

**Title: The multimorbidity profile of South African women newly diagnosed with breast cancer**

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**ABSTRACT**

**Background:** Multimorbidity in women with breast cancer may delay presentation and affect treatment decisions and outcomes. This study described the multimorbidity profile of women with breast cancer, its determinants and association with stage at diagnosis.

**Methods:** This case series analysis concerns the baseline data of a cohort of women enrolled in the ongoing South African Breast Cancer and HIV Outcomes study (SABCHO) in 5 public hospitals in South Africa from January 2016 until April 2018. We collected self-reported data on five chronic conditions (hypertension, diabetes, cerebrovascular diseases, asthma/chronic obstructive pulmonary disease, tuberculosis), determined obesity using body mass index, and tested HIV status. Using multivariate logistic regression models, we examined the associations between determinants of  $\geq 2$  of the 7 above mentioned conditions (defined as multimorbidity), and multimorbidity itself with stage at diagnosis (advanced (III & IV) vs. early (0-II)). This study was approved by the University of the Witwatersrand Human Research Ethics Committee (Approval Number: MI50351, dated: 6th May 2015), and the Institutional Review Board of Columbia University (protocol number AAAQ1359, dated 1<sup>st</sup> January 2016).

**Results:** Among 2281 women, 1001 (44%) presented with multimorbidity. Obesity (52.8%), hypertension (41.3%), HIV (22.0%) and diabetes (13.7%) were the chronic conditions that occurred most frequently at diagnosis. Multimorbidity was more common with older age (OR=1.02; 95% CI 1.01-1.03), higher household socio-economic status (OR=1.06; 95% CI 1.00-1.13) and enrolment at Kwa-Zulu Natal (KZN) Durban hospitals: (OR=1.89; 95% CI 1.42-2.51). Multimorbidity was not associated with advanced stage breast cancer, but for self-reported hypertension there was less likelihood of being diagnosed with advanced stage breast cancer (OR 0.80; 95% CI 0.64-0.98).

**Conclusion:** The prevalence of multimorbidity is high among patients diagnosed with breast cancer. Our findings suggest that the presence of multimorbidity had no significant impact on breast cancer stage at diagnosis. There is need to understand the impact of multimorbidity on breast cancer outcomes.