In boys, 3.2% of them were obese at age 7, and remained to be obese. There were 10.8% went from overweight to normal weight at age 14, at the same age, 12.9% went from normal to overweight. In girls, 4.3% went from normal to overweight (9 years) to obese (14 years), and 2.1% remained obese all the time.

Discussion:

Those who were obese at age 7 stayed in obese. Prevention of childhood obesity should begin before 7 years old. About 10% of boys went from overweight to normal and 12.9% went from normal to overweight at 14 years old. Around the same age, 4.3% of girls went from overweight to obese. Puberty might be a good time to prevent some boys becoming overweight or a small number of girls becoming obese.

ANTI-OBESITY EFFECTS OF A *MONASCUS*-FERMENTED GRAINS ON MALE OBESE MICE INDUCED BY A HIGH-FAT DIET

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Edible fungi of the *Monascus* species have been used as traditional Chinese medicine in eastern Asia for several centuries. *Monascus*-fermented products possess a number of functional secondary metabolites, including pigments, monacolins (natural statins), tocopherols, isoflavones, ubiquinones, and γ -aminobutyric acid. Several scientific studies have shown that these secondary metabolites have anti-inflammatory, antioxidative, and antitumor activities.

This study investigated the extract of *Monascus*-fermented grains (MFGEs) on visceral fat weight in induced obese mice. Mice were divided into two main groups, normal and obesity. In obesity group, mice were fed with high-fat diet. MFGEs was administrated in normal and obesity three sub-groups. Results showed no influence of MFGEs in normal group. However, visceral fat weight, size of adipose cell and cholesterol level were significantly decreased in obesity group fed MFGEs compared to control group. Moreover, adiponectin levels tended to increase and adipocytokines has significant values lower in obesity group fed MFGEs compared to control group. Interestingly, MFGEs involved in the high-fat diet induced-obese mice can inhibit fat accumulation and maintain adiponectins without increasing tumor necrosis factor- α and interleukin-6. The results suggest that it would be beneficial for the prevention of metabolic syndrome and obesity-related disorder.

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A SMARTPHONE APP PLATFORM FOR INVESTIGATION OF THE ADDICTION TREATMENT APPROACH FOR OBESITY

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Background: New treatment strategies for obesity are urgently needed. Mounting evidence suggests that overeating/obesity may involve an addictive process.

Methods: An addiction-based obesity intervention was implemented as a server-integrated smartphone app, which focused on staged withdrawal from problem foods, snacking, and excessive amounts at meals. Withdrawal from problem foods was accomplished by abstinence from each self-identified food until cravings resolved. Withdrawal from snacking was accomplished by progressive snacking abstinence time intervals - morning, afternoon, evening, or night time - with the aim of zero snacks during the entire day. Withdrawal from excessive food amounts was implemented by weighing/recording typical amounts of all foods frequently served at meals. The app then progressively reduced all input amounts and instructed the user via text and Siri voice commands how much to weigh out at meals and if too much were taken. Wireless (Bluetooth) food and body scales were interfaced to the app.

The app platform was piloted with two cohorts (ages 10-21, nearly all obese, 1/3 severely). Cohort 1, (n=43), 5 months, investigated acceptance and effectiveness of the addiction treatment approach. Cohort 2, (n=37), 4 months, investigated resistance and ways to overcome it. Primary outcome was standardized %overBMI. Secondary outcomes were self-ratings of self-esteem, control over food, and degree turning to food when stressed.

Results: Nearly all subjects (89% cohort 1, 100% cohort 2, respectively) identified one or more specific problem foods and successfully withdraw (cravings resolved) from one or more foods. The majority (70%,72%) completely eliminated snacking, while the remainder reduced snack frequency. Nearly all (92%,96%) reduced weighed amounts of foods consumed at home meals. In cohort 1 %overBMI decreased by 7.1 (p<.01) and weighed amounts of foods at home meals were reduced to 51.1% of starting amounts. In cohort 2 %overBMI decreased by 5.25 (p<.01), and weighed amounts of foods at home meals were reduced to 58.4% of starting amounts. Resistance was due to withdrawal symptoms (urges, agitation, anger, but rarely true hunger). Secondary outcomes of self-esteem, turning to food when stressed, control over food and degree of turning to food when stressed all showed statistically significant improvements.

Conclusion: The smartphone app platform proved feasible as: 1) A packaged intervention for obesity based on the addiction model. 2) A tool for investigating further addiction treatment methods and ways to overcome resistance.

EFFECTS OF *Rosa rugosa* HIP POWDER ON WEIGHT AND SERUM LIPID LEVELS IN HIGH-FAT DIET-INDUCED MICE

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This study was conducted to verify effects of *Rosa rugosa* Hip powder on serum lipid levels of high-fat diet-induced mice from a nutritional viewpoint. Powder of *Rosa rugosa* Hip has been used as a folk remedy from ancient times in Korea. There was no significant difference in weight of kidneys and spleens of mice. However, mice fed 10% and 20% powder of sweetbrier fruit with high-fat diet presented high numerical values (p<0.0001). Mice fed 20% powder of *Rosa rugosa* Hip fruit with high-fat diet showed the lowest kidney weights at 0.20±0.06 (g/100 g body wt.) (p<0.0001). For blood cholesterol and HDL-cholesterol concentrations, there was no significant difference between the groups. For LDL-cholesterol concentration, mice fed 10% powder of *Rosa rugosa* Hip with high-fat diet (14.50±2.95 mg/dL) showed a high numerical value compared with other groups (p<0.05). For neutral fat concentration in blood, mice fed 10% and 20% powder of *Rosa rugosa* Hip with high-fat diet showed the lowest numerical values (p<0.05). For phosphorus content in blood (alkaline phosphatase, aspartate aminotransferase, alanine aminotransferase, and lactate dehydrogenase) there was no significant difference among the groups. For blood insulin concentration, the high-fat diet group (2.15±1.34 ng/dL) showed higher levels compared with the control group. Mice fed 10% powder of *Rosa rugosa* Hip with high-fat diet (6.14±4.91 ng/dL) showed the highest rates (p<0.05). For blood leptin concentration, the high-fat diet group was 5.88±3.53 ng/dL, whereas mice fed 10% powder of *Rosa rugosa* Hip with high-fat diet showed a blood leptin level of 10.36±5.96 ng/dL (p<0.05). Therefore, powder of *Rosa rugosa* Hip reduced neutral fat in the blood and may be used as an excellent natural antioxidant in the future.

