H1 Stress Evaluation in Indonesian Civil Aviators

Meta Y. Candra, MSc, Faculty of Dentistry Universitas Indonesia, Jakarta 10430, INDONESIA; Nurtami Soedarsono, PhD, Faculty of Dentistry Universitas Indonesia, Jakarta, DKI Jakarta 10430, INDONESIA; Dewi F. Suniarti, PhD, Faculty of Dentistry Universitas Indonesia, Jakarta 10430, INDONESIA; Febriana Setiawati, PhD, Faculty of Dentistry, Jakarta 10430, INDONESIA*

Learning Overview: Flight safety needs to be improved. After attending this presentation, attendees will understand how the work of a civil aviator is a formidable challenge and stress risk. A biological screening to evaluate civil aviators' stresses to minimize the human risk factor will be reported in this presentation.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by encouraging preventive measures to keep civil aviators from being incapacitated and methods to investigate a human risk-factor involvement in an aviation incident. It is important to take notice at this issue and develop early physical and physiological assessments on civil aviators.

Due to the high level of civil aviation incidents in Indonesia from 2010 to 2017, it is necessary to evaluate human factor as one of the main culprits. A civil aviator's stress condition can arise from aviation environments, such as altitude, noise, communication, and vibration. A civil aviator, who operates a short-haul flight in Indonesia (an archipelagic country), will routinely have many flying hours that may turn into a stressor. It was predicted that an aviator's stress is caused by fatigue. The International Civil Aviation Organization (ICAO) uses the Fatigue Severity Scale (FSS) method to measure the level of clinical fatigue in a person by using nine questionnaires with a score of 1 to 7 for the level of fatigue.

This study measured the level of clinical fatigue using the FSS on aviators who do not fly sectors and have a total flight time of less than 6,624 hours, and those who are on a sector flight and have a total flight time of more than 6,624 hours. There are five proteins secreted during stress that can be used as stress biomarkers: cortisol, lysozyme, immunoglobulin A (IgA), chromogranin, and alpha amylase. This study evaluated the stress condition of Indonesian civil aviators using salivary alpha amylase and blood cortisol as biomarkers on both groups.

From this study, it was concluded that stress on civilian aviators can occur because of the high level of fatigue caused by the total number of flying hours that exceed the specified limits. In addition, more than two sector flights within 24 hours also caused aviator fatigue. This fact has been demonstrated by the increased salivary alpha amylase and blood cortisol levels and FSS scores in the aviation group with total flight hours exceeding 6,624 hours and who performed sector flights.

Fatigue, Stress, Civil Aviator