

## **ABSTRACT**

*Doppler Ultrasonography (USG) is a non-invasive imaging technique used to evaluate blood flow within blood vessels by utilizing the doppler effect. In clinical applications, image quality and the accuracy of velocimetry index measurements are highly influenced by the doppler angle used. This study aims to determine the effect of doppler angle variations on image quality and velocimetry index values of the thyroid gland using doppler ultrasound. The angle variations applied were 25°, 45°, 60°, and 80°. The sample consisted of ten (10) subjects with varying thyroid gland anatomical characteristics, including differences in age, sex, hemodynamic status, and history of thyroid disease. The main parameters observed included B-mode image quality (density or contrast resolution) and velocimetry index values from the region of interest (ROI), namely the common carotid artery (CCA) passing through the thyroid gland area. The results showed that doppler angles of 45°–60° produced the most optimal image quality and velocimetry index values. This finding is consistent with clinical recommendations suggesting that doppler angles in the range of 45°–60° maintain a balance between data accuracy and visualization coverage. Although theoretically, a 25° angle could provide the most accurate results based on the doppler shift equation, its clinical application is limited because the narrower imaging coverage at this angle reduces visualization quality and the accuracy of ROI placement.*

**Keywords:** *Doppler Ultrasonography, Image Quality, Velocimetry Index, Doppler Angle, Region of Interest (ROI)*