

# Caries diagnosis from bitewing radiographs: a cross-sectional study:

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The aim of this cross-sectional study was to determine dental undergraduates' ability to identify and classify caries on bitewing radiographs (BWrs) compared to experienced General Dental Practitioners (GDPs) at the Bristol Dental Hospital (BDH). Current radiology teaching at the BDH does not occur until the fifth year of study. The results obtained from this study were used to determine whether radiological learning objectives need to be achieved earlier in the undergraduate dental curriculum.



The ability of students to identify and classify caries from ten digitized BWrs was recorded using a Caries Diagnosis Exercise, developed on Microsoft PowerPoint. A single tooth on each set of the ten BWrs was selected for subjects to identify and classify caries. A caries classification diagram and key was developed and used throughout the Caries Diagnosis Exercise. Individuals were able to anonymously assess BWrs for caries and voluntarily record their answers using the interactive participant feedback software Turning Point Version 5.3.1. Agreement between GDPs and clinical undergraduates to identify and classify caries was statistically analysed using Cohen's Kappa Coefficient, and their confidence was assessed using Chi-square Test.

A total of 145 participants were recruited for the study. Kappa analysis between GDPs and Year 2, Year 3 and Year 4 showed little agreement between GDP and student responses. Confidence of responses increased with progression through clinical undergraduate years. However, a Chi-squared test showed no statistically significant difference in confidence for GDPs compared to Year 2, Year 3 and Year 4.

While results showed some evidence of student ability to identify and classify caries compared to the 'gold standard', variation in clinical experience and inter-clinician variation are nevertheless valid explanations for the limited agreement seen in this study. Students showed little confidence in their ability to identify and classify caries when they begin their clinical practice in Year 2, which improves as they gain more clinical experience. Therefore, offering formal radiology teaching earlier in the undergraduate curriculum, prior to treating patients, would be beneficial.