

## Saturday — Poster Session



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201P

### **WEIGHT-RELATED ADVICE WITHIN MOTHER-DAUGHTER PAIRS**

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Purpose: This research extends our understanding of mother-daughter interactions around weight issues by asking both what weight-related advice they gave and received to and from each other. Previous research has investigated mothers' advice to their daughters or has asked girls or women for their perceptions of their parents' messages. Method: Open-ended, semi-structured interviews were conducted with a random sample of 80 mother-daughter pairs drawn from grade 8 class lists at four Manitoba schools, two in Winnipeg, two in rural Manitoba. Half of the families were Aboriginal. The overall response rate was 72.6%. Mothers were interviewed first, separately from their daughters. Interviews were tape-recorded, fully transcribed and analysed for thematic content. Results/Findings: Mothers advice about weight seemed aimed at increasing self-acceptance either through weight control or through learning to accept body size as a given. Both positions focussed on eating well and being active. About half of the girls repeated their mothers advice accurately with the notable exception of compliments. Over half of the mothers said they complimented their daughters on her appearance, but only 12 girls reported that their mother complimented them. Conclusions: Despite some differences, there were many commonalities in the advice that mothers gave their teen-aged daughters about weight. The findings have implications for health professionals', teachers' and parents' educational approaches to preventing weight problems with similar girls and women.

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### **WEIGHT LOSS VERSUS NON-DIET INTERVENTION INTEREST IN THE FACE OF SELF-REGULATORY CHALLENGES: SELF-EFFICACY AND BODY IMAGE RELATIONSHIPS**

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Non-dieting interventions (NDI's) focus on health as an alternative to traditional weight-loss diets (TD's). Both interventions stress management of eating and exercise, but NDI's result in physiological and psychological improvements whereas TD's result in weight loss. However, for many TD participants, weight regain is typical implicating difficulty with self-regulatory efficacy. This observational study used social-cognitive theory to examine participant interest after comparing intervention components and long term success rates. Participants were 50 women (mean age 27 years; mean BMI of 25). Two hierarchical multiple regression procedures used TD and NDI self-efficacy, and health- and appearance-outcome value to predict intervention interest. TD (Model adj Rsq = .55,  $p < .001$ ) and NDI interest (Model adj Rsq = .64,  $p < .001$ ) were predicted by social cognitive variables after controlling for intervention choice (TD: Rsq.cha = .25,  $p < .001$ ; NDI: Rsq.cha = .21,  $p < .001$ ). Discriminant function analysis was performed to discriminate individuals that dieted frequently versus infrequently. Social cognitive variables and intervention interest for TD and NDI plus body image (Cash MBSRQ) were predictors. Whereas body image and interest discriminated effectively for both interventions (Wilks' TD = .72,  $p < .01$ ; Wilks' NDI = .59,  $p < .001$ ), physical activity self-efficacy also contributed for the TD alone ( $p < .003$ ). Results suggest that social cognitions are related to intervention interest and history of weight-loss attempts. Body image appears to be strongly related to weight-loss attempts. Implications concern participants' motivational readiness for intervention in the face of changing multiple behaviors and maintaining outcomes long term.

203P

### **COGNITIVE CHANGES RELATED TO EXERCISE, EATING, AND BODY IMAGE ARE ASSOCIATED WITH 16-MONTH WEIGHT LOSS IN PREVIOUSLY OVERWEIGHT AND OBESE WOMEN**

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This study described changes in psychosocial variables related to exercise, eating, and body image during a weight reduction program, and evaluated their association with weight loss up to one year after the intervention's end. Participants (136 women,  $48.2 \pm 4.4$  yrs,  $30.6 \pm 3.5$  kg/m<sup>2</sup>) underwent a 4-month lifestyle weight reduction program and lost  $4.8 \pm 3.9$  kg ( $p < 0.001$ ). Psychosocial variables were assessed under standardized conditions before and after the intervention. Compared to 4-month assessments, mean body weight did not change at the 10- and 16-month follow-ups ( $p > 0.09$ ). Significant ( $p < 0.01$ ) changes in cognitive eating restraint and disinhibition, exercise self-efficacy and intrinsic motivation, body shape concerns and physical self-worth were associated with weight change at four months ( $p < 0.001$  for all variables, except self-efficacy,  $p < 0.01$ ). Early changes in all variables except cognitive eating restraint were also predictive of weight change at ten and sixteen months ( $p < 0.05$ ). Multiple linear regression showed eating variables were significant and independent predictors of short-term weight change, while changes in exercise variables were stronger predictors of longer-term weight variations. Initial improvements in body image did not independently impact long-term outcomes. After controlling for 4-month weight change and for changes in other psychosocial variables during the same period, early increases in exercise intrinsic motivation remained a significant correlate of improved weight loss at 16 months ( $p < 0.05$ ). These data highlight the importance of cognitive changes in weight control and support the notion that an initial focus on diet is associated with short-term results, while attributions towards exercise play a more significant role in long-term weight management.

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#### **THE DETERMINANTS OF THE INTENTION OF NURSES AND DIETITIANS OF NEW BRUNSWICK TO RECOMMEND BREASTFEEDING**

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This study attempted to identify the major determinants of the intention of nurses and dietitians to recommend breastfeeding to new mothers for six months as well as the salient beliefs underlying this intention. Following an open-ended questionnaire which sought to elicit their most significant beliefs, a standardized questionnaire based on a modified model of Ajzen's theory of planned behavior, was sent to New Brunswick nurses and dietitians who graduated between January 1992 and December 1996. The main determinants of intention were perceived behavioral control and perceived professional norm. They explained 69% of the variance in intention. All salient beliefs underlying the perceived behavioral control were significantly associated with intention. To help nurses and dietitians to support and promote breastfeeding more effectively, programs should focus on changing perceived and true barriers to recommending breastfeeding, as well as the perceived professional norm.

205P

#### **PSYCHOSOCIAL DETERMINANTS OF REGULAR PHYSICAL ACTIVITY PRACTICE IN MENOPAUSAL WOMEN USING THE MODIFIED THEORY OF PLANNED BEHAVIOR**

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Regular physical activity (RPA) contributes to many health and well-being outcomes among older adults. Its role in the prevention of osteoporosis in menopausal women is considerable. Efforts to understand determinants of RPA are necessary to plan effective interventions for this population. The main purpose of this study was to identify the psychosocial factors that could explain the intention of menopausal women at risk of developing osteoporosis to practice RPA. This quantitative exploratory research used Ajzen's theory of planned behavior (TPB) with the addition of habit and facilitating factors constructs from Triandis theory to better understand menopausal women's intention to practice RPA. A questionnaire was elaborated from the results of a pre-study that identified salient beliefs regarding the studied behavior in the target population and was administered to a sample of 75 women from the "Centre Ménopause Québec". The results suggest that attitude, social norm, habit, facilitating factors, education level and marital status are significantly associated with intention to practice RPA ( $R^2 = 0.51$ ;  $p < 0.001$ ). However, the perception of control is not. Thus, messages that focus on well-being and promote RPA at a young age are key elements for effective interventions. Furthermore, specific attention should be paid to target single women and women with low education to increase their intention to practice RPA. The study concludes that the TPB is relevant for studying intention to practice RPA in a population of menopausal women. Other dimensions should also be considered for a better understanding of the determinants of RPA behaviors.

