

A Mediterranean Diet Nutrition Intervention Increases Adherence in Feeding America's Bravest: A Prospective, a Crossover Step-Wedge Cluster-Randomized Controlled Trial

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Objectives: United States (US) career firefighters represent a working population at high risk for chronic diseases that may benefit from a Mediterranean diet intervention at the public health level. The primary objective of this trial was to assess the effect of a Mediterranean diet nutrition intervention (MDNI) vs. a control group on a modified Mediterranean diet score (mMDS) and Mediterranean diet adherence screener (MEDAS).

Methods: US career firefighters within the Indianapolis Fire Department (IFD) were enrolled and randomized to either a MDNI (n = 241) or control group (n = 244) and completed follow-up visits at 6 and 12 months. Data collection began in November 2016 and was completed by July 2019. Analysis of covariance was used to estimate age and sex adjusted mMDS and MEDAS mean scores at baseline, 6 months

(n = 291), and 12 months (n = 227). Generalized linear regression models were used to estimate mMDS and MEDAS adjusted mean differences between baseline and 12 months (n = 168).

Results: A total of 485 US career firefighters (95% male with mean age of 47 years (SD = 7.5)) were enrolled in this clinical trial. Age and sex adjusted mMDS mean scores in the intervention group were 23.8 (SE = 0.6) at baseline, 25.5 (0.9) at 6-months, and 26.6 (1.3) at 12 months, whereas the control group scored 24.6 (0.7) at baseline, 24.7 (0.9) at 6 months, and 24.9 (1.2) at 12 months. Participants in the intervention group improved their mMDS at 12 months by 2.1 (1.1), meanwhile the within-group change among controls was -0.4 (1.0). The observed between-group difference was 2.5 (95%CI: 1.0-3.9, p = 0.001). Similarly, age and sex adjusted MEDAS mean scores among the intervention group were 6.3 (0.3) at baseline, 6.1 (0.3) at 6 months, and 6.6 (0.4) at 12-months, whereas controls scored 6.3 (0.3) at baseline, 5.9 (0.3) at 6 months, and 6.0 (0.4) at 12 months. MEDAS within-group differences were 0.3 (0.4) for the intervention group and -0.4 (0.4) among the control group, meanwhile the between-group difference was 0.7 (95%CI: 0.1-1.3, p = 0.02).

Conclusions: This nutritional intervention trial among US career firefighters showed improved adherence among the MDNI group compared to the control group. These findings suggest the Mediterranean diet is a valid dietary pattern recommendation for this non-Mediterranean working population.

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