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**ABSTRACT BOOK**

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## A Preliminary Study on Tumour Necrosis Factor-Alpha (TNF- $\alpha$ ) Level in COVID-19 Patients

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**Introduction:** Cytokine storms have a substantial role in developing lung injury, multiorgan dysfunction, and mortality in persons afflicted with COVID-19. Cytokine storms have been associated with various immune-active molecules, such as interleukins and tumour necrosis factor-alpha (TNF- $\alpha$ ). Therefore, this cross-sectional study aimed to evaluate the level of tumour necrosis factor-alpha (TNF- $\alpha$ ) in COVID-19 severity. **Materials and Methods:** This study involved 188 COVID-19 patients aged 18 to 80 who were hospitalised at Hospital Raja Perempuan Zainab II Kelantan between January 2021 and December 2021. The TNF- $\alpha$  serum levels were analysed using the ELISA method and measured at 450 nm using the Skant RE microplate reader. The patients were classified into five clinical stages based on the Annex 2e guidelines published by the Ministry of Health, Malaysia; they were further classified by severity as mild to moderate disease (stages 1-3) or severe to critical illness (stages 4-5). **Results:** The study included a total of 188 COVID-19 patients with a mean (SD) age of 45.52 (16.10) for mild to moderate and 57.14 (13.71) for severe to critical. There is a significant difference between age and gender for both groups ( $p$ -value < 0.01) and ( $p$ -value = 0.002), respectively. The TNF- $\alpha$  serum levels in the stages 4-5 group are higher as compared to the stages 1-3 group with median (IQR) of 132.63 (108.38) and 116.31 (134.8) respectively, but they were statistically insignificant ( $p$ -values = 0.078). **Conclusion:** The levels of TNF- $\alpha$  in the serum of COVID-19 patients in the mild to moderate group and those in the severe to critical group exhibited a statistically insignificant increase. This preliminary study

suggests that TNF- $\alpha$  may be used as a potential immune active marker of severe SARS-COV-2 infections. A larger scale study is required to confirm this.

Keywords: COVID-19; mild to moderate; severe to critical; TNF-Alpha