

LETTER TO THE EDITOR



Reproducibility between oral radiologists and general dentists with regards to radiographic diagnosis of caries: methodological issue

Sir,

We were interested to read the paper by Pakbaznejad Esmaeili E and colleagues published in the Apr 2018 issue of *Acta Odontol Scand* [1]. They aimed at assessing the reproducibility of diagnosis between specialists in oral radiology and general dentists with regards to caries lesions based on dental panoramic tomography (DPT) of adults. About 100 DPTs analyzed and reported by 42 general dentists, then analyzed independently by two specialists in oral radiology with respect to caries lesions in the premolar and molar areas using radiographic criteria established for caries diagnosis. Level of agreement between specialists and general dentists was assessed by the kappa coefficient [1]. They reported that 61% of the caries lesions on proximal surfaces of premolars and molars observed by specialists went unobserved by general dentists. Kappa value for specialists was 0.85 and for each specialist and general dentists, respectively 0.48 and 0.44.

First of all, it is crucial to know that there is no value of kappa that can be regarded universally as indication good agreement. Two important weaknesses of kappa to assess agreement of a qualitative variable are as follows. First, it depends on the prevalence in each category, which means it can be possible to have different kappa values having the same percentage for both concordant and discordant cells. Table 1 shows that in both (a) and (b) situations, the prevalence of concordant cells are 90% and of discordant cells, 10%; however, we get different kappa values (0.44 as moderate and 0.80 as very good, respectively). Kappa value also depends upon the number of categories [2–6].

They concluded that the reproducibility between specialists in oral radiology and general dentists for detecting caries in DPTs was low. Due to the above mentioned limitations of kappa value to assess reproducibility, such a conclusion may be a misleading message [2–6].

In this letter, we discussed limitations of kappa value to assess reproducibility. Therefore, any conclusion especially in clinical practice should be supported by the above mentioned statistical and methodological issues. Otherwise, mismanagement of the patients cannot be avoided.

Table 1. Limitation of K to assess reproducibility of two observers' diagnoses with different prevalence in the two categories.

		Positive	Observer 1 negative	Total (%)
Situation (a)	Positive	85	5	90
	Negative	5	5	10
	Total	90	10	100
Situation (b)	Positive	45	5	50
	Negative	5	45	50
	Total	50	50	100

Disclosure statement

No potential conflict of interest was reported by the authors.

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