

**Key messages:**

- Cognitive decline occurs during breast cancer care, affecting one quarter of the patients.
- Anxiety, depression and sleep quality should be considered as targets for preventive or curative interventions of cognitive decline.

## Trajectories of cognitive performance over 5 years in a cohort of breast cancer patients (NEON-BC)

Natalia Araujo

N Araujo<sup>1</sup>, L Lopes-Conceição<sup>1</sup>, F Fontes<sup>1,2,3</sup>, M Severo<sup>1,3</sup>, T Dias<sup>4</sup>, V Tedim-Cruz<sup>1,5</sup>, L Ruano<sup>1,3,6</sup>, S Pereira<sup>1,7</sup>, N Lunet<sup>1,3</sup>

<sup>1</sup>EPIUnit, Institute of Public Health, University of Porto, Porto, Portugal

<sup>2</sup>Medical Imaging Department, Portuguese Institute of Oncology-Porto, Porto, Portugal

<sup>3</sup>Departamento de Ciências da Saúde Pública e Forenses e Educa, Faculdade de Medicina da Universidade do Porto, Porto, Portugal

<sup>4</sup>Surgical Oncology Department, Portuguese Institute of Oncology-Porto, Porto, Portugal

<sup>5</sup>Neurology Department, Hospital Pedro Hispano, Unidade Local de Saúde de Matosinhos, Sra. da Hora, Portugal

<sup>6</sup>Neurology Department, Centro Hospitalar de Entre Douro e Vouga, Santa Maria da Feira, Portugal

<sup>7</sup>Neurology Department, Portuguese Institute of Oncology-Porto, Porto, Portugal

Contact: natalia.c.araujo@gmail.com

### Purpose:

Cancer-related cognitive impairment may affect 30-70% of cancer patients, either at baseline or during and after treatment. We aimed to identify trajectories of cognitive performance, from before any treatment to 5 years later, in a cohort of breast cancer (BCa) patients.

### Methods:

BCa women admitted to the Portuguese Institute of Oncology, Porto, were included in the NEON-BC study during 2012. They were evaluated with the Montreal Cognitive Assessment (MoCA) before any treatment, and after 1, 3 and 5 years (N = 506, 503, 475 and 466, respectively). Nlme R package was used to fit a mixed-effect model of the trends in MoCA scores over time, with age and education as fixed effect. Coefficients of this model were retrieved to calculate an age- and education-modified MoCA score (mMoCA). Mclust was used to obtain clusters of trajectories of mMoCA.

### Results:

Two trajectories were identified, one with higher scores and increasing over time, and the other showing a continuous decline (25.9% of the participants and 84% of the women with cognitive impairment confirmed by neuropsychological tests and clinical examination by neurologist at the 5 year follow-up). Each trajectory was split into 2, according to scoring above or below to the median value of mMoCA at baseline to account for the possibility of patients being in a declining pathway before treatment. In addition to trajectories characterized by the highest and lowest scores, respectively, relatively stable over time, two trajectories with middle-range scores were observed, one increasing over time and the other decreasing (12.7% of the participants); being older than 65 years, suffering from anxiety, depression or poor sleep after treatment were more frequent among the latter.

### Conclusions:

One quarter of the 5-year breast cancer survivors had a declining trajectory in cognitive performance. Anxiety, depression and sleep quality should be considered as targets for preventive or curative interventions of cognitive decline.