**Introduction/Background**

Ashkenazi-Jewish (AJ) population-based BRCA-testing is acceptable, does not detrimentally impact psychological well-being or quality of life, is cost-effective and amplifies primary prevention for breast cancer (BC), ovarian cancer (OC). However, prospective data describing lifestyle impact are lacking. We report long-term results of a population-based BRCA-testing randomised controlled trial (RCT) on lifestyle behaviour and cancer-risk perception.

**Methodology**

We designed a two-arm RCT (ISRCTN-73338115, GCaPPS): (a) Population-screening (PS) arm; (b) Family-history (FH)/Clinical-criteria testing arm. Women and men >18-years in the North-London AJ-population were offered informed pre-test genetic counselling and BRCA testing. Participants were recruited through self-referral. Exclusions included: prior BRCA-testing or first-degree relatives of BRCA-carriers. The intervention included screening-testing for three AJ BRCA-mutations: 185delAG(c.68 deletion), 5382insC (c.5266dupC) and 6174delT(c.5946delT). This was undertaken for all participants in the PS-arm; and participants fulfilling FH/criteria in the FH-arm. Patients filled customised/validated questionnaires at baseline/1-year/2-years/3-years follow-up. Outcome measures included lifestyle/behavioural outcomes. Generalized linear-mixed models adjusted for covariates and appropriate contrast-tests were used for between-group and within-group analysis of lifestyle and behavioural outcomes along with evaluating factors associated with these outcomes. Outcomes are adjusted for multiple testing (Bonferroni method), with p<0.0039 considered significant.

**Results**

1034 participants were randomized to PS (n=530) or FH (n=504) arms. No significant difference was identified between PS and FH-based BRCA-testing approaches for dietary fruit/vegetable/meat consumption, vitamin intake, alcohol quantity/frequency, smoking behaviour (frequency/cessation), physical activity/exercise or routine breast mammography screening behaviour, with outcomes not affected by BRCA test result. Cancer-risk perception decreased with time following BRCA-testing with no difference between FH/PS approaches. The risk was found to be lowest in BRCA-negative participants. Men consume fewer fruits, vegetables and vitamins but more meat and alcohol than women (p<0.001).

**Conclusion**

Population-based and FH-based AJ BRCA-testing have similar long-term life-style impacts for smoking, alcohol, dietary fruit/vegetable/meat/vitamin, exercise, breast screening participation and reduced cancer-risk perception.