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#### **CORRELATIONS BETWEEN FAMILY MEALS, CHILDREN'S TV VIEWING AND EATING WHILE WATCHING TV, CHILDREN'S FOOD ACQUISITION STRATEGIES AND MOTHERS' DESIRE TO SEE THEIR CHILDREN LOSE WEIGHT**

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**PURPOSE:** The study sought to explore associations between mothers' perceptions of the importance of family meals, children's level of television viewing and eating while watching TV, children's food acquisition strategies, and mothers' desire to see their children lose weight. **METHODS:** A self-administered questionnaire was completed by 208 mothers. Perceptions of the importance of family meals was measured with two items. Five questions concerned the frequency with which children use different strategies to get their parents to buy specific foods. Mothers' perception of the number of hours per week their children watch television and how often they eat while watching television were obtained. Mothers' desire to see their children lose weight was also measured. **RESULTS:** The number of hours spent watching television was positively correlated with the frequency of eating while watching television, and with the frequency of strategies used by children to influence their parents' food purchases. It also correlates positively with the mothers' desire to see them lose weight ( $p < 0.005$ ). Children's eating while watching TV was also positively correlated with the frequency of strategies used by children to influence their parents' food purchasing. However, it was negatively correlated with the importance given by mothers to family meals ( $p < 0.05$ ). **CONCLUSIONS:** These results support the need to consider the ways in which social interaction during mealtimes has been dramatically changed by the presence of television and to document relationships between television viewing, the quality of food eaten and parents' weight concerns.

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#### **THE PSYCHOSOCIAL DETERMINANTS OF THE INTENTION TO CONTINUE BREASTFEEDING AFTER RETURNING TO WORK: PRELIMINARY RESULTS AMONG WOMEN EMPLOYED IN THE NETWORK OF HEALTH AND SOCIAL SERVICES IN THE GREATER MONTREAL AREA**

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Few studies have examined why some women manage to continue breastfeeding after returning to work and others not. To better understand the intention of women to continue breastfeeding after returning to work, we carried out a quantitative study using a standardized questionnaire inspired by Triandis's theory of interpersonal behaviors; the questionnaire was elaborated following an initial qualitative study among the same population. Through the department of

Human resources of their employer, and after they had requested a maternity leave, we recruited between March 2000 and March 2001, 268 women employed in the network of health and social services of the greater Montreal area. Among these, 128 returned the second questionnaire containing the psychosocial variables and 104 were still breastfeeding at that time (2 months post-partum). Others had either decided not to breastfeed or had already stopped breastfeeding. Though preliminary, the results suggest that the moral norm is the most important determinant of behavioral intention, explaining 72% of its variance. Perception of control explains an additional 6%. Important elements of the moral norm included personal values and principles, but no guilty feelings. These results suggest that breastfeeding promotion programs should pay more attention to the personal values of women as well as to the physical barriers to breastfeeding that exist, or that women perceive, in their work environment.

208P

#### **DIFFERENCES IN TOTAL DAILY PHYSICAL ACTIVITY AND PARTICIPATION IN MODERATE-TO VIGOROUS PHYSICAL ACTIVITY, AMONG OBESE CHILDREN**

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**Purpose:** The purposes of this study were two fold: to describe the levels of physical activity in obese children participating in an intervention program with PA plus diet and a control group drawn from the community without intervention. To compare the level of MVPA between the two groups. **Methods:** The subjects for this study, aged 8-10 years old, were divided in two groups. The obese experimental group (OEG) comprised volunteer children (n= 14; boys n=7 and girls n=7). The OCG comprised 26 children (boys, n = 14; girls, n = 12), aged 8–10 years. Each subject in the present study was scheduled to wear the CSA three times during the week of monitoring. The study was conducted during 3 consecutive school days, assuming the assessment of one day PA (Wednesday) program for the EOG. **Results:** Compared to COG, EOG was significantly more activity ( $p = .03$ ) and participated significantly more ( $p= .001$ ) in MVPA activities. Regardless the group, less than 1 period over 20 min of MVPA was reached. When the burst of 10 min MVPA was considered the number of periods raised to values ranged between 1.2 in EOG and 0.9 in COG. Regarding the 5 min. burst in MVPA, EOG presented 4.9 periods and COG 4.3 periods. No significant differences were found between both groups. **Conclusion:** The main findings in this study showed significant differences either in overall physical activity level and the involvement in MVPA for EOG suggesting an increase in the time devoted to PA. This may constitute a helpful strategy for increase total energy expenditure and be useful in weight control program in obese children.

209P

#### **HEALTHY EATING, PHYSICAL ACTIVITY, AND OBESITY PREVENTION: A QUALITATIVE STUDY OF PARENT AND CHILD BELIEFS**

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**Purpose:** Preventative health strategies incorporating the views of target participants have improved potential for success. This study aimed to elicit views from children and parents regarding social and environmental barriers to healthy eating, physical activity and childhood obesity prevention programs. **Methods:** To obtain views of families across a range of social circumstances, three disparate primary schools in Victoria, Australia were selected. Children in grades two and five were invited to participate in focus groups (3-6 children per group). Focus groups were structured around photo-based activities with accompanying semi-structured questions designed to elicit discussion about eating and recreational activities. Discussions with established parent groups were also conducted. Discussion points were recorded on a standard recording sheet, collated, and key themes extracted. **Results:** 119 children and 17 parents participated. Nine main themes were identified: information and awareness, contradiction between knowledge and behaviour, lifestyle balance, local environment, barriers to a healthy lifestyle, contradictory messages, myths, roles of the school and family, and timing and content of prevention strategies for childhood obesity. **Conclusions:** Child and parent views were generally similar. Parent recommendations around the timing and content of child obesity prevention strategies were consistent with suggestions from quantitative research. Although generally well-informed, parents want more information and strategies to encourage healthy lifestyle for children. Findings suggest a need for consistency in the explicit and implicit healthy lifestyle messages children receive about diet and physical activity. Consistently promoting healthy diet and activity choices across settings are important steps for childhood obesity prevention programs.

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#### **SOCIOECONOMIC DIFFERENCES ASSOCIATED WITH OVERWEIGHT STATUS IN PRESCHOOL CHILDREN AND THEIR MOTHERS**

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Childhood obesity is an important public health concern. This study investigated the socioeconomic differences associated with overweight status in a cross-sectional sample of 231 Head Start preschool children aged 3-5 years (55% Hispanic-American (HA), 45% African-American (AA), 45% male) and 193 mothers (58%HA, 42%AA; we excluded fathers and pregnant mothers). Overweight was defined as BMI > 85th percentile using CDC standards (age and gender specific for children). We collected socioeconomic data on all 231 caregivers which included the number of computers with internet, VCR, and DVD in the home, marital status, employment status, education and income. 37% of the children were overweight or at risk for overweight and 20% were overweight. A greater proportion of HA boys (32%) were overweight compared to AA boys (11%) ( $p=0.011$ ). AA mothers had a higher mean BMI ( $32\pm 8$ ) compared to HA mothers ( $29\pm 8$ ) ( $p=0.10$ ) and there were no significant age differences among mothers ( $31\pm 9$ ). A greater proportion of AA mothers (53%) were obese compared to HA mothers (37%) ( $p=0.05$ ). We found a lower percentage of HA had computers with

Internet, VCR, DVD ( $p < 0.001$ ); cell phone ( $p < 0.01$ ); and a TV in child's bedroom ( $p = 0.002$ ). Despite these differences, socioeconomic factors were a poor predictor of overweight status among children and mothers within this population.

