REVIEW ARTICLE

The viability of a diagnostic role for dental hygienists and dental therapists in the UK: A review of the literature

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Abstract

Dental therapists (DTs) and dental hygienists (DHs) are registered in the UK by the General Dental Council. They have a defined scope of practice and this allows them to see patients by direct assess, undertake clinical examinations and tests to formulate a diagnosis and care plan. This review will focus on the viability of a diagnostic role for these highly trained health care professions within the UK, with reference to national and international literature.

Several key themes consistently appear in the literature; acceptability, examination & diagnostic skills, financial impact, clinical knowledge and safeguarding. These themes, act either as barriers or facilitators or both in this defined role of direct access.

This review concludes patient's acceptance of DHs and DTs and that they have significant examination and diagnostic skills. Despite the potential cost saving for either, the patient, insurer or the UK National Health Service when they are utilised in this role of undertaking oral health assessments, dentist's acceptance of DH and DTs continues to serve as a barrier.

More primary research in the UK and internationally is required to provide a stronger foundation for support and enhancement for this front-line role.

1. Introduction

The aim of this positional paper is to review the viability for dental hygienists (DHs) and dental therapists (DTs) to perform as front-line clinicians undertaking oral health assessments in the UK. Further, the paper will discuss the barriers and facilitators in the utilisation of these mid-level providers in this role, with reference to the international literature where relevant. Both categories of dental professionals are registered with the UK General Dental Council (GDC) and work within a defined scope of practice with direct access [1, 2]. There are 7660 hygienists and 3700 therapists registered with the GDC in 2020. These are highly trained individuals currently qualifying with a bachelor's honours degree or diploma, and should be recognised and successfully utilised as front-line clinicians for carrying out oral health assessments, by patients and fellow health professionals. From the literature, several key themes consistently appear and include: acceptability, examination & diagnostic skills, financial impact, clinical knowledge and safeguarding. These, which act either as barriers or facilitators or both in this defined role, will be discussed in detail. Deficiencies in our knowledge and where further research is required to support these professionals as front-line clinicians are identified in this review.

2. Acceptability

The majority of studies have identified the positive acceptance of the dental hygienist and dental therapist [3 - 8]. However, acceptance of the therapist role in children's care was found to be lower in the UK [4,6] and in the USA [8]. This is surprising considering the DTs' historical role in paediatric dentistry around the world [9] and their abilities to provide a wide range of paediatric dental treatments [2]. This can be explained by the lack of awareness of these professionals by both patients and dentists [4,5,10,11]. However, it is encouraging to see that patients recognised the potential to save dentist's clinical time by using DTs in a diagnostic role [5,7]. More research is required to identify reasons why patients and parents of children may decline dental therapy treatment as well as identify the acceptance of DTs through the perspective of children. Patient acceptance appeared to be influenced by their trust in the dental team [5] and their approval by dentists [5,8]. This presents as a barrier, despite the acknowledgment that DHs' and DTs' full scope of practice would relieve dentists' time and thus improve patient access to dentistry [10 - 14].

Unfortunately, dentists whose traditional role as team leader, have been shown to display a mixed view of DHs and DTs. In the UK, Ross & Turner's study [14] reported that dentists have negative acceptance of DHs and DTs taking a diagnostic role, however, reliability and validity of the study was limited due to a low response rate, and therefore the potential level of nonresponse bias. Other studies [14, 15] have reported dentists' perceived threat to their control over treatment, financial issues and inter-professional employment. Additional reasons for dentists' negativity towards DHs and DTs, include concerns over their clinical diagnostic abilities and potential patient safety [12, 13]. As with patients, dentists were found to lack knowledge of the training and clinical remit, particularly of

DTs [10 - 16]. The situation in the USA is patchy with only a few states having legislatively supported the training and practice of DTs [17], thus possibly explaining lower levels of knowledge amongst USA dentists [13, 15]. This explanation however does not apply to UK dentists, where DTs have been trained and have practiced since the 1970s, although in low numbers. More research is required to assess dentists' attitudes towards DTs' and DHs' roles as front line clinicians, particularly with the expansion of these registered professionals.