STUDY ON IN VITRO ANTIOXIDANT CHARACTERISTICS OF *Erigeron annuus*, CORN HUSK, AND *Rosa rugosa* HIP POWDERS

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This study conducted extraction of effective components from *Erigeron annuus*, corn husk, and *Rosa rugosa* Hip powders, which are suggested as new resources with bioactive effects. In the case of *Erigeron annuus*, corn husk, and *Rosa rugosa* Hip powders, measurement of TPC, ABTS+ radical scavenging activity of trolox, DPPH radical scavenging activity, and measured value of FRAP were higher in ethanol extract than water extract.

Especially, in the case of ABTS+ radical scavenging activities of trolox and FRAP values of *Erigeron annuus* and *Rosa rugosa*, Hip powders, antioxidant activity effects were excellent.

In the case of corn husk powder, ABTS+ scavenging activity of trolox was high.

Therefore, powders of *Erigeron annuus*, corn husks, and *Rosa rugosa* Hip showed antioxidant activity. Additional experiments related to these are ongoing.

EFFECTS OF *Erigeron annuus* POWDER ON WEIGHT AND SERUM LIPID LEVELS IN HIGH-FAT DIET-INDUCED MICE

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This study was conducted to verify effects of *Erigeron annuus* powder on serum lipid levels of high-fat diet-induced mice from a nutritional viewpoint. Powder of *Erigeron annuus* has been used as a folk remedy from ancient times in Korea. There was no significant difference in weight of kidneys and spleens of mice. High-fat diet group showed significantly higher kidney weight compared to other groups ($p < 0.05$).

In the group of mice fed 20% *Erigeron annuus* powder with high-fat diet, concentration of serum LDL-cholesterol was high ($p < 0.05$), whereas concentration of neutral fat was remarkably lower compared to other groups ($p < 0.05$). The group fed 10% *Erigeron annuus* with high-fat diet showed the lowest blood phospholipids ($p < 0.05$) as well as the highest alkaline phosphatase and alanine aminotransferase levels in blood ($p < 0.05$). There was no change in blood insulin concentration. However, blood leptin concentration was significantly higher (5.88 ± 3.53 ng/dL) in mice fed high-fat diet compared to other groups ($p < 0.05$).

Hence, powder of *Erigeron annuus* drastically lessened neutral fat concentration in blood in high-fat diet-induced mice. Thus, powder is considered to have utility in the food processing industry.

EFFECTS OF CORN HUSK POWDER ON WEIGHT AND SERUM LIPID LEVELS IN HIGH-FAT DIET-INDUCED MICE

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This study was implemented to verify effects of corn husk powder on serum lipid levels of high-fat diet-induced mice from a nutritional viewpoint. Powder of corn husks has been used as a folk remedy from ancient times in Korea. Weight of livers was significantly higher in the control group and high-fat diet group compared with groups fed 10% and 20% corn husk powder with high-fat diet ($p < 0.0001$). High-fat diet-induced mice showed significantly higher kidney weights compared with mice fed 10% and 20% corn husk powders with high-fat diet ($p < 0.05$). For blood HDL-cholesterol concentration, mice fed 10% corn husk powder with high-fat diet (160.00 ± 16.17 mg/dL) showed significantly higher levels compared with the other three groups ($p < 0.05$). High-fat diet-induced mice showed an LDL-cholesterol concentration of 10.00 ± 1.55 mg/dL. Mice fed 10% and 20% corn husk powder with high-fat diet showed high numerical values of 13.50 ± 2.51 and 11.25 ± 2.87 mg/dL, respectively. For neutral fat concentration in blood, mice fed 10% (83.50 ± 19.30 mg/dL) and 20% (88.50 ± 22.25) corn husk powder with high-fat diet showed very low levels compared to the control group and high-fat diet group. For content of blood phosphorus, mice fed 20% corn husk powder with high-fat diet showed significantly lower levels than the control group ($p < 0.05$). For activity of alkaline phosphatase, high-fat diet group showed 38.00 ± 12.25 U/L activity, whereas mice fed 20% corn husk powder with high-fat diet showed significantly high activity of 58.50 ± 14.80 U/L ($p < 0.05$). For content of blood aminotransferase, mice fed corn husks with high-fat diet showed low levels compared to the control group ($p < 0.05$).

High-fat diet-induced mice showed a blood insulin concentration of 2.15 ± 1.34 ng/dL, whereas groups fed 10% and 20% corn husks with high-fat diet showed levels of 0.86 ± 0.42 ng/dL and 0.56 ± 0.48 ng/dL, respectively. There was no significant difference. In the case of leptin, the high-fat diet group showed significantly high levels of 5.88 ± 3.53 ng/dL. Groups fed 10% and 20% corn husks with high-fat diet showed low numerical values of 2.72 ± 2.34 ng/dL and 1.10 ± 0.62 ng/dL, respectively ($p < 0.05$). Corn husk powder increased high HDL-cholesterol concentration in blood while lowered neutral fat concentration and leptin secretion. Therefore, powder of corn husks has utility in food industry and food processing.

