Quantification of Dental Caries by Osteologists and Odontologists – A Validity and Reliability Study

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ABSTRACT As in modern populations, dental caries in early populations is linked to diet and general health. In order to record not only advanced disease states with frank cavitation of teeth but also early lesions, indicating the presence of the disease in a population, it is important that the archaeologist can correctly detect and classify lesions of varying severity. The present study compares and contrasts quantification of dental caries by osteologists and odontologists. Four osteologists and four odontologists undertook visual and radiographic inspection of 61 teeth from three different sources: medieval, 19th century and modern. Separate sets of criteria were applied to disclose observer confidence in detecting a lesion and in estimating lesion extent. For validation of visual assessments, the teeth were sectioned. Radiographic assessments were validated by a specialist in dental radiography. The results disclosed that the odontologists in general showed greater sensitivity than the osteologists, correctly identifying carious lesions, but the osteologists had higher specificity, correctly identifying healthy teeth. Thus, the osteologists tend to overlook carious lesions (under-diagnosis), while the odontologists tend to incorrectly record lesions in healthy teeth (over-diagnosis). For both osteologists and odontologists, correct assessment was poorer for radiographs than for visual inspection.

Key words: caries, identification validity, identification reliability, visual and radiographic inspection, osteologists, odontologists