3. Examination and diagnostic skills

To act as a front-line clinician, i.e. the individual who first assesses a patient and formulates a diagnosis and care plan, DHs and DTs must be competent and knowledgeable in the examination and diagnosis of dental disease and head and neck pathology. In the UK they are already diagnosing dental diseases autonomously within their scope of practice and the majority are reported to be confident in this role [18]. Undergraduate student DHs and DTs in the UK are trained to "assess and manage" dental diseases, so confidence in examination and diagnosis is likely to increase [19]. Comparative diagnostic test accuracy studies have found similar abilities between DHs and dentists in diagnosing periodontal conditions [20, 21] and between DTs and dentists in caries diagnosis [22 - 26] and potential oral malignancy [27]. However, DHs and DTs have shown a potential to over diagnose periodontal diseases [21, 24, 28]. This finding may be due to the use of dentists' diagnosis as the benchmark, a potential limitation to comparative studies. This was particularly highlighted by Macey et al., [24] who reported that DHs and DTs recorded lower levels of specificity when diagnosing periodontal conditions. Macey et al., [24] also suggested that due to their extended training in treating periodontal conditions, DTs and DHs may be more accurate than dentists at diagnosing periodontal conditions. However, it has also been reported that DHs may use "irrelevant findings" to diagnose disease [25] in a study of caries diagnosis in a school setting, which reported DTs to have equal or higher inter-rater reliability with a "gold standard" dentist trained and standardised for epidemiology studies; than other dentists. Overall, the literature supports the notion that DHs and DTs are competent in examination and diagnosis, thereby supporting the use of these mid-level providers as front-line clinicians. However, the scope of practice and training of DHs and DTs varies around the world [9], and so these findings cannot be generalised. In addition for further changes to the workplace pattern of care in UK dentistry to be supported, more research in this area is required.

4. Financial Impact

Through operational modelling, it has been identified that there are cost-saving [29 - 31] and dentist time saving benefits in the delegation of dental examinations to DTs in the UK [30, 31]. These benefits could lead to the increase of access to care for UK patients without deterioration of patients' oral health [31]. However, a limitation to the modelling is the cross-sectional "snap-shot" data used as inputs, for example, dental therapist salaries. With the expansion of the dental hygienist and dental therapist roles to include diagnosis

and radiographic interpretation of dental images, it is feasible that professional indemnity and GDC registration fees would increase, with the consequence that DHs and DTs are likely to demand higher remuneration. In addition, patients may expect to pay less to see mid-level providers in this role [4, 8]. This would diminish potential cost savings. A recent study has explored the use of DTs in general practice through testing different case study scenarios in Wales [16]. They highlighted the importance of a workable viable business case being a significant influencing factor in the employment of DTs, as practices must operate both as viable businesses and healthcare providers. The study further reported that current NHS remuneration policies prevent DTs full utilisation in a financially viable NHS practice setting [16]. Further research therefore into these factors and how they may affect these models will be required to further improve modelling of effective remuneration and cost of practicing.

5. Clinical Knowledge

To create appropriate care plans DHs and DTs require a comprehensive understanding of potential comorbidities and medications that patients present with, particularly with an increasingly ageing population [32, 33]. USA studies found DHs had a good knowledge of HIV [34] and chemotherapy, but poor knowledge of hormone therapy [35], tobacco cessation [36] and eating disorders [37]. Limited studies have been reported from the UK. However, in order for UK dental, DH and DT students to be eligible for registration with the GDC, they must meet the learning objectives within the 'Preparing for Practice' guidance, which includes knowledge of general and systemic diseases relevant to dentistry [38]. Further research into whether this guidance is being met to a sufficient standard would identify whether DHs and DTs knowledge of comorbidities or risk factors prepares them for a front-line diagnostic and care planning role.

6. Safeguarding

Safeguarding is a significant role for all healthcare professions. Chadwick et al., [39] reported comparable safeguarding practices between DTs and dentists. However, some DT participants had identified safeguarding concerns but did not progress to reporting [39]. To have a front-line role any professional must be confident in reporting safeguarding concerns where they suspect them. More research and training are required to ensure not just DHs and DTs but all members of the dental team are meeting this imperative role of health care professionals.

7. Conclusion

This review has highlighted and explored the potential facilitators and barriers to the use of DHs and DTs in oral health diagnosis and care planning within the UK, with reference to the international literature. Within the limitations of this review these papers identified that overall:

(I) Patients' acceptance of DHs and DTs
(II) Mid-Level providers' examination and diagnostic abilities
(III) The potential cost-savings, which facilitate their role in oral health assessments.

(IV) Dentist's acceptance of DHs and DTs (although there is an acknowledgement of how DHs and DTs can improve access to dentistry) continues to serve as a barrier.

More primary research in the UK and worldwide is required in the themes identified, to provide a stronger foundation for support and enhancement for this front-line role. This in turn may improve dentists' confidence in DHs and DTs and change their acceptance of their potential in a diagnostic role. It was surprising to see that awareness of DHs and particularly DTs and their training was low amongst dentists and patients; and thus more focus on increasing this awareness is required within the profession and the public.

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