211P

**SOCIOECONOMIC AND LIFESTYLE DIFFERENCES IN WEIGHT CHANGES FROM CHILDHOOD TO YOUNG ADULTHOOD**  
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Obesity is a public health problem. This study examined differences in socio-economic and lifestyle characteristics associated with obesity status in a longitudinal sample of 822 young adults (68% Euro-American (EA) and 32% African-American (AA); 36% male. Subjects were categorized into three adiposity categories that described BMI changes from childhood to young adulthood; normal-normal (N-N), overweight to overweight (O-O); and normal-overweight (N-O). Chi-square test was used to examine the distribution differences in socio-economic and lifestyle factors among the three adiposity categories. There were more EA in N-N category than AA (44% vs. 34%) ( $p < 0.05$ ), and more males than females in N-O category (47% vs. 30%) ( $p < 0.05$ ). More EA males were in N-O category ( $p < 0.05$ ) and EA females in N-N category ( $p < 0.05$ ) compared to other ethnicity-gender groups. More subjects in the O-O category had incomes  $\leq$  \$15K as compared to individuals with income  $>$  \$45K (31% vs. 15%) ( $p < 0.05$ ). The mean age of N-O category was higher than the mean age of O-O category (28.6 years vs. 27.7 years) ( $p < 0.05$ ). More single individuals were in the O-O category (39% vs. 61%) ( $p < 0.05$ ). Increased physical activity outside of work was negatively associated with obesity ( $p < 0.05$ ). Additional studies are needed to better understand factors that affect weight change from childhood to adulthood.

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**CHANGING DIETARY PATTERNS OF THE OBESE**

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Purpose: To assess differences in dietary patterns in the obese over time and in impoverished areas using the Healthy Eating Index (HEI). Methods: A 24 hour dietary recall was completed in the Continuing Survey of Food Intakes of Individuals (CSFII) 1994-1996, the National Health and Nutrition Examination Survey, (NHANES) 1999-2000, and the FOODS 2000. FOODS 2000 is a representative survey of nutrition and health in the Lower Mississippi Delta (LMD), conducted in 2000. HEI scores, composed of 10 components each representing different aspects of a healthful diet, were constructed for non-Hispanic adults. We compared components for obese status. Results. For total HEI, the non obese were slightly but significantly better than the obese in CSFII and NHANES but no change was seen in the two categories from 1996 to 2000, nationally. The LMD HEI was significantly lower than both national surveys for obese and non-obese. The HEI components demonstrated differences both over time and regionally versus nationally. Fat and dairy scores overall were best for NHANES and worst for the LMD; obese had worse scores than the non-obese for all surveys. The LMD had much lower vegetable scores for the obese versus the non-obese, and lower scores than CSFII and NHANES, which were not different. Fruit scores were low for all, with the LMD being lowest; there was a significant difference for obese status only for the CSFII. Conclusion: Examination of the HEI components is essential in evaluating the diets of the obese.

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**A QUALITATIVE ANALYSIS OF MOTIVATORS AND BARRIERS FOR HEALTHY EATING IN UNDERSERVED ADOLESCENTS**  
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The purpose of this qualitative study was to identify motivators and barriers for healthy eating in underserved adolescents. Forty-eight adolescents, on the free lunch program in rural South Carolina (19 females, 29 males; ages 10-13 years; 82% African American, 10% white, 8% Hispanic) participated in focus groups (6-10 per group) separately for boys and girls. The focus groups were conducted using a standardized protocol, and students were asked open-ended questions related to their knowledge, motivation, barriers, preferences, and current dietary patterns. The focus groups were audio-taped, transcribed, and coded by two independent raters ( $r = .90$ ). QSR NVivo was used to analyze the data and identify motivational themes and barriers to eating healthy. When asked what healthy foods they liked, most participants mentioned fruit and vegetables, especially strawberries, salad and soul food (such as greens, corn, or mashed potatoes). Primary motivators for eating healthy included having enough energy to participate in sports, to be strong, to build muscles, to stay healthy, and to avoid gaining weight. The primary barriers for not eating healthier included lack of choice of healthy foods at school, lack of taste, lack of availability (both at home and at school), and lack of social norms for eating healthy. This study expands on previous research by identifying that choice of healthy foods, health benefits (strength, weight control), taste, and social norms are important elements to include in dietary interventions for adolescents. In addition, these data suggest that increasing availability of healthy foods at home and school may be essential.

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**LAY PERCEPTIONS OF THE CAUSES AND PREVENTION OF CHILDHOOD OBESITY**

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Purpose: The research aim was to examine consumers' perceptions of the causes and prevention of childhood obesity and to examine relationships between the two sets. In addition, hypothesised differences in the beliefs of the sexes, and different education, age and parental status groups were tested. Methods: A short questionnaire consisting of a range of internal and external obesity causes and prevention strategies was administered to 315 adult shoppers at a Melbourne shopping complex. The responses were analysed by descriptive statistics, principal components analyses, ANOVA of factor scores and via multiple regression analyses of two prevention factor scores with causal factors as independent variables. Results: The most important perceived causes of childhood obesity included availability of unhealthy food, lack

of parental knowledge about food and physical activity, modern sedentary-inducing technology and fast food advertising; genetic influences were not regarded as important causes of obesity. Many respondents saw fast food advertising as a major cause but most did not want it banned, preferring advertising of healthier foods. Parents were significantly attributed children's obesity on government activities, modern technology and media, and lack of physical activity, and favoured obesity prevention government policies, more than non parents. The Government policy prevention factor was significantly related to the causal factors (RSq 15%,  $p < 0.0001$ ; 30% among non parents). Conclusions: The ways people perceive the causes of childhood obesity is associated with their opinions of prevention strategies. The presence of young children in the home may be a key determinant of these beliefs.

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#### **DIFFERENTIAL CORRELATES OF PHYSICAL ACTIVITY IN NORMAL WEIGHT, OVERWEIGHT, AND OBESE INDIVIDUALS LIVING IN RURAL AND URBAN COMMUNITIES**

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**PURPOSE:** Few studies have examined the correlates of physical activity in obese and geographically (i.e., urban versus rural) diverse populations. Therefore, the present study used an ecological approach to identify independent correlates of physical activity in normal weight, overweight, and obese individuals living in rural and urban communities. **METHODS:** A national cross-sectional study (N=6739) with an over sampling of minority and low income households was conducted in 2001. **RESULTS:** c2 analyses showed that rural obese individuals (20.9%) were least likely and urban normal weight individuals (39.3%) were most likely to meet the American College of Sports Medicine physical activity recommendations. Multivariate logistic regression analyses showed significant differences in physical activity levels across weight group and urban / rural areas were found for those reporting (1) the presence of hiking trails, organized sports, and home exercise equipment, (2) barriers to exercise such as hard to stick to a routine, lack of energy, no one to exercise with, don't feel like it, too out of shape to start, and rather be doing other things, and (3) encouragement from spouses, family/children, and friends. **CONCLUSIONS:** The present study suggests that the determinants of physical activity may differ based on obesity status and place of residence (i.e., urban – rural). As such, physical activity interventions should pay particular attention to this in the developmental stages.

