

## Prognostic Significance of Nuclear factor kappa B (p65) among Breast Cancer Patients in Cape Coast Teaching Hospital

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**Abstract :** Context: Breast cancer is a prevalent and aggressive type of cancer among African women, with high mortality rates in Ghana. Nuclear factor kappa B (NF-kB) is a transcription factor that has been associated with tumor progression in breast cancer. However, there is a lack of published data on NF-kB in breast cancer patients in Ghana or other African countries. Research Aim: The aim of this study was to assess the prognostic significance of NF-kB (p65) expression and its association with various clinicopathological features in breast cancer patients at the Cape Coast Teaching Hospital in Ghana. Methodology: A total of 90 formalin-fixed breast cancer tissues and 15 normal breast tissues were used in this study. The expression level of NF-kB (p65) was examined using immunohistochemical techniques. Correlation analysis between NF-kB (p65) expression and clinicopathological features was performed using SPSS version 25. Findings: The study found that NF-kB (p65) was expressed in 86.7% of breast cancer tissues. There was a significant relationship between NF-kB (p65) expression and tumor grade, proliferation index (Ki67), and molecular subtype. High-level expression of NF-kB (p65) was more common in tumor grade 3 compared to grade 1, and Ki67 > 20 had higher expression of NF-kB (p65) compared to Ki67 ≤ 20. Triple-negative breast cancer patients had the highest overexpression of NF-kB (p65) compared to other molecular subtypes. There was no significant association between NF-kB (p65) expression and other clinicopathological parameters. Theoretical Importance: This study provides important insights into the expression of NF-kB (p65) in breast cancer patients in Ghana, particularly in relation to tumor grade and proliferation index. The findings suggest that NF-kB (p65) could serve as a potential biological marker for cancer stage, progression, prognosis and as a therapeutic target. Data Collection and Analysis Procedures: Formalin-fixed breast cancer tissues and normal breast tissues were collected and analyzed using immunohistochemical techniques. Correlation analysis between NF-kB (p65) expression and clinicopathological features was performed using SPSS version 25. Question Addressed: This study addressed the question of the prognostic significance of NF-kB (p65) expression and its association with clinicopathological features in breast cancer patients in Ghana. Conclusion: This study, the first of its kind in Ghana, demonstrates that NF-kB (p65) is highly expressed among breast cancer patients at the Cape Coast Teaching Hospital, especially in triple-negative breast cancer patients. The expression of NF-kB (p65) is associated with tumor grade and proliferation index. NF-kB (p65) could potentially serve as a biological marker for cancer stage, progression, prognosis, and as a therapeutic target.

**Keywords :** breast cancer, Ki67, NF-kB (p65), tumor grade

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