Day 3:

Invited Speakers Abstracts

Get Up! Is your chair trying to kill you? The science of sedentariness and solutions

Professor James A. Levine, M.D., Ph.D. Director Obesity Solutions, Mayo Clinic- Arizona State University. Mayo Clinic. Professor of Medicine, Richard Emslander Professor of Nutrition and Metabolism Professor of Physiology, Professor of Biotechnology, Arizona State University, Professor of Bioengineering, Professor of Life Sciences Arizona State University, Professor of Health Solutions, Mayo Clinic, Scottsdale, USA

Can chairs kill us? We sit, work, shop, eat, and date in them. I argue that chairs—adjustable, swivel, recliner, sofa, couch, four-legged, three-legged, wooden, plastic, dining, and bar—all of them—are out to harm us, to kill us. Chair addiction is the constant need we have developed to sit. We slouch from bed to car seat, to work seat, to sofa. The cost is too great; for every hour we sit, two hours of our lives walk away—lost forever. The list of health consequences is an alphabet of life's torment. A is for arthritis, B is for blood pressure, C is for cancer, D is for diabetes . . . and so it goes. Sedentary living etches away at our very essence. The spring in our step has vanished. Our chairs are islands of isolation. Rush to this talk and discover how to escape your chair sentence.

Two-year follow-up: how cognitive behavioural approaches work on the long run in obesity?

Dr. Perczel Forintos Dóra, Head of Department, Professor of Clinical Psychology, Semmelweis University, Dept. of Clinical Psychology, H-1083, Budapest, Hungary

Predictors of overweight and obesity and work environment

Dr Pouran Faghri, Professor of Health Promotion Science & Director of the University of Connecticut, [Center for Environmental Health and Health Promotion](#), Storrs, CT, USA

Musculoskeletal disorders (MSDs) are major health issue for those working in high demand and low control occupations that require heavy lifting and improper body movements (such as nursing homes). MSDs are multifactorial and are significantly higher in the overweight and obese. As such, MSDs could be considered an independent factor. Cross-sectional studies have shown associations between MSDs (especially low back pain) and BMI. Increase in mechanical forces across joints, coupled with altered body posture due to fat deposition, contribute to MSD prevalence in overweight and obese individuals. Comorbidity of obesity and MSDs have significant implications on work productivity and performance. Furthermore, they affect an individual's health habits and quality of life. More research is needed to understand relationships between obesity and MSDs in order to develop better intervention strategies for overweight and obese employees with reported MSD.

YAL I- yet another lifestyle intervention – is it time to give up on psychological interventions for adolescents with obesity?

Dr Deborah Christie, Consultant Clinical Psychologist, UCLH, Child and Adolescent Psychological Services, 250 Euston Rd, London, UK.

The presentation will review recent lifestyle interventions for children and adolescents with obesity. The challenges designing and delivering effective interventions will be reviewed. The need for effective multidisciplinary interventions targeted at the correct groups will be discussed

The CO-EUR program: psychological aspects of obesity treatment

[Dr Erik Aller](#), Consultant Research and Development, Hoofdkantoor, Maastricht, The Netherlands

Since 2008 we are very successful at running an obesity treatment center at 4 locations in the Netherlands. We started out with one 18 months multi-disciplinary conservative (so no in house surgery) treatment program for people suffering from obesity. But as a result of our own scientific research we improved our program and we now offer 3 different individualized modular treatment programs adapted to the specific patients profile. We use psychologists, psychiatrists, MD's, physiotherapists and dieticians to treat our patients. We generate and use our own scientific evidence to keep improving our program and collaborate with large medical centers and universities.

Stress and Eating Behaviour

[Dr. Alexandra Johnstone](#), Rowett Institute of Nutrition and Health, University Of Aberdeen, Greenburn Road, Bucksburn, Aberdeen, UK

Stress can influence our health, directly or indirectly through behavioural change. This includes feeding behaviour, specifically the type and quantity of food consumed, where some people will eat more and some people will consume less calories under stress. Longitudinal studies have suggested that elevated stress levels can encourage an increased desire for hedonically pleasing, highly palatable energy dense foods, resulting in an energy intake surplus and possible weight gain. Furthermore, the workplace could also be the origin of various

health inequalities since working conditions have been found to be associated with employees' health behaviour and health. One in five workers in Europe are employed on shift work involving night work and over one in 20 work extended hours. It is well documented that shift work can disturb the physiological circadian rhythm in most individuals and this may impact on energy balance. The EU-funded NeuroFAST study data adds a specific dimension of assessing the effect of shift work on motivation to eat, food intake, and eating style.

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

ADIPOSIITY AND PSYCHOSOCIAL OUTCOMES AT AGES 30 AND 35

G.F.H. McLeod, D.M. Fergusson, L.J. Horwood, F.A. Carter

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BACKGROUND: Previous research has shown inconsistent associations between overweight/obesity and psychosocial adversity. In particular, some studies have shown that gender modifies associations; with females experiencing greater psychosocial adversity than males.

AIMS: To examine associations between Body Mass Index classified on a 3-point scale: healthy BMI (<25.0), overweight BMI (25.0-29.9) or obese BMI (30+) and a series of psychosocial outcomes of: life satisfaction, self-esteem, household income, personal income, savings and investments, and depression at ages 30 and 35, by gender.

METHODS: Data were gathered on BMI and the psychosocial outcomes at 30 and 35 from the Christchurch Health and Development Study (CHDS). The CHDS is a longitudinal birth cohort of 1,265 children born in Christchurch, New Zealand in 1977.

RESULTS: Population-averaged generalised estimating equation models showed statistically significant ($p < .05$) associations between adiposity and adverse psychosocial outcomes for females; but not males. After statistical adjustment for potentially confounding childhood social background, parental size, IQ and childhood sexual abuse, significant associations ($p < .001$) remained between adiposity and: decreased household income, decreased savings and investments, and increased depressive symptoms. Marginally significant ($p < .10$) associations remained between adiposity and: decreased life satisfaction ($p = 0.056$), and self-esteem ($p = 0.091$). Adiposity was not associated with personal income ($p > .10$). While some associations were marginally significant, or not significant, a multivariate test showed the presence of significant associations ($p < .01$) between female adiposity and all psychosocial outcomes in adulthood.