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#### **STRESS RESPONSE: SEXUAL OR FAT DISTRIBUTION DIFFERENCE?**

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Sex differences in stress responses have been emphasised in past researches. Such differences have been attributed to psychological differences between men and women. The results of recent studies have suggested that the HPA axis is hypersensitive in obesity with predominance of central adipose tissue. The objective of this study was to investigate possible differences between sexual typical obesity patterns in stress response. Three groups of subjects were selected: lean, obese (central for men and peripheral for women) and reduced obese (minimal weight loss, 5 kg). The Trier Social Stress Test (TSST) (mental arithmetic task and public speech in front of an audience) was used to assess the stress response. In the present study, the TSST was administered twice (in fed and fasted states). Cortisol response to awakening (CRA) was also measured as an indicator about the reactivity of the HPA axis. In the morning, obese men had higher CRA than lean men, but this response tended to return to lean values after weight loss. In women, the results were the opposite. Obese women had lower CRA than lean and reduced-obese women. For the TSST, women in general had a lower cortisol reactivity than men. Nutritional status did not influence the way each group reacted [men: lean > obese > reduced obese, women: obese > lean = reduced-obese]. According to these preliminary results, it seems obesity, and particularly fat distribution, influences the status of the HPA axis and thus response to stress. These results also confirm that CRA provide important information about the basal state of the HPA axis.

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#### **FOOD ASSISTANCE PROGRAM PARTICIPATION, OVERWEIGHT AND RISK FOR OVERWEIGHT IN YOUNG CHILDREN: THE EARLY CHILDHOOD LONGITUDINAL STUDY**

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The first follow-up data from the Early Childhood Longitudinal Study (ECLS) was used to investigate changes and persistence in overweight among Asian, Black, Hispanic and White children (n=22,000). For this analysis, the sample consisted of children for whom data was available at both time points--kindergarten (K) entry in fall, 1998 and completion of first grade (FG) in spring, 2000. CDC age and gender specific growth information (2000) was used to categorize children who moved into 'at risk' of overweight ( $BMI \geq 85\%ile \leq 95\%ile$ ) or overweight ( $BMI \geq 95\%ile$ ) categories by FG or who remained in the at risk or overweight categories at both time points. By the end of FG, Black and Hispanic boys had the greatest increase among children categorized 'at risk' for overweight (i.e. approximately 6% for both groups), and the changes in weight category was significant for blacks ( $p < 0.01$ ). Asian children had the lowest increase in the 'at risk' category by the end of FG (3.8% and 4.5%, boys and girls respectively) and Whites were intermediate (i.e. 5.1% and 5.5%, boys and girls respectively). More Black and Hispanic girls entered the overweight category than their male counterparts by end of FG. However black girls had the highest increase compared to all groups--5.4% became

overweight. Nine percent (9%) of Hispanic boys and 8.3% of Black girls were persistently at risk for overweight at K and FG, while 14.5% of Hispanic boys and 10.1 percent of Hispanic girls were overweight at both times points. The relationship between food assistance program participation and these weight outcomes in the cohort is examined.

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#### **HEALTHY NUTRITIONAL LIFESTYLE STARTS AT ELEMENTARY SCHOOL: A PILOT PROJECT**

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Purpose: Childhood obesity is increasing in many countries and little effort has been made to enhance children's nutrition knowledge and eating behavior. This study was performed to evaluate nutritional knowledge and eating behavior changes following a nutrition education program in an elementary school of Québec City. Methods: Nutritional knowledge was evaluated in 392 girls (5 to 12 years of age) with questionnaires prepared for each cycle of the elementary program. Different themes were examined, such as the Canadian nutritional guidelines, the importance of breakfast, healthy snacks and the interpretation of food labels. Eating behaviors were measured with breakfast recall, snacks brought to school and at the cafeteria. Results: In general, nutritional knowledge was improved by  $13.9 \pm 10.6$  % ( $p < 0.0001$ ) following the program. Improvement in knowledge was significantly higher for the girls in the first cycle ( $18.2 \pm 12.3$  %) compared to the second ( $11.1 \pm 10.1$  %) and the third ( $12.9 \pm 8.1$  %) cycles ( $p < 0.0001$ ) of the elementary program. For the breakfast recall, 98% of youngsters reported having breakfast and no change was observed after the program. However, 9 % ( $p < 0.01$ ) of students improved the quality of their breakfast by including at least 3 food groups to their meal. To this effect, the consumption of milk products was significantly increased (10 %,  $p < 0.002$ ). Conclusions: Teaching nutrition is important for elementary school children to improve their knowledge and to influence their eating behaviors. Initiatives have to be implemented in order to develop nutrition education programs to heighten children to healthy lifestyle.

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#### **FOOD AND NUTRITION POLICIES AND PROGRAMS IN PRINCE EDWARD ISLAND SCHOOLS**

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Purpose: To develop an inventory of food and nutrition policies, programs, and foods available in Prince Edward Island (PEI) schools. While such surveys have been completed in several Canadian provinces, similar information is not available in PEI. Methods: A self administered survey, adapted from previous Canadian questionnaires, was used to assess food and nutrition policies, programs, food provision, and fundraising. Surveys were sent to all PEI school principals via fax/email; 58/64 (90.6%) completed the survey. Descriptive statistics regarding nutrition policies, foods available and services and programs were generated using SAS (v. 6.1). Results/findings: There is a lack of formal nutrition and food policies in PEI, with only 5% of schools having a school based policy which limit the availability of "junk foods". Further, although half of the schools (51%) offer subsidized/ free food programs, there is no provincial funding or standards in place. Vending machines were present in 47% schools, with the majority (4/5) of foods sold being low in nutrient density (e.g. candy, soft drinks). Over half of schools use foods for fund raising, with chocolate bars being the predominant choice. Conclusions: Policy support for a healthy school nutrition environment is lacking in PEI schools. Results indicate that interventions which will enhance the availability of healthy food choices and ultimately improve eating habits are necessary. Survey results will be used as a baseline for such an intervention.

220P

#### **REVERSING THE PREVALENCE OF POOR PHYSICAL FITNESS IN LOW INCOME HISPANIC CHILDREN**

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Increasing rates of obesity and associated diseases like type 2 diabetes have become an urgent public health concern. The Bienestar Health Program is a coordinated school-based social behavioral education program whose main objective is to reduce diabetes risk factors in children; its focus is on changing sedentary lifestyles and poor dietary habits. The Bienestar Program consists of parent, health class, school cafeteria and after-school programs. The purpose of this longitudinal study is to assess the effectiveness of the program in these reducing risk factors in children. The population for this study was 4th grade students from 13 intervention and 14 control schools. Fitness was assessed by a modified Harvard step exercise test. The score is calculated by dividing the total time of exercise in seconds by the sum of three heart rates post exercise, with a higher score indicating better fitness. Pre and post-intervention testing was conducted in the fall of 2001 and spring of 2002. Complete data was available on 626 control and 647 intervention (1,273 total) children. The mean score for all children at baseline was 64.9, a score that is considered low average. Upon follow-up, the prevalence of children with poor fitness scores (below 55) decreased from 14.5% to 11.8% (mean decrease of -2.7%) in the intervention group and increased from 10.9% to 15.1% (mean increase of +4.2%) in the control group. These results show promise for school based interventions in reversing the national wide trend of inactivity, especially among high risk (low income, minority) children.

