Occupational health in aviation: a cross-sectional study of barodontalgia among Malaysian air force pilots

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Abstract

Background: Barodontalgia, or pressure-induced dental pain, poses a significant occupational risk to pilots, potentially impairing flight performance and safety. The present study aimed to determine the prevalence of barodontalgia among Malaysian military pilots, identify the associated risk factors, and examine its relationship with flight performance. Methods: A cross-sectional study employing a census approach was conducted among active Malaysian military pilots between 2021 and 2022 using a modified questionnaire. The questionnaire underwent content validation by five experts and was pre-tested on 10 pilots. Data collection was performed through an online survey. Statistical analyses included descriptive and inferential statistics (Chi-square, t-tests, ANOVA, logistic regression, and ANCOVA), with results considered significant at $p < 0.05$. Results: The questionnaire demonstrated excellent content validity. Among the 190 pilots surveyed (63% response rate), 12.1% experienced

barodontalgia, most commonly at altitudes of 6,000–10,000 feet, with worsening symptoms at 0–5,000 and 11,000–15,000 feet. Transport pilots reported the highest prevalence (43.5%), and the most common symptoms were headaches (43.5%) and loss of concentration (34.8%). Age was negatively associated with barodontalgia (β=-0.1505, p = 0.023), with younger pilots more likely to be affected. Meanwhile, years of service, aircraft type, smoking, dental awareness, and brushing frequency showed no statistically significant associations (p > 0.05). Gender was a significant predictor when controlling for service years (p = 0.048) but not when controlling for age (p = 0.067). Conclusion: Barodontalgia is an occupational concern for Malaysian military pilots, particularly among younger pilots. Preventive dental care, targeted treatment, and regular check-ups are essential to mitigate risks and maintain operational readiness. © The Author(s) 2025.

Author keywords

Altitude sickness; Dental care; Military personnel; Occupational health; Pilots

Indexed keywords

MeSH

Adult; Aerospace Medicine; Aviation; Cross-Sectional Studies; Female; Humans; Malaysia; Male; Middle Aged; Military Personnel; Occupational Diseases; Occupational Health; Pilots; Prevalence; Risk Factors; Surveys and Questionnaires; Toothache; Young Adult

EMTREE medical terms

adult; aerospace medicine; airplane pilot; aviation; cross-sectional study; epidemiology; female; human; Malaysia; male; middle aged; military personnel; occupational disease; occupational health; prevalence; questionnaire; risk factor; tooth pain; young adult

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