CONSUMERS SHOW GREATER IMPROVEMENTS IN DIETARY INTAKES AND QUALITY OF LIFE WITH NUTRIGENOMIC INFORMATION TO SUPPORT CHANGE. **Karen Davison, PhD, RD, CHES, Kwantlen Polytechnic University; Vanessa Araujo Almeida, University of Hawaii; Paula Littlejohn, University of British Columbia; Rimi Afroze, Kwantlen Polytechnic University; Erin Brown, Fraser Health Authority and Kwantlen Polytechnic University**.

Background: Although gene-test based personalized nutrition approaches may have the potential to reduce chronic disease morbidity, many consumers find them complex and health professionals face challenges integrating them into practice. **Purpose**: To help develop tools that would improve the utility of nutrigenomics-based products, a study was conducted to compare a conventional consumer-based self-driven approach to a practitioner-led method of personalized nutrition. **Methods**: Fifty-five healthy adults (35 to 55 years) were randomized to receive a standard nutrition-based gene test report by email (control; n=19) or a practitioner facilitated personalized nutrition intervention that integrated the standard report information with health assessment data (intervention; n=36). The outcomes included diet quality (Healthy Eating Index-Canadian {HEI-C}; proportion {%} of calories from total fat, saturated fat, and sugar; omega 3 fatty acid intakes {grams}; sodium intakes {milligrams}) as well as Health-Related Quality of Life (HRQOL) scale scores. All measures were taken at baseline and week 9 post intervention; select measures were taken at 3 and 6 weeks post intervention. Repeated measures ANOVA compared mean differences and binomial tests of two proportions compared pre/post differences in the number of participants that met Dietary Reference Intakes (DRI) guidelines for fat and sodium.

Results: From the 58 enrolled participants, 55 (94.8%) completed the study. Most participants were between 40 to 51 years (67%), female (74.6%), in a relationship (85.5%), completed post-secondary education (61.8%), and had a household income above $90,000 CAD (58.2%). Significant group differences between baseline and week 9 post-intervention measures were found for percent of calories from total (mean difference=-5.1%, Wilks' lambda (l)=0.817, F(1,53)=11.68. p=0.001, eta-squared {h2}=0.183) and saturated fat (mean difference=-1.7%, l=0.816, F(1,53)=11.71, p=0.001, h2=0.18) as well as HRQOL scores (mean difference=+8.1 points, l=0.914, F(1,53)=4.92, p=0.031, h2=0.086). Significant interactions of time by group were found for sodium (l=0.846, F(1,53)=9.47, p=0.003, h2=0.15) and HEI-C scores (l=0.840, F(1,53)=9.921, p=0.003, h2=0.16). When phenotypic plus genotypic information by group assignment were analyzed, improved total fat (mean difference=-5%, l=0.815, F(1,51)=11.36, p=0.001, h2=0.19) and saturated fat (mean difference=-1.3%, l=0.822, F(1,51)=10.86, p=0.002, h2=0.18) intakes were indicated. Significant interactions of time by group were found for sodium (l=0.844, F(3,51)=3.09, p=0.035, h2=0.16); posthoc analysis showed pre/post differences for those in the intervention group that had positive (pre-mean=3611mg, 95% CI 3039-4182; post-mean 2135mg, 95% CI 1564- 2705) and negative gene test (pre-mean=3722mg, 95% CI 2949-4496; post-mean 2071mg, 95% CI 1299-2843) results.

Improvements in intakes of omega 3 fatty acids were close to significant (mean difference=+0.34g, l=0.926, F(1,51)=3.99, p=0.051, h2=0.07). Pre/post differences related to DRI guidelines showed increases in the proportion of intervention participants within the Acceptable Macronutrient Distribution Ranges for fat (pre/post difference=+41.2%, p=0.02).

Conclusions: When compared to consumer-led approaches, healthy adults appear to derive better dietary outcomes and perceived health benefits from practitioner-led personalized nutrition interventions. In some instances, combining genotypic and phenotypic information facilitates positive dietary changes. Continued work is needed to facilitate the uptake of comprehensive gene-test based personalized nutrition advice