CONCLUSIONS: This study found evidence of small but pervasive effects of increasing adiposity on decreasing psychological wellbeing, decreasing economic circumstances and increasing mental health problems of women in the CHDS cohort. No significant associations were found for males. These findings provide insight into the extent that overweight/obese females experience adversity across a broad range of domains.

MEAL PATTERNS, BINGE EATING AND OBESITY IN U.S. LATINAS

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Binge eating is associated with obesity and has serious implications for individual health and treatment success. Latinas in the United States suffer from obesity at high rates yet, amongst other ethnic minority groups, have been underrepresented in research investigating the relationship between meal patterns, binge eating, and weight (loss). This study is the first to examine the impact of meal patterns and binge eating on changes in Body Mass Index (BMI) amongst a sample of overweight or obese Latina women. The study had two aims: (1) to describe the eating patterns of Latinas who binge eat and examine the associations between these patterns and binges and BMI, and (2) to determine whether a CBT guided self-help (CBTgsh) treatment modifies eating patterns that can be associated with reductions in binges and BMI. Participants for aim 1 included 64 overweight/obese Latina women diagnosed with Binge Eating Disorder using the Eating Disorder Examination (Fairburn & Cooper, 1993), and aim 2 included a subsample of 24 women who completed a CBTgsh intervention. Baseline data indicated that binge eating was positively correlated with BMI, occurred primarily at meals, and that breakfast was the least and dinner the most consumed meal. Lunch consumption was positively associated with binge eating and evening snack consumption was negatively associated with BMI ($p < .05$). The analysis of pre- to post- treatment variables indicated significant decreases in binge eating and BMI. Regression analyses

revealed that changes in mid-afternoon snack frequency significantly predicted changes in binge days, such that increases in mid-afternoon snacks predicted reductions in binge days. This study yields preliminary evidence for the effectiveness of changing meal patterns through CBTgsh on reducing binge eating and associated obesity among Latinas. More research using diverse populations is needed to develop and provide culturally competent treatments for binge eating and associated obesity for underrepresented groups.

OBESITY IN SCHOOL-AGED ADOLESCENTS: FACTORS AFFECTING THE ACCURACY OF SELF-REPORTED ANTHROPOMETRIC CHARACTERISTICS

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The purpose of the present study was threefold: (a) to examine the accuracy with which young adolescents reported their anthropometric data, namely their weight and height; (b) to identify the factors involved in observed differences between self-reported and actual height and weight data; and (c) to use corrective equations in order to minimize these differences. The sample of the study consisted of 473 students (219 males and 254 females), aged 15-20 years old, who were categorized according to their BMI in three groups: normal weight, overweight and obese. The survey instrument was a specifically designed questionnaire. Using the self-reported data 21.8% (103) and 9.9% (47) of the students were classified as overweight and obese individuals respectively. Although the correlation coefficients between the actual and the self-reported data were high, boys and girls underestimated their weight, while height presented significant variation only in girls. Effect size index η^2 indicated that the observed bias concerning weight (0.12), height (.08) and BMI (0.17) were more meaningful for girls. Use of self-reported weight and height values for the determination of BMI category, resulted in underestimation of overweight and obesity. This finding indicates that self-reported information may not be as valid as data from objective measurements. In order to better understand the differences and to improve the validity of self-reported height and weight values, it was attempted to introduce corrective variables. Regression analysis results showed that gender and physical activity significantly contributed to the accuracy of self-reported height and weight respectively, which in turn enhances the ability to predict the actual values and to group individuals in the BMI categories more correctly. These findings suggest the need for further research in order to identify the factors causing the differences and to improve the accuracy of self-reported anthropometric indices used in epidemiological surveys for the problems of overweight youth, by the use of appropriate means of prediction.

GASTRIC BYPASS SURGERY REDUCES AFTERLOAD AND IMPROVES CARDIAC FUNCTION

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Obesity is associated with an elevated risk of cardiovascular disease, metabolic disease, and cardiac mortality. Reactive oxygen species and inflammation are among a number of suspected driving forces behind obesity's detrimental health effects. These factors can elevate cardiovascular risk by causing impairments in cardiovascular structure and function. Measurements of central blood pressure, the pressure the heart faces with each beat, along with the thickness of intima media layer are independent risk factors for cardiovascular disease. These measures can be monitored to determine the effectiveness of interventions. One option to combat obesity is to undergo gastric bypass surgery (GBS). The roux and y surgery entails the upper part of the stomach being stapled to form a pouch separate from the remainder of the stomach. The jejunum will then be connected to this pouch bypassing the lower part of the stomach and the duodenum. The smaller stomach makes the patient feel fuller faster and reduce the breakdown of some food and limit calorie absorption. In survival studies obese individuals opting for GBS, had lower incidences of cardiovascular events and overall greater survival. More specifically others have shown alterations in circulating levels of vascular active cytokines. Yet to date no one has shown the direct effect of this surgery on arterial function. We aim to show the immediate effects of GBS on cardiovascular structure/ function.

Subjects were recruited upon GBS consultation. Subjects' underwent measures of arterial function following a minimum of 10 minutes resting in a supine position. Baseline pre-surgery measurements were taken during the 1-week pre-op appointment. The following week the subjects underwent their GBS and followed post operation instructions. Post-op measurements were taken during the one-week follow up visit. All data is shown as mean $\pm$ standard error. Paired student T-tests were used to statistically compare pre to post operation measures of arterial structure/ function, anthropometrics, and blood profile.

At the 1-week time point body weight had decreased (pre: 131.8 $\pm$ 5.6 to post: 125 $\pm$ 5.2 Kg) along with BMI (pre: 45.2 $\pm$ 2.3 to post: 42.9 $\pm$ 2.2) and waist (pre: 122.1 $\pm$ 5.0 to post: 111.9 $\pm$ 3.2 cm). Reduction in body size and weight was accompanied by a reduction in low-density lipoprotein (pre: 127 $\pm$ 6.2 to post: 113 $\pm$ 4.5 mg/dL).