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#### **PHYSICAL FITNESS AND DIETARY INTAKE OF PARTICIPANTS IN THE BIENESTAR HEALTH PROGRAM**

**Trevino, R.P., Dempsey, L.A., Garcia, O.A.; Hernandez, A.E.; Mobley, C.; Gonzalez, A.; Yin, Z.; The Social and Health Research Center, University of Texas at San Antonio, University of Texas Health Science Center, University of the Incarnate Word, San Antonio, TX; Medical College of Georgia, Augusta, GA, USA**

The Bienestar Health Program is a coordinated school-based social behavioral education program whose main objective is to reduce diabetes risk factors in children; its focus is on changing sedentary lifestyles and poor dietary habits. The Bienestar Program consists of parent, health class, school cafeteria and after-school programs. Pre and post-intervention

testing was conducted in the fall of 2001 and spring of 2002. Fitness was assessed by a modified Harvard step exercise test. The score is calculated by dividing the total time of exercise in seconds by the sum of three heart rates post exercise, with a higher score indicating better fitness. Three 24 hour dietary recalls were collected via face to face interviews by trained data collectors for 1 weekend and 2 weekdays of intake. The children's intake for all meals was entered into the NDS-R (Univ. of Minnesota) software for analysis. The children's fitness scores were divided into 3 categories; poor, average, and good to excellent. The children in the 'poor' physical fitness categories reported eating slightly fewer calories (1,559 kcal) at baseline than children in the good to excellent physical fitness categories (1,571 kcal). Children in the poor category reported eating a greater % of fat (33.4%, 32.7%) and protein (15.2%, 14.5%) and a lower % (52.2%, 53.8%) of carbohydrates than children in the good to excellent fitness category, however, these results were not statistically significant. These results suggest that children with higher physical activity levels need a higher caloric intake to meet their energy needs.

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#### **IDENTIFYING BEST PRACTICES IN CARDIOVASCULAR HEALTH PROMOTION IN SCHOOLS: COMPARISON OF SYSTEMATIC LITERATURE REVIEW VERSUS NOMINATED PRACTICES SCAN**

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As part of a larger project, "Best Practices in Cardiovascular Health Promotion", this paper describes and compares two methods for identifying best practices: systematic review of literature vs. scan of nominated practices using the University of Waterloo model, (Cameron et al, Health Promotion Practice, 2001). Practices were restricted to multi-risk factor, school-based programs. English-language literature, 1997-2002, was searched using 7 search engines, and 77 search strings of key words reflecting heart (n=7); risk factors (2): nutrition (3), physical activity (4), obesity (2), smoking (3), behaviour (4); school channel (8) and study design (8). Citations (n=19,683 after eliminating overlap using Reference Manager8.5, CA) were reviewed by three independent reviewers. From these, 109 titles met selection criteria. Forty-three abstracts and 36 papers were reviewed, representing 18 programs from USA (n=12), Europe (n=5) and Australia (n=1). For the nominated practices scan, the project advisory committee identified 123 key informants, and 62 respondents (50%) nominated 59 distinct school-based programs. Reviewers (n=3) selected 29 programs for follow-up. Respondents from the selected programs (n=24, 83%) completed an e-mailed survey and provided supplemental publications/materials. Of 22 programs meeting selection criteria, 18 were from Canada, 4 from USA, and 3 (14%) included peer-reviewed publications. Only two programs were identified by both methods. All selected programs using either approach are being reviewed for strength of evidence, plausibility and practicality. Literature review and nominated practices scan appear to be complimentary and not equivalent methods. Both may be needed to identify best practices in heart health promotion.

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#### **SCALE DEVELOPMENT TO ASSESS THE INFLUENCE OF THE FOOD-RELATED SOCIAL ENVIRONMENT OF MIDDLE SCHOOLS: OUTCOMES, CHALLENGES AND FUTURE DIRECTIONS**

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Researchers have been encouraged to consider factors in the school social environment, such as foods sold to students via vending and a la carte programs and foods used as incentives and rewards by teachers, as potentially important predictors of students' eating behaviors. While theory supports this link, empirical research in this area is limited and primarily elementary school-focused. School-level scales, using multiple data sources (students, teachers, parents and school administrators) and a variety of measurement modalities (surveys, direct observation and key informant interviews) were developed to represent the key theoretical constructs of the food-related social environment of middle schools (n=16), which include normative expectations, role modeling, social support and opportunities/barriers for healthy eating. Scale reliability was generally good and correlations between scales were in the expected direction, with most being moderate to high. However, mixed-model analysis of variance procedures revealed no statistically significant associations between scales and young adolescents' (n=485) consumption of fruits, vegetables and dietary fat (based on 24-hour dietary recalls). Challenges associated with the study of school-level social-environmental factors are discussed and recommendations for future etiologic research are proposed.

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#### **USING PARTICIPATORY ACTION RESEARCH TO DESIGN SCHOOL-BASED NUTRITION INTERVENTIONS**

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**PURPOSE:** The purpose of this paper is to provide the background for conducting community-based participatory action research, using photovoice, to encourage key community stakeholders to become advocates for change in the school nutrition environment. **BACKGROUND:** Photovoice is an innovative investigative methodology that facilitates partnerships between researchers and study participants. Using cameras, participants document important assets and opportunities to promote healthy lifestyles in community settings. **Methods/key points:** The study's purpose was introduced to teachers from a rural East Tennessee school system at an in-service meeting, where they were given cameras and asked to document the types of foods available in their classrooms. The photographs were displayed at subsequent focus group meetings. Teachers discussed the foods depicted in the photographs, whether or not these foods help motivate students, the relationship between these foods and a healthy diet, and ways to improve classroom food practices. The teachers developed an action plan to improve the types of foods available to students in the classroom. Teachers will convene a meeting with other school faculty to implement the action plan for the schools in fall 2003. **CONCLUSION:** Photovoice is an innovative approach in community-based participatory action research methodology. Although this methodology has been used successfully to document the environment of disenfranchised populations, relatively few studies have used this

method to address opportunities for improvement in the nutrition environment. Use of this methodology in nutrition behavioral research can provide an insider's perspective that may give researchers greater insight on how to promote sustainable dietary behavioral changes.

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#### **A COMPARISON OF FRUIT AND VEGETABLE SERVINGS FROM DIETARY RECALLS AND SCHOOL CAFETERIA OBSERVATIONS AMONG 3RD AND 4TH GRADE SCHOOL CHILDREN**

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Various methods are used for collecting, quantifying, and analyzing the composition and nutrition content of consumed meals. The purpose of this research was to compare servings of fruits, vegetables, and juices from dietary recalls with observations of lunch meals eaten in school cafeterias by 3rd and 4th grade U. S. school children residing in Alabama. Data were collected over two years. Outcome variables included the number of servings of fruits, vegetables and juices, and nutrient composition of the meal - total kilocalories, carbohydrates, protein, fat, and dietary fiber. Meals consumed during lunch periods in school cafeterias were observed by trained individuals. In Year 1 baseline, no mixed fruit/vegetable dishes were included in the quantification of the meals. Mixed fruit and vegetable dishes were included in Year 2. Individual children whose parents had given prior consent were observed consuming the lunch meal. Twenty-four hour dietary recalls were collected in person the day after the child was observed consuming the meal in the school cafeteria. The lunch meal menus served to facilitate memory of consumed foods during the dietary recall. At Year 1 there were 433 paired observations for recalls and observations. In Year 2 there were 392 dietary recalls linked with observations of lunch meals consumed. The number of fruit, vegetable, and juice servings, total kilocalories, carbohydrates, protein, fat, and dietary fiber were compared for dietary recall and direct observation of lunch meals consumed. Servings of fruit, vegetable, and juice servings were correlated between dietary intakes and direct observations to validate recall results.

