indicated that bodily pain significantly worsened in both groups, with a significant interaction for physical functioning, role physical, bodily pain and physical component ($p < 0.05$ for all). Further analyses revealed greater improvements in physical functioning, role physical and physical component in the RT+meat vs. RT+C group ($p < 0.05$).
Conclusions: Combining progressive resistance training with a protein-enriched diet led to improved measures of physical quality of life in elderly women, whereas there were no improvements in resistance training alone.
Funding source(s): Meat and Livestock Australia.

THE INFLUENCE OF AGE ON THE BMI AND ALL-CAUSE MORTALITY ASSOCIATION: A META-ANALYSIS

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Background/Aims: A healthy body weight range for adults is defined as a BMI (kg/m^2) between 18.5 and 24.9, however, our meta-analysis for those $\geq$ 65 years, indicated a greater risk of mortality at a BMI < 23. Our aim was to clarify if there is a clear age-related difference in the BMI mortality association in cohort studies spanning the whole adult age range.
Methods: A sub-group analysis of studies included in our meta-analysis spanning the whole adult age range. We included studies of community-living adults that included cohorts both $\geq$ and < 65 years. The reference BMI value used was 23.5 kg/m^2. Two-stage random-effects meta-analysis was used to examine a potential nonlinear relation between BMI and all-cause mortality risk.
Results: Seven studies were identified including a total of 254,954 subjects < 65 years with 17,633 deaths and 54,221 subjects $\geq$ 65 years with 9,652 deaths. Mortality risk tended to fall at BMIs lower than 23 in the younger group and increased in the older group e.g. BMI range 20.0-20.9: < 65 years: HR 0.94 (95%CI: 0.85, 1.05); $\geq$ 65 years: HR 1.16 (1.07, 1.25). In the younger group mortality increased from BMI range 28.0-28.9, HR 1.16 (1.00, 1.35) but mortality did not tend to increase in the older group until a BMI 35.0-35.9, HR 1.03 (0.81, 1.33).
Conclusions: Age significantly alters the BMI mortality association and this effect is evident in cohort studies that span the whole adult age range, confirming that the recommendation for optimal BMI for older adults is different from that of younger adults.
Funding source(s): N/A.

DIET DURING PREGNANCY AND FOETAL GROWTH AND BODY COMPOSITION IN WOMEN AT RISK OF GESTATIONAL DIABETES MELLITUS

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Background/Aims: To explore the effect of maternal nutrition on foetal growth in a self-selected sub-group of women who participated in a randomized controlled trial comparing the effect of a low glycaemic index (low-GI) diet vs a healthy diet (HD) in women at risk of GDM ($n = 139$).
Methods: Fifty nine women (mean ± SD age 35.2 ± 3.8 years, pre-pregnancy BMI: 25.8 ± 5 kg/m^2) joined the sub-study. Dietary data were collected using 3-day food records. Differences between groups were tested using ANCOVA. Linear regression was used to assess the general effects of maternal diet ($n = 96$) on offspring body composition, assessed by air-displacement plethysmography.
Results: Dietary GI was significantly different between groups (low-GI 51 ± 1 vs. HD 57 ± 1, $p < 0.001$). Birth weight *z*-score was lower in the low-GI (0.17 ± 0.15) compared to the HD group (0.65 ± 0.16, $p = 0.037$), as was birth length *z*-score (low-GI 0.25 ± 0.17 vs. 0.85 ± 0.15, $p = 0.016$). Maternal carbohydrate intake (%E) in early pregnancy was inversely related to offspring fat free mass (FFM) index ($\beta = -0.196$, $p = 0.050$, $n = = 96$). Fat and saturated-fat were positively associated with offspring FFM index (% fat, $\beta = 0.241$, $p = 0.016$; %saturated-fat, $\beta = 0.250$, $p = 0.012$, $n = 96$). In late pregnancy, carbohydrate was inversely associated with offspring fat mass (FM) index, while fat and saturated-fat was positively associated with offspring FM index (%carbohydrate, $\beta = -0.243$, $p = 0.037$; %fat, $\beta = 0.224$, $p = 0.037$; %saturated-fat, $\beta = 0.216$, $p = 0.036$, $n = 88$). Higher GI was associated with lower FFM index ($\beta = -0.267$, $p = 0.013$).
Conclusions: Maternal diet and GI influence foetal growth and body composition.
Funding source(s): NHMRC

TIME TRENDS IN PLASMA CHOLESTEROL AND TRIACYLGLYCEROL FROM 1991 TO 2013 IN TERTIARY STUDENTS

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Background/Aims: Monitoring time trends in blood lipids in young adults are informative of lifestyle changes because use of cholesterol-lowering medication in this age group is uncommon. The aim of this study was to examine the time trends in plasma cholesterol and TAG concentrations in young adults.
Methods: Participants in this cross-sectional survey were students enrolled in undergraduate nutrition papers at the University of Otago sometime between 1991 and 2013. Blood was collected from volunteers after they had fasted overnight for 10 h or more. Plasma total cholesterol and TAG concentrations were measured using Roche diagnostic kits on automated Cobas instruments. Univariate and multiple linear regression were used to examine time trends in plasma lipid concentrations.
Results: There were 2027 plasma cholesterol and 1990 plasma TAG measurements included in the unadjusted analysis. Plasma total cholesterol concentration decreased by 0.18 mmol/L every 10 years ($p < 0.001$; 95%CI: -0.24, -0.11) and plasma TAG concentration decreased by 8.3% every 10 years ($p < 0.001$; 95%CI: -11.2, -5.3). Further adjustment for sex, age and BMI in the regression model increased the reduction in total cholesterol and TAG concentration to 0.27 mmol/L ($p = 0.029$; 95%CI: -0.50, -0.03) and 12.0% ($p < 0.012$; 95%CI: -20.3, -2.7) per 10 years increment, respectively.
Conclusions: Plasma cholesterol and triacylglycerol concentrations in Otago tertiary students enrolled in nutrition have declined since 1991, probably from dietary changes. These time trends may differ slightly from those in the general population.
Funding source: University of Otago.

DOES INCREASED DAIRY PROTEIN INTAKE IMPROVE STRENGTH AND LEAN MASS IN OLDER ADULTS?

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Background/Aims: It is important to maintain muscle mass and strength into older age to maintain health. The aim was to evaluate whether consuming dairy protein immediately after exercise stimulates greater increases in strength in older adults compared with soy protein or a lower protein control diet.
Methods: Healthy older adults ($n = 179$, mean ± SD age 61.5 ± 7.4 years, BMI 27.6 ± 3.6 kg/m^2, 81 males and 98 females) were randomised to one of three 12-week isocaloric dietary treatments designed to maintain energy balance: high dairy protein (HP-D, delivering > 1.2 g/kg body weight of protein per day; ~27 g dairy protein); high soy protein (HP-S, delivering >1.2 g/kg body weight of protein per day; ~27 g soy protein); typical protein intake (TP, delivering < 1.2 g/kg body weight of protein per day). All participants undertook the same progressive resistance exercise training program three times per week. Muscle strength and body composition were assessed at Week 0 and 12 and treatments effects were analysed using two-way ANOVA.