One-week post-GBS is marked by a number of improvements to the cardiovascular system as well. Central systolic blood pressure (pre: 112 ± 4 to post: 105 ± 2 mmHg, $p=0.08$), augmentation index (pre: 16 ± 3 to post: 8 ± 3 , $p=0.06$), an indirect measure of arterial stiffness, and central augmentation pressure (pre: 4.9 ± 1.1 to post: 2.5 ± 0.9 mmHg, $p=0.06$) tended to decrease 1-week post GBS. These changes were independent of a change in brachial artery blood pressure. Assessments of peripheral vessels showed similar improvements in augmentation index. The reduction of central blood pressure directly impacted cardiac function in the subjects. Both estimated left ventricular end systolic pressure and direct measure of left ventricular end systolic volume (pre: 66 ± 4 to post: 55 ± 3 mmHg) decreased post-GBS. This is accompanied by an increase in contraction rate (dP/dt pre: 672 ± 54 post: 737 ± 46 , $p<0.01$), a decrease in LV ejection time (pre: 291 ± 10 to post: 211 ± 30 ms), and a decrease in myocardial oxygen demand (PTIs pre: 2346 ± 120 post: 2194 ± 107 area/min, $p<0.05$).

Central arteries are important determinants of cardiac function and disease as they directly impact the function of the heart. From this preliminary data set it appears the initial impact of the gastric bypass surgery, weight loss, and the post-operative care reduces arterial stiffness. This reduction in stiffness slowed wave reflection enough to reduce augmentation pressure and central systolic blood pressure. The reduction of these two measures decrease the afterload on the heart this allows for better cardiac function. The decrease in end systolic pressure and volume and the increase in the rate of left ventricular contraction and the drop in ejection time support this. The reduction of afterload allowing for better cardiac function translates to more efficient cardiac work, highlighted by lower PTIs an indirect measure of myocardial oxygen demand.

The effects of GBS on arterial health will continue to be assessed. We will be following the subjects at additional time points; 3 month, 6 month and 1 year post surgery. These time points will allow us to assess the long-term effectiveness of the surgery. Future direction of the study will also call for the assessment of a control group following the post-operative liquid diet to determine the extent of its involvement in the reduction of cardiovascular stiffness.

HOW DO THE UNDERWEIGHT CHILDREN OF MOTHERS WHO SMOKE END UP OVERWEIGHT?

Lecture Presenter: Lilac Lev-Ari, mobile: 972-52-8632434 ldlevari@ruppin.ac.il

Lilac Lev-Ari, PhD¹ Rachel Bachner-Melman^{1,2}, Richard P. Ebstein³, David Mankuta⁴

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Although babies born to mothers who smoke during their pregnancy tend to be born underweight, in the long term they are at risk for overweight and obesity. We hypothesized that smoking mothers pressure their babies to eat because they are born small. The weight and height of babies born to 88 mothers who smoked during their pregnancy and 107 mothers who did not was measured and recorded one to two days after birth. One year later, the babies' height and weight was reported by the mothers, who also completed measures of eating attitudes, child feeding practices and infant temperament and behavior. Variables predicting the babies' BMI at age one were examined for smoking mothers and nonsmoking mothers using repeated measures. Since level of education and socioeconomic status were lower for smoking than for nonsmoking mothers, these variables were entered as covariates. As expected, smokers' babies had significantly lower BMIs at birth than the non-smokers' babies, but this difference had disappeared one year after birth. Babies' BMI at one year was predicted by different variables for nonsmoking and smoking mothers. Regression analysis revealed that the BMI at age one of nonsmoking mothers' babies was predicted by babies' BMI at birth ($\beta=.30$, $p<.05$), but not by maternal eating attitudes or child feeding behaviors (Adj. $R^2=0.1$). The BMI at age one of smoking mothers' babies was predicted by maternal eating attitudes ($\beta=.69$, $p<.001$) and pressure for her child to eat ($\beta=.29$, $p<.001$), but not by the babies' BMI at birth (Adj. $R^2=0.67$). In addition, there was a significant positive correlation between BMI at age one and child temperament (distress) as reported by nonsmoking, but not by smoking mothers. These results support the hypothesis that in contrast to nonsmoking mothers, mothers who smoke want their children to gain weight, pressure them at an early age to eat, and do not perceive an association between BMI and distress. This interim picture after the first year of life may provide insight, beyond the "thrifty gene hypothesis", into the process by which the children of smoking mothers transition from being, on the average, underweight newborns to being overweight children and adults.

Poster Presentation Abstracts

Poster abstracts will be finalised weeks before the event

FATTY ACID SYNTHASE/OXIDIZED-LOW DENSITY LIPOPROTEIN AS METABOLIC ONCOGENES LINKING OBESITY TO COLON CANCER VIA NF-kappa B IN EGYPTIANS

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Obesity is a major health problem which heightens the risk of several chronic illnesses including cancer development particularly colon cancer. The underlying pathophysiology of obesity associated colon cancer remains to be elucidated. The purpose of this current study was to determine fatty acid synthase (FASN) activity/ expression, oxidized low-density lipoprotein (ox-LDL) level and redox status under the context of anthropometric measurements and lipid profile to find their potential role as interacting biomarkers relating obesity to colon cancer initiation and progression via nuclear factor kappa-B (NF- κ B) signaling. This study was conducted upon Egyptian individuals; 30 obese subjects with colon cancer, 11 nonobese and 11 obese subjects without colon cancer. FASN gene expression, NF- κ B immunoreactivity, and serum oxLDL level were estimated by real-time PCR, immunohistochemistry and immunoassay, respectively. FASN activity, glycemic status, obesity, and oxidative stress indices were also assessed. It was found that FASN expression and activity were statistically increased in obese with colon cancer ($P = 0.021$ and 0.018 , respectively), with statistically significant increase in patients with advanced grading. Moreover, NF- κ B immunoreactivity and serum ox-LDL level were significantly increased in obese colon cancer patients with significantly higher levels in those with advanced grading (all $P < 0.05$). Dyslipidemia, insulin resistance, and oxidative stress indices were worsened in obese patients with colon cancer. These results revealed that FASN and ox-LDL as well as oxidative stress may increase the risk of obesity related colon cancer, particularly via NF- κ B signaling and could be used as potential predictive and prognostic biomarkers for obesity complicated with colon cancer.

