



DASH Diet Compliance in Middle-Aged and Elderly Adults with Elevated or High Blood Pressure

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Abstract

Several studies have shown the cardiovascular health benefits of the Dietary Approaches to Stop Hypertension (DASH). However, individuals with hypertension are less likely to follow DASH than individuals without hypertension. **In this study**, participants receive a 30-minute education on DASH and a 20-minute education on ASA24™ and DASH support at baseline by a Registered Dietitian. Researchers are blinded to the groups in this phase 3 **randomized controlled trial** of exercise. Participants **undergo exercise training three times per week for one year** consisting of aerobic exercise, resistance exercise, a combination of both, or delayed exercise (control). **Three 24-hour dietary recalls per month are collected from participants using ASA24™**. 100 individuals with elevated or stage I hypertension, with a mean age of 53 years old, an average BMI of 32 kg/m², and not on blood pressure medication met the criteria of three baseline diet recalls and three recent diet recalls during a 3-month follow-up. 71% of these individuals completed 80% or more of their diet recalls within 3 months. Diet quality was assessed by the DASH score (Lin et al., 1999). T-tests and Least Square Means (LSM) were used to compare scores between sexes and ages groups. A significance level of .05 was used for statistical tests. **Men's DASH score at baseline was higher than women's** (\bar{x} females=2.4, \bar{x} males= 3.1; p=0.04) and **≥56 years old had the highest DASH score compared to the 35-55 year of age at baseline** (p<0.0001). The 35-45 year of age had the highest DASH score (\bar{x} =3.06; p<0.0001) compared to the ≥46 year of age (\bar{x} =2.6) at month three. Additionally, at month three, women had a significant change in the DASH score (women=+0.24, men= -0.34; p<0.0001).

Background

1 in 2 American Adults suffer from HYPERTENSION



DASH eating can lower blood pressure, however individuals with hypertension are less likely to follow DASH

Objective

Compare diet quality by sex and age groups among participants receiving two education sessions: a 30-minute education on DASH and a 20-minute education on ASA24™ and DASH support at baseline both led by a Registered Dietitian.

Methods

- Sub sample: 100 participants (36-70 years old).
- Blinded to the groups in this phase 3 randomized controlled trial of exercise. Participants undergo exercise training three times per week for one year consisting of aerobic exercise, resistance exercise, a combination of both, or delayed exercise (control).
- DASH and ASA24 education at baseline given by a Registered Dietitian.
- Three 24-hour dietary recalls per month are collected from participants using ASA24™.
- 102 individuals met the criteria of three baseline diet recalls and three recent diet recalls during a 3-month follow-up. Participants had elevated or stage I hypertension, with a mean age of 53 years old, an average BMI of 32 kg/m², and not on blood pressure medication. 71% of these individuals completed 80% or more of their diet recalls within 3 months.
- Data was analyzed using SAS 9.4 . T-Tests and Least Square Means (LSM) were used to compare scores between sexes and age groups.

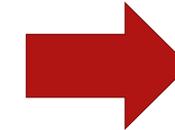
Results

Best Diets Overall: DASH #1



Source: US News and World Report, 2018

How is the DASH Score Calculated?



	All Participants (females n=55, males n=45)
Age (years)	52.9 ± 10.2
BMI Baseline (kg/m ²)	32.1 ± 5.2
BMI Month 3 (kg/m ²)	32.8 ± 7.2
DASH Score Baseline	2.8 ± 1.5
DASH Score Month 3	2.8 ± 1.3

Linear Index Model: Create by Lin et al., 1999

DASH Nutrient	1 Point if hit DASH score target values	.5 points if hit intermediate target values
Sodium (mg/day)	<2300	2300-2650
Cholesterol (mg/day)	<149.1	149.1-224.7
Saturated Fat (% of kcal/day)	<6.0	6 to 11
Total Fat (% of kcal/day)	<27.0	27-32
Protein (%of kcal/day)	>18.0	16.5-18.0
Calcium (mg/day)	>1240	842.3-1240.0
Magnesium (mg/day)	>496.7	330.3-496.5
Potassium (mg/day)	>4673.3	3198.3-4673.3
Fiber (g/day)	>30	19.5-30

*Adapted from Kim, et al. (2016) and the National, Heart, Lung, and Blood Institute (2006). Source: Morton et al. (2012); Mellen et al. (2008).

Baseline DASH Score

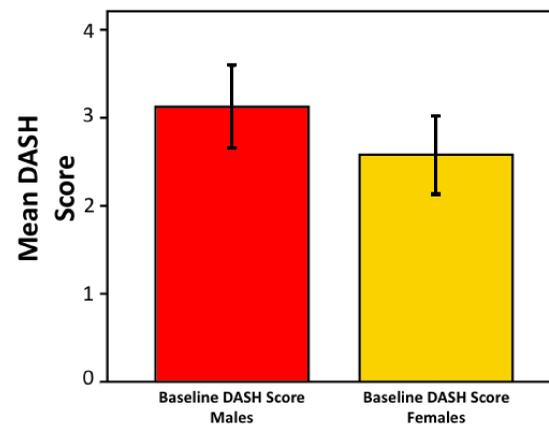


Fig. 1. A t-test showed men's DASH score at baseline was significantly higher than women's (\bar{x} females=2.4, \bar{x} males= 3.1; p=0.04).

DASH Score Females

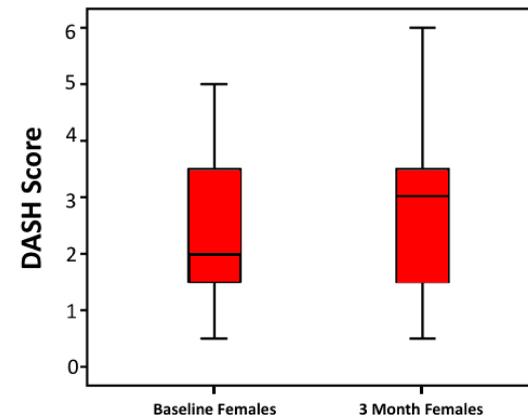


Fig. 2. At month three, women had a significant increase in the DASH score (women=+0.24, men= -0.34; p<0.0001).

DASH Score at Month 3: Age

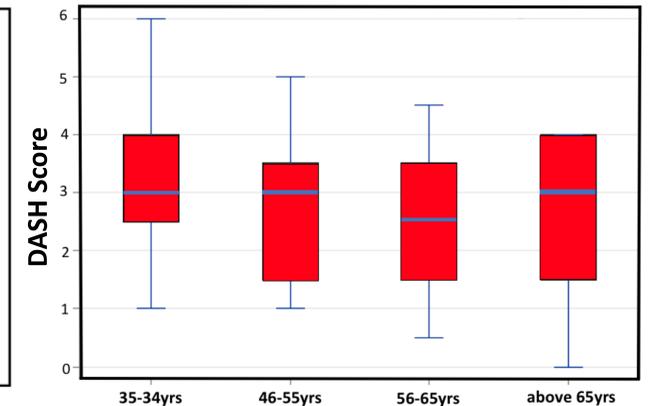


Fig. 3. The 35-45 year olds had the highest DASH score (\bar{x} =3.06; p<0.0001) compared to the ≥46 year olds (\bar{x} =2.6) at month three.

Summary

- Men started the study with higher DASH scores.
- Women's diet quality increased during the first three months of the study, whereas men's diet quality worsened.
- At month three, the 35 to 45 years of age achieved the highest DASH score when compared to the other age groups.