

## 1. ABSTRACT

### Introduction:

Historically breast cancer incidence has been low in Africa but now accounts for most cancer deaths in women in many sub-Saharan African countries. The purpose of this study is to examine the role of referral patterns and geographical distance on the stage at presentation.

### Methods:

This retrospective cross-sectional study was undertaken at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) and Chris Hani Baragwanath Academic Hospital (CHBAH) breast units from July 2015 to September 2017. The participants were grouped into both early (I and II) and advanced (III and IV) stage breast cancer. Demographic data (age, residential distance, referral pattern) and histological characteristics (immunohistochemistry and grade) were compared. Bivariate logistic regression models were applied on all variables with a subsequent multivariate analysis on all statistically significant variables.

### Results:

Of the 1008 participants enrolled in the cohort, 55% presented with advanced stage disease. Referral pattern was statistically significant on bi- and multivariate analyses with a 50% increased risk of having advanced disease following indirect referral (from secondary hospital or specialist) regardless of other socio-demographic or histological characteristics ( $p < 0.001$ , OR = 1.49, 95%CI 1.13-1.97). Geographical distance had no influence on stage at presentation ( $p = 0.075$ , OR = 1.36, 95%CI 1.03-1.80).

### Conclusion:

Referral patterns play an important role as a barrier to care in the South African public sector. Direct referral routes are needed with simple access to specialised breast units.