

## **ABSTRACT**

*Three-dimensional conformal radiotherapy (3-D CRT) is a clinical procedure used in the treatment of breast carcinoma. One of the major challenges in this procedure is respiratory motion, which causes displacement of the radiation target and its surrounding critical organs. This displacement leads to dose errors, referring to the difference between the planned and actual radiation doses received by the patient. This study aimed to estimate dose errors in the planning target volume (PTV), left lung, and spinal cord due to respiratory motion in breast radiotherapy using the isocenter shift method. Additionally, a comparison was conducted between the half-beam block and extended tangential field planning techniques to evaluate their respective dose errors. Dose error calculations were performed using a numerical approach with the composite trapezoidal integration method. The results indicated that the half-beam block method produced lower absolute dose errors compared to the extended tangential field method for PTV and spinal cord. However, for the left lung, the half-beam block method tended to cause dose underestimation, whereas the extended tangential field method resulted in dose overestimation, making the extended tangential field method a safer technique for the left lung.*

**Keywords :** *Radiotherapy, 3-D CRT, dose error, respiratory motion, isocenter shift.*