

### Impact of Precision Nutrition Counseling for Active Duty Service Members at Risk for Metabolic Syndrome

Mary McCarthy,<sup>1</sup> Evelyn Elshaw,<sup>2</sup> Barbara Szekely,<sup>2</sup> Jennifer Honig,<sup>3</sup> Autumn Thompson,<sup>3</sup> Zachary Colburn,<sup>1</sup> Laurel Gillette,<sup>1</sup> Stanley Langevin,<sup>4</sup> and Ka Yee Yeung-Rhee<sup>5</sup>

<sup>1</sup>Madigan Army Medical Center; <sup>2</sup>The Geneva Foundation; <sup>3</sup>Wilford Hall Ambulatory Surgical Center; <sup>4</sup>Wilford Hall Ambulatory Surgery Center; <sup>5</sup>Langevin Research LLC; and <sup>6</sup>University of Washington - Tacoma

**Objectives:** Metabolic Syndrome (MetS) is characterized by abdominal obesity, dyslipidemia, elevated fasting blood glucose (FBG), and hypertension; personalized nutrition counseling and wellness applications have demonstrated positive results for weight management when coupled with high levels of participant engagement and motivation.

**Methods:** In a prospective RCT RDs conducted personalized nutrition counseling using results of targeted sequencing, biomarkers, and expert recommendations to reduce risk for MetS. Treatment Group (TG) received six weekly sessions; Control Group (CG) received a pamphlet of expert recommendations upon randomization. A digital application provided real-time health data capture. Anthropometrics and BP were evaluated at baseline, 6, & 12 wks; biomarkers at baseline

& 12 wks. Primary outcome was change in weight at 12 wks. Statistical analyses included descriptives and t-test or ANOVA; significance set at  $P < .05$ .

**Results:** 138 subjects enrolled from Nov 2019 - Feb 2021 between 2 sites [Northwest (NW) in WA; Southwest (SW) in TX]; 107 completed the study with  $n = 70$  in the TG. Demographics: 66% male, mean age 31 yrs, 66% married, 49% Caucasian, non-Hispanic. There were no differences between TG and CG at baseline. High deleterious variant prevalence found for genes/SNPs associated with obesity (40%), cholesterol (38%), and BP (58%). 65% of subjects had 25(OH) D less than 30 ng/mL upon enrollment. In NW cohort primary outcome of change in weight at 12 wks was not significant  $p = .34$ . Significant difference at 6 wks noted for TG change in weight  $p = 0.02$ ; fat mass  $p = .01$ ; BMI  $p = 0.02$ ; and % body fat  $p = 0.01$ . BP significant at 12 wks, both systolic ( $p = .04$ ) and diastolic ( $p = .04$ ). Change in 25(OH)D favored TG,  $p = 0.01$ . SW TG had greater reduction in waist circ  $p = .04$  at 6 wks. Digital app had low adherence and poor correlation with ASA24 reference.

**Conclusions:** Significant progress was achieved in the TG at 6 weeks although not sustained at 12 weeks. The concept of nutrigenomics was well-received in this cohort.

**Funding Sources:** TriService Nursing Research Program.