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#### **IMPACT OF THE IMPLEMENTATION INTENTIONS STRATEGY ON THE PRACTICE OF PHYSICAL ACTIVITY AMONG SEDENTARY PATIENTS**

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**Purpose :** 74% of Quebecers do not practice enough physical activity to enjoy the associated health benefits. This experimental and random study involved evaluating the impact of the Implementation Intentions strategy on the practice of physical activity by 133 sedentary patients recruited in general medical practice.

**Methods :** This strategy stipulates that, by formulating a concrete plan that specifies when, where and how the actions should be undertaken, the attainment of the goal sought is facilitated. All participants had to fill out a questionnaire and received medical counselling, both of which dealt with physical activity. The 68 patients attributed randomly to the experimental group also developed a concrete action plan representing the intervention evaluated by the study.

**Results :** Compared to the period of 15 days preceding the medical visit, both the number of sessions of physical activity (3.34 versus 3.07;  $p = 0.72$ ) and the minutes of activity practised during the 15 days following the medical visit (181.1 versus 165.3;  $p = 0.67$ ) were higher among the patients of the experimental group. Although a tendency favouring the experimental group was observed, the Implementation Intentions strategy did not make a significant contribution on either the clinical or statistical level.

**Conclusions :** The present study did not confirm that this intervention strategy is useful in clinical settings. Nonetheless, strong social desirability combined with low statistical power explains in large part this absence of impact.

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#### **THE DUTCH HEART HEALTH COMMUNITY INTERVENTION 'HARTSLAG LIMBURG': RESULTS ON DIETARY FAT INTAKE AND PHYSICAL ACTIVITY**

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Hartslag Limburg (Dutch for Heartbeat Limburg), a regional cardiovascular diseases (CVD) prevention program, integrates a community strategy and a high-risk strategy to reduce CVD risk behaviors. This study focuses on the effects of the community intervention on fat intake and physical activity, as well as the effects on psychosocial determinants of these behaviors. The project was based on community organization principles and health education theories and methods. In order to implement the intervention, nine local Health Committees were set up, each organizing activities that facilitate and encourage people to adopt a healthier lifestyle. To assess differences between the experimental and a control region, a pretest-posttest nonequivalent control group design was used. At baseline, representative random cohort research samples were selected in the Maastricht region and in a control region. Data on fat intake and physical activity, and on psychosocial determinants of these behaviors, were gathered by means of structured questionnaires, sent by mail. To study differences, multilevel regression analysis was used for all outcome variables. The study indicates that the intervention had a significant effect on fat reduction, 48 years (median age). Respondents in the\_especially among respondents aged Maastricht region were also more realistic about their fat intake at posttest. Only a limited effect on intentions to increase physical activity was found. It is concluded that the results of the present study lend some support to the assumption that a reduction in CVD-related behaviors can be achieved by means of a community intervention.

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**THE DUTCH HEART HEALTH COMMUNITY INTERVENTION 'HARTSLAG LIMBURG': RESULTS AT ORGANIZATIONAL LEVEL**

Ronda, G., Van Assema, P., Maastricht University, The Netherlands; Ruland, E., Steenbakkens, M., Regional Public Health Institute Maastricht, The Netherlands; Van Ree, J., Maastricht University, The Netherlands; Brug, J., Maastricht University, Erasmus MC Rotterdam, The Netherlands

Hartslag Limburg, a cardiovascular diseases (CVD) prevention program, integrates a community strategy and a high-risk strategy to reduce CVD risk behaviours. This study focuses on the results of the effect evaluation study of the community intervention at the organizational level. Organizational changes were an intermediate goal of the Hartslag Limburg community intervention, as these are assumed to be a prerequisite for changes at the individual level. To assess differences between the experimental and a control region, a pretest-posttest nonequivalent control group design was used. The baseline measurement was conducted in 1998 and the posttest in 2001. All organizations that were potentially significant agents in health promoting activities were included. At posttest, the number of activities per organization involved in activities relating to healthy eating, smoking behaviour or physical activity was higher in the Maastricht region than in the control region. Furthermore, the overall posttest percentage of organizations involved in at least one activity relating to physical activity was higher in the Maastricht region than in the control region. It is concluded that the present study provided valuable information about organizational involvement in health promoting activities, and about changes over time in a large community-based intervention. However, because of the limitations of the study, the importance of measuring change at different social levels in community-based programs, and the scarcity of effect studies of community interventions at the organizational level, further research on this subject is warranted.

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**RESULTS OF THE HEALTHY BODY HEALTHY SPIRIT TRIAL**

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Little is known about the impact of interventions that simultaneously address diet and physical activity (PA). Healthy Body/Healthy Spirit was a multicomponent intervention to increase Fruit and Vegetable (F & V) consumption and PA among African Americans, delivered through Black churches. This study had two primary aims: 1) Test the effectiveness of a culturally-tailored self-help dietary and PA intervention compared to standard health education materials; 2) Test the effectiveness of using Motivational Interviewing (MI), delivered by telephone, to modify F & V and PA habits. Sixteen churches were randomly assigned to three intervention conditions. Group 1 received standard nutrition and PA intervention materials; Group 2 received culturally-tailored self-help nutrition and PA materials; and Group 3 received the same intervention as Group 2, plus four telephone counseling calls based on MI. The primary outcomes, assessed at baseline and 1-year follow-up, were F & V intake (assessed by food frequency questionnaires and minutes of PA. Groups 2 and 3 showed significant changes in both F & V intake and PA. For F & V, though not PA, there was a clear additive effect for the MI intervention. Of the 61% of participants across the three groups that exhibited at least a moderate behavior change, most, 72%, made a change in only one health behavior. Of the remaining participants who made at least a moderate change in either behavior, 17% made a large change in both F & V and PA and 8% made a large change in one behavior and a moderate change in the other.

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**PEER-LED PROMOTIONS FOR LOW-FAT FOOD CHOICES IN THE TACOS PROGRAM**

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Purpose: Describe the peer-led promotions intervention component of the TACOS (Trying Alternative Cafeteria Options in Schools) program. Methods: Student groups in ten secondary schools implemented school-wide promotional activities that highlighted lower fat foods available in the a la carte areas of the school cafeteria. TACOS staff worked with student groups and their faculty advisors to train the students for specific promotional activities over the course of the two-year study. Student groups were offered financial incentives for completing each promotion, depending on the complexity of the promotion. Results: Students implemented 101 promotions over the course of two years (YR 1 M=4.9 promotions per school, SD=1.5; YR 2 M=13.2 promotions per school, SD=3.3). Promotions were led by health classes (24.2%), marketing/business classes (15.8%), Student Council (12.6%), DECA (6.3%), Family Consumer Science classes (5.3%), other student groups (20.0%), other classes (14.7%), and multiple student groups (1.1%). Fifteen different types of promotions were implemented including fruit and vegetable promotions (26%), media-related promotions (12%), student created promotions (11%), taste tests (10%), and student food choice self-assessments (10%). Most promotions were one day in duration. Incentives ranged from \$50-\$300 per promotion (YR 1 M=\$162, SD=38.4 ; YR 2 M=\$130, SD=15.8). Conclusions: Student-led peer promotions can be effectively implemented in schools to promote lower fat food choices in school cafeterias.

