

Does time pressure impact on dentists' diagnostic performance?

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A Commentary on

Plessas A, Nasser M, Hanoch Y, O'Brien T, Bernardes Delgado M, Moles D.

Impact of time pressure on dentists' diagnostic performance. *J Dent* 2019; **82**: 38–44. DOI: 10.1016/j.jdent.2019.01.011. PubMed PMID: 30711602.

Abstract

Design A randomised blinded crossover trial.

Sample selection Forty local primary care dentists in the south west of England were recruited using a variety of methods. Dentists from NHS, mixed practice, private practice and community services were included. Participants were allocated to four balanced experimental test groups of equal numbers. Block randomisation was used for allocation. The principle researcher was blind to which group a participant was from. The trial was completed using a purpose-made weblink which contained a clinical decision-making exercise. The participants repeated the exercise under increasing time pressure.

Data analysis Data analysis was performed independently by the principle researcher. The diagnostic sensitivity and specificity of the decisions made were calculated and statistical analysis performed. This included paired t-tests to assess differences in self-reported stress and difficulty when the exercise was performed under different time constraints. Mann-Whitney U tests were used to compare differences in the sensitivity and specificity values achieved under the varying time constraints.

Results One hundred percent ($n = 40$) of GDPs who responded to the invitation were eligible and included in the study. Results showed a statistical difference ($p < 0.001$) of both perceived difficulty of the task, and stress experienced when under time pressure. Results showed diagnostic sensitivity to pathological features was significantly worse ($p < 0.001$) under time pressure. Conversely, the specificity of identification of pathology free sites were not affected by the different circumstances.

Conclusions Time pressure negatively impacted diagnostic performance and decreased diagnostic sensitivity for all pathological features. Sensitivity to caries-related pathology and periodontal disease-related pathology deteriorated by 40% and 67%, retrospectively.

Commentary

Dentistry is recognised as being a highly demanding and stressful profession, with attributes commonly associated with stress transferable to the role. This includes long working hours, heavy

Practice points

- Time pressure may be an important factor when reviewing radiographs for diagnosis. However, there is a lack of reliable evidence to suggest whether time pressure leads to stress and therefore misdiagnosis of dental radiographs.
- Under time pressure a robust radiographic report *proforma* may assist to prevent missing important pathology.

administrative loads, high patient expectations and time pressures, the latter being associated with fatigue, burnout and low job satisfaction.^{2,3}

It is established that correct diagnosis is paramount in ensuring patients' welfare and minimising medico-legal implications. Previous studies of diagnostic performance in medical practitioners when they are subjected to time pressure, have shown that it became suboptimal when time was short. This has undesirable effects not only on patient care, but also on healthcare providers' wellbeing.⁴

This randomised crossover trial aimed to evaluate whether time pressure negatively impacted on dentists' diagnostic abilities by assessing the effect on diagnostic sensitivity and specificity in relation to time pressure.

Conducted in a methodologically appropriate manner, this multicentre, four-armed design used primary care dentists who responded to local adverts. All participants received the same intervention, the crossover design reduced the confounding of variants as all participants served as their own control. Bias was prevented by block randomisation and researcher blinding. However, confounding factors such as participants' workplace, age, recruitment method or experience were not accounted for by stratification, or other methods. Blinding of participants to the time pressure variable was obviously not possible.

Dropout rate was 0%, excluding attrition bias; however, no power calculation had been performed and the number of participant was relatively small. This, in addition to the limited geographical area from which participants were drawn, perhaps reduces the potential generalisability of the results. Also, as the participants were volunteers, the sample is probably not representative of all dentists.

The authors investigated the dentists' self-rated stress and perceived difficulty of the task using a visual analogue scale (VAS). The data showed a statistically significant difference ($p < 0.001$) in the VAS scores for perceived stress under the time-pressure (Mean = 55.78, SD = 25.74) compared to no time constraints (Mean = 10.73, SD = 12.06) condition. Likewise, participants rated the task significantly more difficult ($p < 0.001$) under the time pressure condition (Mean = 65.43, SD = 25.11), compared to the no time constraints (Mean = 14.83, SD = 12.63). These are important findings.

GRADE rating



Aforementioned concerns would suggest that the strength of evidence from this randomised crossover study is likely to be low. However, the paper provides a beneficial, thought-provoking summary that fits with conventional knowledge around stress and time pressure and deterioration of diagnostic performance. Nevertheless, the results should be interpreted with caution. Due to the insufficiency and heterogeneity of available publications, future high-quality randomised clinical trials with a higher power, recruitment from a wider catchment area and more robust bias control, are needed to generate stronger evidence.

References

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