



*International Conference on*  
**MULTIDISCIPLINARY  
APPROACHES IN SCIENCE**  
*2021*



*Conference Proceedings*

*Faculty of Science, University of Colombo,  
Sri Lanka*

## Estimation of Effective Radiation Dose in 16 Slice Computed Tomography Neck Examination

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Computed Tomography (CT) is the most essential imaging technique and widely used in various diagnostic radiological and interventional procedures in Sri Lanka. Because of the increased demand for CT imaging procedures, evaluating patient dose is very important to achieve the maximum benefits over the unnecessary radiation exposure. The main purpose of this work was to estimate the effective dose (ED) for neck CT examination protocols (C-Spine and Neck) performed with a 16 slices CT machine at Base Hospital–Karawanella. 172 patients' data including Volumetric CT Dose Index (CTDIvol), Dose Length Product (DLP), scan parameters and patient demographic data of each examination were collected for a period of one year. These results were compared descriptively and compared with available data. Correlation between adult neck scanning volume (ANSV) and neck scanning length (ANSL) with DLP for each protocol was calculated by using Pearson's correlation analysis. The achievable doses (AD) and Diagnostic Reference Level (DRL) values of calculated ED were 6.2 mSv and 6.8 mSv respectively for single-phase C-Spine protocol and 12.6 mSv and 13.8 mSv respectively for the dual–phase scan. For the neck protocol, AD and DRL values of calculated ED values were 5.7 mSv & 7.8 mSv and 11.6 mSv & 15.8 mSv for dual-phase and single-phase respectively. The p-values of all comparisons were less than 0.05. A strong positive correlation between ANSV and ANSL with DLP were obtained. The results obtained in this study were considerably higher than the data obtained from literature. This study will lead to meaningful standardizing optimization of neck CT examination protocols and will provide a starting point for further institutional analysis of CT radiation doses.

**Keywords:** Computed Tomography, Effective Dose, DRL

**Proceedings of the International  
Conference  
on  
Multidisciplinary Approaches in Science  
(ICMAS) - 2021**

November 24 – 26, 2021

Colombo, Sri Lanka



**Faculty of Science  
University of Colombo**

Proceedings of the International Conference on Multidisciplinary Approaches in Science  
(ICMAS) – 2021, Electronic Version  
© Faculty of Science

ISBN: 978-624-5873-15-9

**Cover designed by**  
Udana Wetthasinghe

**Printed by**  
Colombo University Press  
94, Cumarathunga Munidasa MW,  
Colombo 03, Sri Lanka.

**Published by**  
Faculty of Science, University of Colombo