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The evaluation of education and experience effects on detection of interproximal caries with or without cavity on digital bitewing radiographs

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Object: Dental caries is one of the most prevalent chronic diseases of human worldwide. Carious lesions start with superficial enamel demineralization and, if diagnosed early enough, can be treated with less-invasive techniques such as oral hygiene control and fluoride therapy. If detected early noninvasive treatment can be effective .This study assessed the Evaluation of education and experience effects on detection of interproximal caries with or without cavity on digital bitewing radiographs.

Method and Materials: This experimental study was conducted on 50 human teeth (28 premolars and 22 molars) extracted in dental offices. The teeth were mounted in rose wax and tissue. Digital bitewing radiographs were obtained for all teeth. The digital radiographs of the blocks were viewed by four groups of third year dental students, sixth-year (senior) dental students, maxillofacial radiology, and general dentists with 5 years of clinical experience. The teeth were sectioned with Mecatome and were observed in stereomicroscope to evaluating caries lesion. The results of stereomicroscope were compared with observers opinions. Data were analyzed using SPSS16 software.

Results: The results demonstrated that sensitivity for radiology residents was a higher than those for the other groups(41.73 %), indicating a high rate specificity was for maxillofacial radiology(96.45).the highest positive predictive value was seen in maxillofacial radiology(58.08).and the highest negative predictive value was seen in maxillofacial radiology(90.53). The rate of false-positive diagnoses was 71.66 % among third-year dental students, which was the highest among the groups. The frequency of false-negative diagnoses was 82.58 % for general dentists, which was the highest among the groups.

Conclusion: Most of the results show the positive effect of training and experience on the more accurate diagnosis of proximal caries

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