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A workplace setting to change diet and lifestyle habits

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Introduction: Strong, inverse associations have been observed between Mediterranean Diet (MD) consumption, total Cardiovascular Disease (CVD) and CVD-related events (1). Two recent meta-analyses observed a 19% (RR: 0.81; 95%CI: 0.74–0.88; I²=79.9%) to 29% (RR: 0.71; 95%CI: 0.65–0.78; I²=78%) lower risk of CVD and related outcomes when comparing high MD adherence to low (2,3). While current scientific evidence supports that following a Mediterranean-style diet improves health, workplace interventions using Mediterranean Diet eating principles have been very limited. Previous studies have reported that due to unpredictable schedules and unreliable meal times, firefighters often depend on fast food and sugar sweetened beverages as their primary source of nourishment (4). As a result, the habitual dietary pattern of firefighters is calorically dense, high in processed meats, grains, and sugar,

high in saturated fat and low in nutrient dense foods. This poses them at high risk for CVD development, also the first cause of death among this population accounting for nearly 45% of all on duty deaths and 30% of total deaths.

Objectives: To assess the efficacy of a workplace intervention among U.S firefighters with a Mediterranean diet intervention (Feeding America's Bravest Study) to change Firefighters' Eating Habits and Improve Cardiovascular Risk Profiles.

Methods: Feeding America's Bravest (5) is a cluster-randomized controlled trial within the 44 stations of Indianapolis Fire Department (including about 500 firefighters career members with permanent station assignment) to compare a Mediterranean Diet Nutritional Intervention vs. an *ad libitum*, Midwestern-style diet (control or no intervention)

for 12 months followed by a cross-over when the intervened group (group 1) went under a self-sustained continuation phase for 12 months to examine long term persistence of behavior change. Group 2 crossed-over to receive the active Mediterranean Diet Nutritional Intervention for 6 months to test the efficacy of the same but shorter intervention followed by 6 months of a self-sustained phase. The intervention consists on group educational sessions, discounted access to key Mediterranean foods, peer education/support, text messages, and on-line learning. The primary outcome is the 12-month change in the modified Mediterranean diet scale comparing group 1 vs. group 2 as well as 12- and 24 month change within group 1; and 6- and 12 month change within group 2. Secondary outcomes are changes in body weight, body composition and other cardio-metabolic risk markers. Trial Registration Number: NCT02941757 (5).

Results: We are now in the last phase of data collection (24 months follow-up). Preliminary results are being analyzed and will have more elaborated results for the presentation in the conference. Our preliminary results show post-intervention increases in the modified Mediterranean Diet Score (mMDS) as well as consistent increases in the consumption of target items such as olive oil. In the Indianapolis study, at six months, favorable changes in mMDS ($p < 0.001$) in comparison with the control group were found. Specifically, those in the intervention group had a 15.5% increase in the values in the mMDS score in comparison with baseline score (23.10 ± 6.59 vs. 26.69 ± 5.82 , $p < 0.001$). No significant improvement was found in the control group (2.6%, $p = 0.138$). Additionally, nut consumption ($p = 0.022$) and daily olive oil consumption ($p = 0.001$) were all significantly increased compared the control group. Consonant significant improvements in single-item scores at 6-months were also observed in the MDNI group for fruit consumption, fat and starch qualities and fried foods. Additionally, we have also confirmed in all the that our mMDS is highly correlated with PREDIMED scores of MD-adherence ($r^2 > 0.7$, $p < 0.001$).

Conclusions: In conclusion, preliminary results showed a positive association with healthy dietary changes that may translate to health benefits in other outcomes. Our upcoming results will determine the effectivity of the introduction of a Mediterranean Diet in the U.S. firefighter food culture and its sustainability. This will provide crucial evidence for informing recommendations not only for other career and volunteer fire departments throughout the U.S., but also for other occupational populations such as law enforcement and the military.

conflict of interests

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