EFFECT OF NUCKS-1 OVEREXPRESSION ON CYTOKINE PROFILING IN OBESE WOMEN WITH BREAST CANCER

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Background: Overweight and obesity are recognized as major drivers of cancers including breast cancer. Several cytokines, including interleukin-6 (IL-6), IL-12 and lipocalin 2 (LCN2), as well as dysregulated cell cycle proteins are implicated in breast carcinogenesis. The nuclear, casein kinase and cyclin-dependent kinase substrate-1 (NUCKS-1), is a nuclear DNA-binding protein that has been implicated in several human cancers, including breast cancer. Objectives: The present study was conducted to evaluate NUCKS-1 mRNA expression in breast tissue from obese patients with and without breast cancer and lean controls. NUCKS-1 expression was correlated to cytokine profiles as prognostic and monitoring tools for breast cancer, providing a molecular basis for a causal link between obesity and risk. Materials and Methods: This study included 39 females with breast cancer (G III) that was furtherly subdivided into two subgroups according to cancer grading (G IIIa and G IIIb) and 10 control obese females (G II) in addition to 10 age-matched healthy lean controls (G I). NUCKS-1 expression was studied in breast tissue biopsies by means of real-time PCR (RT-PCR). Serum cytokine profiles were determined by immunoassay. Lipid profiles and glycemic status as well as anthropometric measures were also recorded for all participants. Results: IL-6, IL-12 and LCN2 were significantly higher in control obese and breast cancer group than their relevant lean controls ($p < 0.05$), while NUCKS-1 mRNA expression was significantly higher in the breast cancer group compared to the other groups ($p < 0.05$). Significant higher levels of IL-6, IL-12, and LCN2 as well as NUCKS-1 mRNA levels were reported in G IIIb than G IIIa, and positively correlated with obesity markers in all obese patients. Conclusions: Evaluation of cytokine levels as well as related gene expression may provide a new

tool for understanding interactions for three axes of carcinogenesis, innate immunity, inflammation and cell cycling, and hope for new strategies of management.

POLO LIKE KINASE 1 (PLK1) EXPRESSION IN VISCERAL ADIPOSE TISSUE OF MORBIDLY OBESE NON DIABETIC WOMEN

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Dysregulation of glucose metabolism is a common association with obesity. However, not all types of obesity are complicated with diabetes. Obese animals can compensate for insulin resistance through β -Cell proliferation. Nevertheless in humans this mechanism remains to be elucidated. Here we evaluated the cell cycle related Polo like kinase-1 (Plk1) expression in omentum of morbidly obese non diabetics relative to circulating tumor necrosis factor alpha (TNF- α) and leptin plasma levels. This study included 15 morbidly obese non-diabetics, 12 morbidly obese diabetics, and 12 healthy controls. Omentum was obtained during bariatric surgery and other elective surgeries. Plk1 expression was evaluated by semiquantitative reverse transcriptase polymerase chain reaction and immunohistochemistry. Plasma TNF- α , leptin and fasting insulin were determined by immunoassays. Plk1 expression and immunoreactivity were significantly higher in obese non diabetics than diabetics and controls and associated with hyperinsulinemia and hyperleptinemia. Plk1 expression negatively correlated with glycemic status and TNF- α levels in obese non diabetics. Our findings provide a possible role for Plk1 in visceral adipose tissue as an adaptive response to obesity and prevention of overt diabetes. This could be achieved by enhancing β -cell mass expansion and lowering TNF- α levels. Better understanding of the mechanistic role of Plk1 in obesity may lead to therapeutic strategies that target both obesity and diabetes.

DOES EXERCISE INTENSITY INCREASES APPETITE, ENERGY, INTAKE ENERGY EXPENDITURE AND FAT OXIDATION IN SEDENTARY OVERWEIGHT INDIVIDUALS?

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Key words: Appetite, Exercise, Food intake, Energy Expenditure

Abstract:

Appetite control (i.e. control of energy intake) is important for weight maintenance. Exercise contributes to the most variable component of energy expenditure (EE) but its impact is beyond the energy cost of exercise including physiological, behavioural, and appetite effects. Exercise is known to acutely influence effect appetite but evidence as to the independent effect of intensity is lacking. This study investigated the role of exercise intensity on appetite, energy intake (EI), appetite related hormone, fat utilisation and subjective measures of appetite. One hour after a standardised breakfast, 10 sedentary overweight volunteers. Subjects undertook either 8 repeated 60 second bouts of cycling at 95% VO_{2max} (high intensity) or 30 minutes of continuous cycling, at a fixed cadence, equivalent to 50% of the participant's VO_{2max} (low intensity) in a randomised crossover design. Glucose, NEFA, glucagon-like peptide-1 (GLP-1) were measured fasted, postprandial, and pre and post-exercise. Satiety was assessed subjectively throughout the study using visual analogue scales (VAS). *Ad libitum* intake of a pasta meal was measured at the end (3-h post-breakfast). Interestingly, there was not significant difference in EE fat oxidation between HI and LI post-exercise. Also, no significant effect of high intensity (HI) was observed on the *ad libitum* meal, 24h and 48h EI post-exercise. However the mean 24h EI was 3000 KJ lower following HI than low intensity (LI). Despite, no significant differences in hunger score, glucose, NEFA and GLP-1 between both intensities were observed. However, NEFA and GLP-1 plasma level were higher until 30 min post LI. In conclusion, the similarity of EE and oxidation outcomes could give overweight individuals an option to choose between intensities. However, HI could help to reduce EI. There are mechanisms and consequences of exercise in short and long-term appetite control; however, these mechanisms warrant further explanation. These results support the need for future research in to the role of in regulation energy balance, especially for obese people.

