

Summary of: Dental practitioners and a digital future: an initial exploration of barriers and incentives to adopting digital technologies

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VERIFIABLE CPD PAPER

FULL PAPER DETAILS

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Background Digital technologies are proliferating into dental practices. While their technical attributes have often been studied, it remains unclear why some dentists adopt and use these technologies more than others. **Aim** To explore the incentives for and barriers against accepting and using digital dental technologies **Method** Eleven semi-structured qualitative interviews were conducted with experts in dentistry, dental technology and dental education in the Netherlands. **Results** Dentists' acceptance and use of digital technologies are to varying degrees driven by the perceived advantages over analogue methods, perceived influence on treatment quality, dentists' personal and professional orientation, and social influence from peers and external groups. These effects are complemented by personal and dental-practice characteristics. **Conclusions** The findings suggest that there are large differences in motivation to adopt and use digital technologies between early adopters, late adopters and non-adopters, which should be examined in greater detail. We recommend that educators, dentists, and representatives of the dental industry who deal with the diffusion of these technologies take account of dentists' widely different attitudes to digitalisation.

EDITOR'S SUMMARY

There was a time when dentistry was only performed during daylight hours. It wasn't due to a curfew, or a preference for a short working day but because without gas, and later electric, light it just was not possible to see into the mouth. Apart from changing clinical practice forever, the arrival of electricity had a plethora of other unanticipated consequences.

Electricity is so commonplace that we would not now even consider it as technology and yet I am sure that at the time it became available there would have been suspicion about investing in it, resistance (no pun intended) to its introduction and belief that it really would not change the way things were done and had always been done.

Yet these same reactions are broadly similar to the reluctance to embrace 'modern' or perhaps we should term it current technology as it applies to den-

tistry. This paper is interesting not only in itself but also in the way it prompts us to consider our own relationship to adopting elements of the brave new digital world. For while, as acknowledged, the work was undertaken in the Netherlands and with a small and selected sample I suspect that the results are far more universally applicable since our experience of human nature suggests that such reactions are widely expressed.

Admittedly the difficulty lies in knowing which innovations are here to stay and which might be passing fads or be superseded, but in the same way that it is unthinkable not to have electricity in order to be able to carry out the full range of dentistry, so in years to come it will seem similarly unbelievable that we fail to embrace more readily the technology that now surrounds us, for whatever reasons. It is always the unimaginable consequences that are the most profound though; no need to site the chair near

a window for daylight and no need any longer to view the computer screen in the dark.

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 215 issue 11.

Stephen Hancocks

Editor-in-Chief

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IN BRIEF

- Highlights that dental practitioners face technological innovations, which imply changes to everyday clinical practice.
- Suggests dental practitioners differ in adoption of technological developments depending on innovation perception, personal, practice and social factors.
- Understanding the barriers and incentives to the use of digital dental technologies is crucial for anticipating future developments.

COMMENTARY

There is no doubt that digital technologies have changed the way we practice and in particular the way dental laboratory work is produced following the advent of CAD-CAM. It is also true there are greater opportunities to deliver dental education through the various digital advancements, often making education more interactive. It is highly likely that these advancements will continue in the future; changing the way many of us were taught at dental schools. This means that many will probably need to adapt to these changes to improve the efficiency and productivity of their clinical work, and for those involved in education possibly change their teaching techniques to enable the future generation of dentists to be prepared for the digital era.

This paper set out to identify why some dentists embrace digital technological advancements in dentistry whilst others are slow to do so. The study used a small number of experts in the fields of clinical dentistry, dental technology and dental education to address this issue.

This paper by van der Zande *et al.* aimed to explore which factors influence dentists' decision making on accepting and rejecting digital technologies in daily dental practice. To do this it used a series of semi-structured interviews to identify themes that could be explored in a future study amongst general dental practitioners. The interviews explored four main topic areas: (1) observed and expected developments, (2) ways in which

dentists deal with dental technologies, (3) barriers and incentives and (4) influences of technology on daily practice. The study included only 11 participants, six of whom were dentists.

The study identifies that perceptions of their advantages were generally financial or based on time saving. Barriers to change included concerns that the technology may not last and therefore there may be a reluctance to be one of the first to make the change. The size of the dental practice was also considered a potential barrier to making such changes. The influence of peer recommendation was also seen to be an important factor in the decision-making processes. This paper highlighted that one important factor that acts as a barrier is knowledge of how new technologies will influence quality of care. This is clearly an important factor and with technological advancements moving at a fairly rapid rate it would be important for clinicians to ask such questions of new products or techniques.

Whilst this paper identifies barriers it does not inform the reader if these can be generalised to a large group of dental practitioners. The paper is also set in the Netherlands, so would these barriers be as influential in the UK or other European countries? I suspect the follow-up study will produce some interesting data, however, this will probably be of more benefit to commercial companies rather than individual dentists. The digital era is here to stay and needs to be embraced but not at the cost of quality patient care.

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AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

We wondered what the consequences are of digital developments for dentistry and why the implementation of digital technologies varies widely between professionals. It became clear that this is a rather scarcely explored field of study. Insight into the specific professional situation of dental practices is largely lacking in the wider literature on organisational theory. Our objective was to find out how different experts in dentistry view digital developments and what changes these might involve for the profession. We focused on decision-making among dental practitioners and wanted to explore which factors influence such decision-making.

2. What would you like to do next in this area to follow on from this work?

In an upcoming study, we wish to further investigate the themes that emerged from this study. A representative sample of Dutch general dental practitioners was approached with a questionnaire, aiming to identify differences between early, later and non-adopters of dental technologies. We wish to investigate practice and personal characteristics in relation to digital adoption in more detail. Following on from this questionnaire study, the next step will be more in-depth investigations of the effects of using digital technologies on work practices. In this way, the focus will be on what happens after adoption of technologies, whether they continue to be used or not and what changes are caused by implementing technologies.