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**BIARIATRIC SURGERY, APPETITE AND PHYSICAL ACTIVITY**

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We report on 997 who underwent bariatric surgery from 1984 to January 2002. Follow-up completion to date is more than 95%. Appetite is decrease as weight is decrease and weight lost is maintained over years. Weight lost also brings increase physical activity. Morbid obesity creates a vicious circle from which it is almost impossible to get out. Bariatric surgery should be considered as a valuable step to make behavioral change and exercise more realistic.

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#### **FORMATIVE EVALUATION FOR PLANNING BEHAVIOR CHANGE INTERVENTIONS IN THE LOWER MISSISSIPPI DELTA**

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Purpose: To utilize focus groups to provide information to assess resources, needs, and opportunities for sustainable nutrition interventions in the Lower Mississippi Delta (LMD). The aim was to ascertain perceptions of Delta residents of acquisition and consumption of healthy foods and factors that could possibly influence their behavior in the consumption of healthy foods. Methods: Twenty-seven focus groups were conducted in nine counties in Arkansas, Louisiana and Mississippi. The groups included 255 persons, 240 females and 15 males (18-60+ years of age), and 176 African Americans, 73 Caucasians, five (5) Hispanics, and one (1) Asian. The discussion topics were healthy foods, shopping, and behavioral change. Data analyses were completed by general and specific content coding. Descriptive and interpretative summaries and emerging themes were identified for each topic. Results: Common emerging themes for all three topics were health concerns and health as it relates to disease and family influence and personal preference. Healthy food themes included barriers or constraints associated with making healthy food choices, traditional eating patterns vs. current cultural influences, and approaches to promote healthy eating. Shopping themes included economic factors, and availability and quality of fresh produce. Behavioral change themes included increased knowledge and skills, personal responsibility, health benefits of increasing fruit and vegetable consumption, and food and nutrition resources. Conclusions: Focus groups in the LMD identified many important themes relevant to the development of nutrition interventions in these communities. These data will be used in the community participatory interventions being developed in the LMD.

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#### **A CONCEPTUAL MODEL FOR ENHANCING BEHAVIORS IN RURAL COMMUNITIES AND UNIVERSITIES FOR COLLABORATIVE NUTRITION INTERVENTION RESEARCH**

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Purpose: To develop a model for building collaboration between rural communities and university scientists to affect nutritional and health behavioral changes. Background: Community participation is critical to the implementation of successful nutrition interventions. Community-based participatory research (CBPR) is an innovative process to involve communities as full partners with university scientists. It provides for community buy-in and empowerment, use of indigenous knowledge, university transfer of technical assistance, capacity building in both communities and universities, and sharing of resources, responsibilities, and authority. Methods: The Lower Mississippi Delta Nutrition Intervention Research Initiative (Delta NIRI) is a consortium that involves six universities (two each in AR, LA, and MS), USDA/ARS, and one community in each of the three states. The Delta NIRI consortium has developed a model for conducting nutrition intervention research, which targets the community and has a goal of sustainability after the research is completed. All partners participate as equal members and contribute to all phases of the research process. Results: Issues have been identified related to different levels of trust, cooperation, readiness, and participation within these rural communities and the universities. Our model shows how a nutrition intervention research plan is developed using community-based participatory research. Conclusions: Utilizing the CBPR process a model was developed with communities and universities that improved collaborative behavior of both entities.

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#### **ELECTRONIC MESSAGING TO PROMOTE HEALTHY EATING AND ACTIVE LIVING TO WORKSITES: CLIENT ACCEPTANCE AND FEEDBACK**

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More than half of Canadians over age 15 use the Internet regularly; and approximately 84% of Internet users have access to e-mail, which many use on a daily basis (Statistics Canada, 2002). The purpose of this study was to evaluate the acceptability of an electronic mode of delivery for weekly health messages. Five large worksites participated in the study with a total enrollment of 2599 individuals [intervention group (n=1948); control group (n=651)]. The project was designed for men and women aged 35 to 55 years of age, who are at increased risk of developing diabetes (BMI >25; sedentary). Key messages (n=12) about healthy eating and active living were developed and sent via e-mail to the intervention group for 12 weeks. The messages were combined such that both the nutrition and the physical activity message complemented the other with a similar underlying focus (i.e., motivation, time constraints). Questionnaires assessing client satisfaction with the mode of delivery were administered at the end of the study. Response rate was 60% (n=1172). E-mail format was preferred by 89.7% of respondents compared to paper copy or a website. The majority of the people liked the length of the messages (~2-3 paragraphs) as provided (83.9%) and preferred receiving them once per week (72.8%). Furthermore, 75% of respondents stated that they read all 12 messages. There were minimal technical problems throughout the study. Thus, e-mail appears to be an acceptable mode of delivery for health messaging to consumers; and it offers great potential as an important research tool for use with large samples.

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**PHYSICAL ACTIVITY AND NUTRITION WORKPLACE ELECTRONIC MESSAGING INTERVENTION**  
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The workplace is a pivotal setting for the promotion of physical activity and nutrition. The overall project was designed for men and women aged 35 to 55 years of age, who are at increased risk of developing diabetes (BMI >25; sedentary). The purpose of this study was to evaluate the efficacy of a 12-week electronic messaging intervention on physical activity and nutrition promotion in the workplace. Five large worksites in the province of Alberta, Canada participated in the study with an enrolment of 2599 individuals [intervention group (n=1948); control group (n=651)]. Separate physical activity and nutrition messages were sent to participants for each of the 12 weeks (24 messages). The weekly combined physical activity and nutrition messages had parallel underlying themes (e.g., time/cost constraints, motivation). The messages were operationalized based on key social cognitive constructs for physical activity and nutrition promotion (e.g., Social Cognitive Theory, Theory of Planned Behaviour, Protection Motivation Theory, Transtheoretical Model) and reviewed by a national panel of experts. Respondents completed separate validated measures for activity and nutrition related to knowledge, attitudes and behaviours. 2099 individuals completed the 12 week post-test assessment for a response rate of 81%. Repeated Measures Analyses of Covariance revealed that the program was more efficacious ( $p < 0.05$ ) for the experimental group in both physical activity variables (cons, metabolic equivalent units (METs), self-efficacy, intentions) and nutrition variables (healthy eating practices, moderation) compared to the control group. Although the significant effect sizes were small (Cohen, 1977), the findings suggest that electronic messaging is a promising mode of delivery for physical activity and nutrition promotion in the workplace.