COMPARISON OF THE EFFICACY OF STANDARD BARIATRIC SURGICAL PROCEDURES ON SAUDI POPULATION USING THE BARIATRIC ANALYSIS AND REPORTING OUTCOME SYSTEM (BAROS)

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ABSTRACT

Obesity is a chronic disease that has reached epidemic proportions globally. WHO estimated that 700 million population will be obese worldwide in 2015 compared to 300 million reported in 2005. In Saudi Arabia, an overall obesity prevalence is progressively increasing from 20% in 1996, to 35% in 2005, up to 52% in 2013 with 20,000 deaths per year due to obesity and related comorbidities. Compared to different weight loss methods and programs, bariatric surgery proved to be the most effective and sustainable weight loss procedures, in addition to improvement of co-morbidities and quality of life. The aim of this study is to assess outcomes of standard bariatric surgical procedures using the Bariatric Analysis and Reporting Outcome System (BAROS).

Methods:

The questionnaire of BAROS was translated into Arabic language and validated before its use to collect the data from the patients who had bariatric surgeries from March 2010 to December 2012 at two institutions. Data was analyzed and scored against three outcomes; excess weight loss, cure or improvement of comorbidities, and quality of life changes.

Results:

A total of the 270 patients were included; 79 underwent Laparoscopic Roux-en-Y gastric Bypass Procedure (LRYGBP), 159 had Laparoscopic Sleeve Gastrectomy (LSG), and 32 had Laparoscopic Adjustable Gastric Banding (LAGB); with an overall female to male ratio of 2.5:1, 0.8:1, 1.3:1; and an average age of 36.41 ± 8.87 , 31.87 ± 9.83 , 34.75 ± 11.24 for the three procedures respectively. The average excess weight loss (EWL) was 67.94%, 75.82 %, and 81.65 % against each procedure respectively. In patients with more than 1 year of follow-up, comorbidities were improved (64.0%, 48.8% & 57.1%) or resolved (36.0% ,51.2% & 42.9%) with 95% reported significant improvement in quality of life . Overall excellent\very good\good outcomes group scoring was achieved in 62 (78.5%), 133(83.65%), and 18 (56.25%) patients, with failure reported only by 4 (5%) patients. Major complications were noted in 7.8%, 5.7%, and 6.25% patients; and minor complications in 5.1%, 11.3%, and 12.5% patients against the three procedures respectively; with no reported mortality.

Conclusion:

Standard bariatric procedures are very effective in reducing and sustaining excess body weight, for cure and improvement of co-morbidities, and quality of life improvement in morbidly obese Saudi population with different degrees of impact and outcome that can be beneficial in selecting appropriate procedure for appropriate indications and patients. LRYGB seems to work better for co-morbid diseases, LSG works well for excess weight loss as well as LAGB in selected patients.

WEIGHT-RALATED DIFFERENCES IN GLUCOSE AND SHORT-CHAIN FATTY ACID IN OBESE SUBJECTS WITH AND WITHOUT DUODENAL WHITE SPOTS.

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Introduction: Reduced glucose oxidation was reported in obese subjects using ^{13}C -glucose breath test method and the higher plasma glucose levels in obese subjects may be partly explained by lower glucose oxidation rates. However, it has been unclear what endoscopic finding reflects reduced glucose oxidation. At panendoscopy, the second part of the duodenum was usually observed, and diffuse white spots were found in some patients. This endoscopic finding is considered to reflect abnormal lipid transport from the villi of the small intestine. Since a close association between fat malabsorption and white deposits on the duodenal mucosa has been reported by several authors, we proposed this study to evaluate the relationship between white spots observed in the duodenum and malabsorption of glucose and short-chain fatty acids.

Methods: Consecutive 132 subjects presenting diagnostic upper endoscopy were recruited in this study. ^{13}C -acetate was administrated intraduodenally in 65 and ^{13}C -glucose in 67 patients. At the end of endoscopy, a tip of endoscope was placed to the second part of the duodenum and 20 ml of water containing 100 mg of ^{13}C -substrate was sprayed onto the duodenal mucosa. Breath samples were taken at baseline and at 10-min interval.

Results: Patients with diffuse white spots were found in 7 (54%) of 13 patients with a BMI of more than 26, in 18 (43%) of 42 with a BMI of 20-26, and in 6 (50%) of 12 with a BMI of less than 20. A delay in the $^{13}\text{CO}_2$ excretion

curve in patients with BMI of more than 26 was noted between 10 and 30 min after oral administration of ^{13}C -acetate; however, the difference was not significant. In ^{13}C -glucose breath test the mean values of $^{13}\text{CO}_2$ excreted in expired air are significantly lower in patients with a BMI of more than 26 at 70-90 min, compared with the other non-obese patients. Among 42 patients with a BMI of 20-26, significantly lower values of $^{13}\text{CO}_2$ excretion in the 'diffuse' group were found at each time.

Conclusions: In conclusion, results from the duodenal infusion study using stable isotopes demonstrate a close association between diffuse white deposits on the duodenal mucosa and impaired glucose absorption rather than short-chain fatty acids.

NONINVASIVE [1- ^{13}C]-ACETATE BREATH TEST DISTINGUISHES FATTY LIVER DISEASES FROM VIRAL HEPATITIS

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Introduction: [1- ^{13}C]-acetate breath test has been used to evaluate gastric emptying of liquid test meals. Acetate is absorbed rapidly from the small intestine and reaches the liver where carbon dioxide (CO_2) is produced and excretes in expired air. If acetate metabolism in the liver is changed, it is possible that $^{13}\text{CO}_2$ excretion also changes regardless of gastric emptying. We therefore conducted [1- ^{13}C]-acetate breath test for the evaluation of acetate metabolism in patients with various liver diseases.

