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**Breast cancer molecular subtype classification according to immunohistochemistry markers and its association with pathological characteristics among women attending tertiary hospitals in Tanzania**

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[***https://doi.org/10.1016/j.heliyon.2024.e38493***](https://doi.org/10.1016/j.heliyon.2024.e38493)

**Background:** Breast cancer immunohistochemistry is a biological characteristic of the tumour which has a role to diagnose molecular subtype, prognosticate and guide treatment and is cat egorised into 4 subtypes. Data in Tanzania was lacking and was based off data extrapolated from studies in Western Africa thus hypothesizing that women of African ancestry predominately develop Triple Negative Breast Cancer (TNBC).

**Methods**: A retrospective cross-sectional study was carried out at two tertiary referral hospitals on participants who were recruited from the cancer registries from 2015 to 2022. Prevalence of each molecular subtype was determined and association between molecular subtype to demographic and pathological characteristics were evaluated. Predictors of molecular subtypes was then determined using logistic regression. **Results**: Total number of participants were 1214, median age was 50 (IQR: 41–61), median tumor size was 5 cm (IQR: 4–7) with lymph node positivity in 73.7 %. Immunohistochemistry studies showed estrogen, progesterone and Human Epidermal Growth Factor Receptor 2 (HER2) receptor positivity in 54.4 %, 34.4 % and 27.8 % of cases respectively. Molecular subtype classification prevalence for Luminal A was 21.17 % (95 % CI: 18.87–23.47), for Luminal B 35.75 % (95 % CI: 33.05–38.45), for HER2 enriched 11.86 % (95 % CI: 10.04–13.68) and for TNBC 31.22 % (95 % CI: 28.61–33.83). Significant association was seen between molecular subtype with age, tumor size, tumor grade and lymph node involvement. Predictors of Luminal tumors were larger tumor size (aOR 1.217, 95 % CI: 1.149–1.291) no lymph node involvement (aOR 0.429, 95 % CI: 0.313–0.589) while an advanced tumor grade reduced likelihood (aOR 0.041, 95 % CI: 0.011–0.019).

**Conclusion:** In Tanzania Luminal B was most predominant subtype presenting at an earlier age and associated with more favorable pathological characteristics.

Keywords: *Breast cancer Immunohistochemistry Molecular subtype Tanzania Africa*