



## Artery Research

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### **5.4: LIFETIME ADHERENCE TO A MEDITERRANEAN DIET (MD) PATTERN IS ASSOCIATED WITH LOWER CAROTID STIFFNESS IN YOUNG ADULTS: THE AMSTERDAM GROWTH AND HEALTH LONGITUDINAL STUDY**

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system, with the invasive gold standard (aortic PWV), as measured during cardiac catheterization on alternate days, in up to 659 patients: M1 (invasive aortic PWV), M2 ("conventional" subtraction: suprasternal notch-femoral site minus suprasternal notch-carotid), M3 (estimation from body height: TD = body height/4 + 7.28), M4 (direct measurement carotid-femoral site \* 0.8), M5 (subtracted method as M2 but using straight caliper instead of a tape).

**Results:** Transit times, as assessed invasively and with the SphygmoCor system, were in good agreement (62.8 and 63.4 msec, respectively). TD and corresponding cFPWV, as measured with M2 and M3, met the invasive values – Table. M4 overestimated invasive TD by 3.5 cm, resulting in an overestimation of PWV by 0.3 m/sec. M5 underestimated TD by 4.5 cm, resulting in an underestimation of PWV by 0.9 m/sec. Correlations with invasive method and respective coefficients of determination were not improved, when M4 or M5 was used.

**Conclusion:** Non-invasive estimation of TD for cFPWV (often labelled as aortic PWV) remains problematic. A simplified method, based on body height, may be of value.

|                                | M1   | M2    | M3    | M4   | M5   |
|--------------------------------|------|-------|-------|------|------|
| Patient number                 | 659  | 659   | 659   |      |      |
| TD cm                          | 50.6 | 50.8  | 50.4  |      |      |
| PWV m/sec                      | 8.6  | 8.4   | 8.4   |      |      |
| R <sup>2</sup> vs PWV invasive |      | 0.378 | 0.373 |      |      |
| Patient number                 | 401  | 401   | 401   | 401  |      |
| TD cm                          | 50.4 | 51.1  | 50.5  | 53.9 |      |
| PWV m/sec                      | 8.5  | 8.4   | 8.3   | 8.8  |      |
| R <sup>2</sup> vs PWV invasive |      | 0.42  | 0.41  | 0.39 |      |
| Patient number                 | 108  | 108   | 108   |      | 108  |
| TD cm                          | 50.5 | 50.1  | 49.8  |      | 46.0 |
| PWV m/sec                      | 8.9  | 8.7   | 8.7   |      | 8.0  |
| R <sup>2</sup> vs PWV invasive |      | 0.33  | 0.35  |      | 0.32 |

**5.4 LIFETIME ADHERENCE TO A MEDITERRANEAN DIET (MD) PATTERN IS ASSOCIATED WITH LOWER CAROTID STIFFNESS IN YOUNG ADULTS: THE AMSTERDAM GROWTH AND HEALTH LONGITUDINAL STUDY**

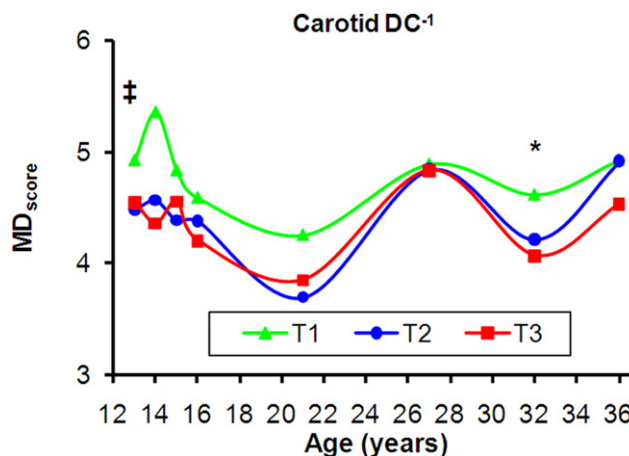
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**Purpose:** To investigate whether lifetime adherence to an MD pattern (i.e., from adolescence to adulthood) is associated with arterial stiffness in adults.