Methods: [1- ^{13}C]-acetate breath test was performed in 23 chronic liver diseases (mean age 67 years). The cause of liver disease was hepatitis C virus (HCV) in 8 patients, hepatitis B virus (HBV) in 3, and primary biliary cirrhosis in 1, alcoholic liver disease in 4, non-alcoholic fatty liver disease in 6. The patients received 100ml of water containing 100mg of [1- ^{13}C]-acetate in the sitting position after an overnight fast. Breath samples were collected at baseline and at 5, 10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, and 120 min after ingestion to analyze $^{13}\text{CO}_2$. ^{13}C was measured as the $^{13}\text{CO}_2/^{12}\text{CO}_2$ isotope ratio and was expressed as delta over baseline per mil (‰).

Results: The $^{13}\text{CO}_2$ concentrations increased from the beginning, and peak enrichment values were reached after 20 min. A peak value of $^{13}\text{CO}_2$ excreted (C_{max}) was lowest in patients with non-alcoholic fatty liver (14.8+/-6.1 %dose/h), followed by alcoholic fatty liver disease (mean 17.4+/-7.9 %dose/h), and viral hepatitis (mean 19.3+/-2.8 %dose/h). Inverse association was found between prothrombin time and C_{max} , whereas there was no correlation between C_{max} and platelet counts or serum albumin levels.

Conclusions: Especially, [1- ^{13}C]-acetate breath test is a useful non-invasive tool for distinguishing between patients with fatty liver diseases and those with viral hepatitis. When [1- ^{13}C]-acetate breath test is used to evaluate gastric emptying in the subject with fatty liver diseases, we should duly recognize the various metabolism of acetate.

WEB-BASED LIFE STYLE MODIFICATION INTERVENTION GROUNDED ON SELF DETERMINATION THEORY AND CARDIO-METABOLIC RISK OF POSTMENOPAUSAL WOMEN

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Postmenopausal women are under high prevalence of the cardio-metabolic risk. To ameliorate these risks, special management is needed.

The purpose of this study was to identify the effects of web-based life style modification intervention grounded on the self determination theory on the cardio-metabolic risk of postmenopausal women.

This study was a randomized trial with the 71 postmenopausal women with abdominal obesity in their fifties and sixties. After 12 week web-based intervention period, changes of anthropometry and cardio-metabolic risk were measured.

The basal purposes of the intervention were the forming healthy eating habit, increasing physical activity and decreasing daily life stresses. The point of the intervention was providing autonomy support in the process of self directed strategy choice, implementation, self monitoring and self evaluation using internet homepage.

To test the effects of the intervention repeated measure ANOVA was done and to identify correlation the effects of the intervention with the intrinsic motivation bootstrapped correlation analysis was done.

As a result, web-based autonomy-support intervention ameliorates the cardio-metabolic risk of the postmenopausal women and the intrinsic motivation of life style modification was positively correlated with weight, BMI, waist circumference, waist to height ratio, triglyceride and VAI.

To test correlation of the implementation adherence with the cardio-metabolic risk follow up study is needed. Also additional study is needed with clinically severe subjects.

Key words: Self determination theory, web-based intervention, autonomy-support, cardio-metabolic risk, life style modification

EAT MY CHILD, EAT! MOTHER'S POSTPARTUM CHANGE IN ATTACHMENT AND BODY IMAGE

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Pregnancy and birth are major events in a woman's life. Weight changes may impact body image, and relating to the newborn may influence the mother's attachment configuration. This study aimed to examine whether maternal attachment style and body image indices change during the year following birth and to explore links between them. Participants in the study were 195 mothers who gave birth at a hospital in Israel between 2008 and 2012. The BMI of mothers and their babies was measured and recorded within 2 days after birth (Time 1). Mothers reported their own and their babies' height and weight one year postpartum (Time 2) and completed self-report measures of attachment style, body image, eating attitudes and feeding practices. We used cluster analysis, a person-focused approach describing individual differences and the links between different experiences of the same individuals, entering mother's attachment styles (avoidant and anxious-ambivalent attachment) at Time 1 and Time 2 to identify groups of mothers with common attachment characteristics. We then used repeated measures to examine differences in BMI, body image, eating attitudes and breastfeeding habits across the three resulting groups: 1. Secure-stable attachment - mothers with low scores on both insecure attachment dimensions at both points in time; 2. Insecure-improved attachment - mothers with high scores on both insecure attachment dimensions at Time 1 but significantly lower scores at Time 2; and 3. Insecure-worsened attachment - mothers tending to have high scores on both insecure attachment dimensions at Time 1 and who scored even higher at Time 2. Level of education was entered as a covariate in the analyses, since it was lower in the insecure-worsened group than the other groups. Eating attitudes were healthiest in secure-stable mothers at both measurement times, and deteriorated over the year for Insecure-unstable mothers. Secure-unstable mothers were least satisfied with their bodies at both measurement times, and Secure-stable mothers were less aware than the other groups of the thin female ideal. Interestingly, despite an average weight loss of 6.06 kg, all mothers became less satisfied with their bodies over the year. Although there were no between-group differences between the babies' BMI at time 1, significant interaction between group and time was observed, with the BMI of Insecure-unstable mothers' babies increasing significantly more than that of the other groups during their first year of life. No differences between mothers' BMI or frequency of breastfeeding were found across group or time. Rather than approaching attachment style as a constant, this study takes into account how giving birth impacts maternal attachment style, and reveals links between attachment style, eating attitudes and body image during the year after giving birth. Results highlight a subgroup of mothers with insecure attachment style and negative body image immediately after giving birth, who are even more insecurely attached and more disturbed in their eating habits when their babies are one year old. Their babies also seem to gain a disproportional amount of weight during this year. The combination of insecure attachment and disturbed eating attitudes in mothers at the time of birth may predict a tendency in their children to become overweight and prove useful in interventions aimed at preventing childhood obesity.