The effect of oral contraceptive therapy (OCT) on the risk of breast cancer has been studied for many years. Previous studies have investigated how OCT use is associated to individuals with a BRCA1 or BRCA2 gene mutation in respect to reproductive factors, OCT duration, age at OCT use and year of OCT use. OCT use has also been studied in regards to different clinical and pathological characteristics in individuals with breast cancer whose mutation status is undefined. The goal of this study was to investigate any difference that might be present between individuals with BRCA-related breast cancer in comparison to individuals who have breast cancer and have tested negative for BRCA1/2, and how they differed in respect to the effects of OCT use and OCT duration by different clinical and pathological characteristics.

This is a retrospective descriptive study, collecting information on a population of patients through electronic data retrieval. The study population consisted of 59 individuals with a BRCA1 mutation, 36 individuals with a BRCA2 mutation and 340 women who had tested negative for BRCA1/2. Information was collected on clinical characteristics, including BRCA mutation status, personal history of breast cancer, age at diagnosis, personal history of ovarian cancer, personal history of other cancer, and menopausal status at breast cancer diagnosis. Pathological characteristics that were collected included grade, stage, ER status, PR status, Her2/neu, Ki-67 and associated in situ and atypical hyperplasia. Pearson’s Correlation, Fisher’s exact and Mantel-Haenszel tests were utilized for investigation of association.

A significant relationship between OCT use (p=0.0151) and OCT duration (p=0.0181) and PR negativity was found in individuals with a BRCA2-related breast cancer in comparison to individuals with Non-BRCA1/2-related breast cancer. Stratification by BRCA mutation status found BRCA1-related breast cancers to have a higher grade (p<0.0005), to be more ER and PR negative (p<0.0005; p=0.0003,
respectively), to have higher Ki-67 levels (p<0.0005), to be associated with inflammatory breast cancer (p=0.0091) and to have associated DCIS with the breast cancer primary (p=0.0122) in comparison to individuals with Non-BRCA1/2-related breast cancer. BRCA2-related breast cancers tended to have a higher grade (p=0.019) and ductal and lobular carcinoma histologic pathology only (p=0.011) in comparison to individuals with Non-BRCA1/2-related breast cancer. Stratification of the different clinical and pathological characteristics by OCT use and OCT duration found that regardless of mutation status, women who used oral contraceptives (p=0.016) or used for a longer duration (p=0.015) were more likely to be premenopausal at breast cancer diagnosis.

PR negative breast cancer indicates non-functioning ER and is usually associated with a more aggressive breast cancer phenotype. ER expression is inversely associated with a higher tumor grade. Therefore, further hypothesis-driven research is required to help elucidate this association found between BRCA2 breast cancers, OCT use and PR negativity, as well as some of the other trends found in this study.