**Methods:** Longitudinal data on dietary intake (2-8 repeated measures; ages 13-36) were retrieved for 373 subjects in whom carotid stiffness was assessed by means of ultrasonography at age 36. An MD<sub>score</sub> [range: 0 to 9 (higher values indicate better adherence)] was calculated based on values < or > the sex-specific medians or pre-defined cut-off values of vegetables, legumes, fruits/nuts, whole grains, fish, meat/poultry, dairy products, alcohol and the ratio of mono-unsaturated to saturated lipids intake. Adherence to an MD pattern (yes/no) was defined based on values > or < median of the MD<sub>score</sub>. We used generalized estimating equations to compare, throughout the 24-yr longitudinal period, the MD<sub>score</sub> between subjects with increasing levels [i.e., tertiles (T)] of the *inversed* distensibility (DC<sup>-1</sup>) and compliance coefficients, and Young's elastic modulus.

**Results:** After adjustment for height, energy intake, physical activity, smoking and mean arterial pressure, and as compared to subjects with 'stiffer' arteries (i.e., in T3), those with 'less stiff' arteries (T1) had a higher lifetime mean MD<sub>score</sub> [e.g., +0.44 (95%CI: 0.20-0.69)], when considering the DC<sup>-1</sup> levels - Figure. Subjects with 'less stiff' arteries were also more likely to have had adhered to an MD pattern throughout the longitudinal period than those with 'stiffer' arteries [OR=1.68 (1.22-2.31)].

**Discussion:** Promoting adherence to the MD throughout the course of young life might offer an important means to prevent accelerated arterial stiffening later in life.



**5.5 IMPACT OF URBAN VERSUS RURAL ENVIRONMENT ON CENTRAL BLOOD PRESSURE, AORTIC STIFFNESS AND WAVE REFLECTIONS: THE PURSE-HIS STUDY**

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Urbanisation of developing countries has had a marked impact on population health. In particular, in India, the prevalence of coronary heart disease is markedly increased in urban versus rural settings. The aim of the current study was to assess the impact of geographic location on large artery stiffness and central blood pressure (BP) as part of the PURSE-HIS study.

**Methods:** In all, 7676 individuals (4276 females) from three distinct geographical regions of Tamil Nadu, India were studied. The mean age was 44±10 years (range 19-79 years). Following completion of a detailed medical history questionnaire, all participants underwent haemodynamic screening including brachial and central BP, augmentation index (AIx) and aortic pulse wave velocity (PWV, SphygmoCor). Subjects were then grouped according to geographical region (urban, semi-urban and rural) and decade of age. Clinic brachial and central BP increased significantly with age in all three geographical regions (P<0.001). However, both brachial and central pressures were significantly lower in rural participants at all ages (P<0.001 for all). Aortic PWV also significantly increased with age in all geographical regions (P<0.001 for all). However, the age-associated increase in PWV was significantly attenuated in rural participants (P<0.001), even after adjusting for confounders (Figure 1). In contrast, AIx was significantly higher in younger rural individuals (<40 years, P<0.001), although this difference was not evident in older individuals.

These data indicate that urban lifestyle adversely impacts on blood pressure and large artery stiffness in an Indian population, which may contribute to the increased cardiovascular risk observed in these individuals.

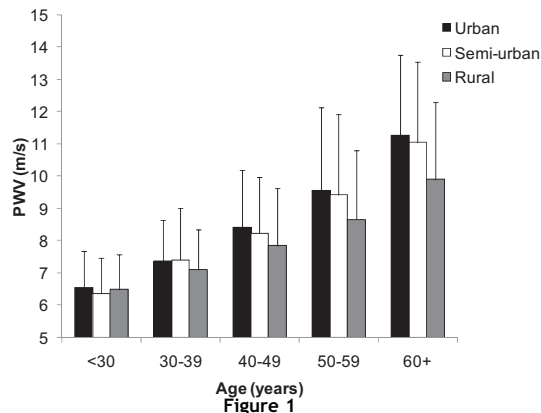


Figure 1