

ABSTRACT

Computed Tomography (CT) Scan examination is a diagnostic imaging modality that uses ionizing radiation with a relatively higher dose compared to conventional radiology. Therefore, radiation dose optimization is necessary to ensure patient safety without reducing image quality. One of the optimization efforts is the establishment of a local Diagnostic Reference Level (DRL). This study aimed to analyze radiation doses in adult non-contrast head CT Scan examinations based on the Computed Tomography Dose Index Volume (CTDIvol) and Dose Length Product (DLP) values, and to establish a local DRL at RSUD Kota Salatiga using the Philips Ingenuity 128 CT Scanner.

This research employed a quantitative descriptive method with an observational approach using radiation dose data from 50 adult patients undergoing non-contrast head CT Scan examinations during January 2026. CTDIvol and DLP data were analyzed to obtain the minimum, maximum, average, and 75th percentile values as references for determining the local DRL.

The results showed a CTDIvol value of 38.7 mGy. The lowest DLP value was 811.4 mGy·cm, the highest was 1263.7 mGy·cm, the average was 1009.598 mGy·cm, and the 75th percentile was 1133.275 mGy·cm. The obtained CTDIvol and DLP values were still below the Indonesian Diagnostic Reference Level (IDRL) reference values issued by BAPETEN in 2021. The 75th percentile values of CTDIvol and DLP can be used as the local DRL at RSUD Kota Salatiga to support radiation protection optimization and improve the quality of radiology services.

Keywords: *local DRL, CTDIvol, DLP, non-contrast head CT Scan, radiation dose.*