Knowledge, practices and regulatory challenges associated with portable handheld dental x-ray devices utilization among Indonesian dentists: A cross-sectional study

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Abstract

Objective: This study aimed to assess the knowledge of Indonesian dentists regarding the usage, safety practices, and regulatory frameworks for portable handheld dental X-ray devices. Material and Method: A descriptive, cross-sectional study was conducted among dentists in Surabaya, Indonesia, between June and October 2024. A total of 1,770 dentists were invited to participate via an online questionnaire, with 184 completing the survey (10.4% response rate). The validated questionnaire assessed knowledge across 12 fields, each with subpoints. A Likert index percentage formula was used to quantify knowledge, and logistic regression analysis explored correlations between knowledge levels and professional characteristics. Results: Dentists' overall knowledge was moderately low (44.9%). Ownership of handheld devices was associated with lower knowledge of

licensing requirements (OR=0.089, p=0.002), radiation protective equipment (OR=0.122, p=0.016), and acrylic shielding plates (OR=0.214, p=0.041). Years of practice positively correlated with interest in purchasing devices (OR=2.230, p=0.020). Conclusion: Despite their benefits, portable handheld dental X-ray devices pose risks without proper training and adherence to regulations. Targeted education, standardized training, and regulatory clarity are essential to ensure safe and compliant use in clinical practice.

Author keywords

Dental radiography; Diagnostic; health services; radiation safety; safety regulations; x-rays

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