Investigating the relationships between lifestyle physical activity and diet on vascular health among older adults

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Objective

This research aimed to investigate how behaviours of lifestyle physical activity (PA) and diet predict and correlate with vascular health in older adults using the gold standard measure of pulse wave velocity (PWV).

Methods

This cross-sectional study analysed 83 adults aged 64-91 years (M=78±6.44) residing in independent living communities. Dietary questions were taken from the Harvard disease risk tool. The Yale physical activity survey allowed the calculation of metabolic equivalents of task (METmins). PWV was collected using a non-invasive device (applanation tonometry).

A hierarchical regression was calculated whereby covariates of taking blood pressure medication (BPM) and age (both known to affect PWV) were controlled in model 1 and diet and METmins were added into model 2. Pearson correlations were then calculated to determine individual correlations with PWV by subgroups of sex and age.

Results

The model 1 regression (R2=.29; F(2,79)=16.00, p<.001) indicated that covariates of BPM and age accounted for 29% (p≤.000) of the variance in PWV, but when diet and METmins were added in model 2 (R2=.31; F(4,77)=8.56, p<.001) they only contributed 2% more (non-significant change, p=.35) to the prediction of PWV. Healthier arteries in males correlated significantly with higher METmins (r=-.54, p=.004) and younger participants (r=.40, p=.027).

Healthier arteries in females correlated significantly with younger participants (r=.49, p=.000), no BPM (r=.36, p=.002), and higher METmins (r=-.25, p=.029). Among 64-78 year olds, healthier arteries were correlated with no BPM (r=.35, p=.011), and healthier diets (r=-.26, p=.046), but not with METmins. Alternatively, 79-91 year-olds showed healthier arteries correlated with higher METmins (r=-.36, p=.012), but not with diet.

Conclusions

After controlling for age and BPM (model 1) in the regression, diet and METmins (model 2) were unable to significantly contribute to the prediction of arterial stiffness in older adults.

Both males and females showed correlations between healthier arteries and higher METmins, but not between arterial health and diet, suggesting PA is more correlated to arterial health than diet.

Those aged 64-78 had healthy arteries in correlation with a healthy diet, whereas 79-91 year olds had healthy arteries in correlation with higher METmins.