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**THE EFFECT OF STAGE-BASED DIETARY AND/OR PHYSICAL ACTIVITY INTERVENTIONS IN PRIMARY CARE: A SYSTEMATIC REVIEW**

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**OBJECTIVE:** To systematically review the literature concerning the effect of stages-of-change based interventions in primary care on physical activity and dietary behavior. **BACKGROUND:** Stages-of-change-based interventions in primary care have become more popular recently, which can be attributed to the individual character of the setting and the unique relationship primary care physicians have with a large proportion of the population. **METHODS/KEY POINTS:** A search of the published literature until June 2002 was performed using the following inclusion criteria: 1) intervention based on TTM with no use of additional aids, 2) primary care setting, 3) (randomized) controlled trial, 4) reported results on the effect on behavioral outcome measures. Two independent reviewers assessed methodological quality and draw conclusions of the effectiveness at short, medium, and long term follow-up were based on a rating system of five levels of evidence. The search revealed 13 relevant physical activity interventions (9 RCTs and 4 CTs) and five dietary interventions (all RCTs aimed at reducing fat intake), all published since 1994. Overall, methodological quality was good. No evidence was found for an effect on stages of change and actual levels of physical activity. Strong evidence was found for an effect on fat intake at short and long-term follow-up. Limited evidence was found for an effect on stages of change for fat intake at short-term follow-up. **CONCLUSION:** The scientific evidence for the effect of stages-of-change based lifestyle interventions in primary care is limited. Limiting aspects in the stages-of-change concept with respect to complex behaviors as physical activity and dietary behavior are discussed.

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**PREDICTORS OF BMI CHANGE IN BLACK WOMEN WHO JOINED SISTERTALK: A CABLE-TV DELIVERED WEIGHT CONTROL PROGRAM**

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SisterTalk was a five-year grant to develop, deliver and evaluate a culturally sensitive weight control program for Black women in Boston via "live" cable television. The intervention included 12 weekly hour-long TV shows and then 4 monthly booster videos as well as accompanying mailed written materials. We recruited four cohorts of women totaling 374 participants. Diet, physical activity, height and weight (calculated BMI) were measured at baseline, 3, 8 and 12 months. Follow-up response rates ranged from 57-79%. Overall, the SisterTalk intervention was successful in helping participants change diet and lower their BMI. The purpose of this presentation is to present and discuss the short and long term predictors of BMI change. We performed hierarchical multiple regression of variables significantly associated with BMI change and examined unique contributions of each variable to explained variance in BMI change. Independent predictors of BMI change at 3 month follow-up were: living without children in the household, as well as changes in the following variables: days per week of physical activity, time spent on feet (rather than sitting), mean portion size, and "overeating" scale. We will also present the predictors of BMI change at 8 and 12 months, and discuss mediating variables for change in BMI. The implications of these findings on the development of future weight control programs will be discussed.

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**THE RELATIONSHIP OF SIDEWALKS, PATHS AND BICYCLE LANES TO WALKING, BICYCLING AND JOGGING REGULARLY**

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**PURPOSE:** This study examined the association between the availability of sidewalks, paths and bicycle lanes, their use and the frequency of walking, bicycling, and jogging. **METHODS:** Telephone interviews were conducted with 2,690 Canadian adults selected by random digit dialing from communities of 10,000 residents or more. Individuals were asked

whether there were none, some or many sidewalks, paths, and bicycle lanes in their community, how often they used these (not at all, sometimes, frequently) and whether concerns about safety or sidewalk and lane maintenance limited walking or bicycling (agreed, disagreed or neither agreed or disagreed). Frequent walking (>100 times/year), bicycling and jogging (>26 times/year) was assessed using an adaptation of the Minnesota Leisure-time Physical Activity Questionnaire. Odds ratios adjusted for age, sex, income and education were used to assess relationships. RESULTS: Sidewalks were three times as likely to be used regularly by adults reporting that many sidewalks were available, and bicycle lanes and paths were 3.5 times as likely to be used regularly by adults reporting that many paths and lanes were available. People were 1.5 times as likely to jog frequently if sidewalks were available and 1.2 times as likely to bicycle frequently if lanes or paths were available. Concerns about safety reduced the likelihood of using sidewalks, paths or lanes regularly and concerns about sidewalk maintenance reduced the likelihood of using sidewalks regularly. CONCLUSION: These results suggest that providing safe places to walk and bicycle is a key element in public health strategies to increase walking and bicycling.

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#### **IMPACT OF FOOD PUBLICITY ON CHILDREN: CHILDREN AND PARENTS' POINTS OF VIEW**

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The media are so much part of our lives and at the core of our existence that we perceive them as « natural »; by the same token we underestimate the opinions and behavior to which they give rise. In this respect, the advertising content of T.V. programs has become a major social preoccupation. On the basis of the social representation theory, our study aims at studying food advertising contents to which families are exposed daily, alongside with family behavior and representations of food habits. Food advertising contents, broadcast on the seven Quebec French T.V. channels over a week's period, during the hours of family viewing are analysed to identify the types of products announced, their corollary values and their semiotic characteristics. These contents are concurrently analysed with the responses first obtained by interviews with 156 children of low and high socioeconomic backgrounds from rural and urban areas in Quebec, who were asked to talk about the advertising contents they know (type, content, preference, etc.) and second, with their parents' responses (N=89) to a questionnaire on their family's eating habits. Results reveal the differential impact advertising plays on children depending on their age and the importance the parents attribute to different sources of influence including advertising in their choices of food and that of their children. They also put forth family's regularities concerning foods most frequently consumed, and those judged essential on daily basis, but also those that create problems during mealtime.

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#### **FAMILY CHARACTERISTICS RELATE TO FRUIT AND VEGETABLE INTAKE (FVI) AND BMI IN CHILDREN AND PARENTS**

**Frank Franklin, Richard Shewchuk, Kathy Harrington, Susan Davies, Michelle Feese; University of Alabama at Birmingham, Alabama, USA**

Sample: Third grade children (n=1459, 67% White, 31% African-American) and their parents (94% female) in 33 schools in Birmingham, Alabama. Measures: Child FVI (servings/day) by 24-hour recall; parent FVI (servings/day) by Block 7-item FV screener. Child height and weight; parent self-report height and weight. Results: We defined 4 Family Groups (FG) based on clusters of facilitators and barriers of FVI and family interaction. The population prevalence (%) and Z scores of facilitators, barriers, and interaction are FG1 28%, 2.25, -1.5, 1.25; FG2 24%, 1.0, 3.75, -0.75; FG3 32%, -1.5, 0.25, 0.5; FG4 17% -2.5, -2.75, -2.0. There were no differences in age, ethnicity, gender, marital status, income and education in FG1, 2, and 4. FG3 had higher proportion married, white, higher income and education. Mean FVI and BMI of mothers (M) and children (C) are FG1M 3.80, 25.8; FG1C 2.22, 18.4; FG2M 3.0, 27.0; FG2C 2.04, 19.2; FG3M 2.97, 26.4; FG3C 1.94, 18.8; FG4M 3.38, 26.9; FG4C 2.4, 18.3. The correlation of child-parent BMI was 0.29: highest in FG1 (r=0.32) and lowest in FG4 (r=0.16). Conclusions: Higher BMI in children and mothers in FG 2 compared to FG1 and 4 are inversely related to FVI of mothers and children in these same family groups. Higher FVI in families may protect against obesity.