



The use of dental therapists as examiners in dental epidemiological surveys

R.S. Patel¹, A.J. Sprod², P. Harwood³ and C.S. Drugan¹

¹Dental Public Health, University of Bristol, UK; ²Somerset Primary Care Dental Service, Bridgwater, UK; ³Public Health, NHS Somerset, Taunton, UK

Practitioners in Dental Public Health often need to find more cost-efficient ways of providing services, whilst assisting with the personal and professional development of colleagues. This paper gives an example of how these competencies were deployed in relation to an epidemiology programme.

Key words: dental staff, therapists, dental auxiliaries, sentinel health event, epidemiological surveys

Initial impetus

Dental public health practitioners, in seeking to promote oral health and prevent and control dental diseases, inform their planning with epidemiological surveys of oral health and needs. In England, surveys within the NHS Dental Epidemiology Programme (NHS DEP) follow a rolling programme and often involve large numbers of examinations by dentists usually employed by community dental services. The dental examinations are resource intensive as these dentists are costly and the examinations take time (Kwan and Pendergast, 1998). To reduce the costs of surveys and increase skill mix, a number of countries have extended the role of dental auxiliaries as examiners in epidemiological surveys (Wang and Riordan, 1995). Although the extent to which they are used varies internationally, the rationale for using skill-mix focuses on the potential for increasing access and efficiency of services (Ohrn *et al.*, 1996).

The use of dental auxiliaries in epidemiological surveys in UK has been contemplated over the last two decades. Although successful calibration has been achieved (Kwan and Pendergast, 1998), no epidemiological programme has been delivered using dental therapists in data collection. The main barrier has been the agreement of the UK General Dental Council (GDC). In previous years the GDC has taken the view that dental auxiliaries were not permitted involvement in epidemiological surveys, as 'diagnosing' disease was not within their remit. Dental public health has always been firmly rooted as a core competency area for UK trained dental care professionals (DCPs), and the GDC's DCP curriculum (2009a) requires they '*be familiar with the use of indices in the recording of oral conditions and in evaluating data*'.

Since the introduction of dental therapist training in the UK, their role has expanded. Over the last two decades, the role of the therapist has become more defined and the skill mix model of care has received increasing prominence following positive published reports (Medical

Education England, 2012). As a result of the changes, the number of training places for therapists has increased significantly in recent years, as their role within the dental team becomes better understood. The GDC has defined the permitted duties of all members of the dental team (2009b). As well as describing the core treatments and procedures each professional group may conduct under the prescription of a dentist, a wide range of additional treatments that appropriately trained DCPs may perform were identified. The GDC scope of practice document is currently due for review, and with the establishment of skill mix dentistry, it is anticipated that the role of dental therapists may extend further.

Solution suggested

This paper describes the successful calibration and use of dental therapists in undertaking a dental epidemiological survey in the South West of England and considers the challenges faced.

Primary consideration has been given to the scope of extending skills of dental therapists and whether the profession would welcome such an opportunity. Additionally, capacity within the dental therapist workforce for expansion of working practices needs consideration. Insufficient career opportunities and poor career prospects have resulted in many therapists reducing hours and/or working as dental hygienists (Gibbons *et al.* 2000). Expanding clinical opportunities and work streams could arguably increase job satisfaction among dental auxiliaries (Ylipää *et al.*, 1996) as well as provide a valuable, cost effective work force for epidemiology. In addition, the number of training programmes across the country and number of posts has increased. Such growth in the profession would provide a sufficiently large and accessible workforce that could be used in surveys.

At present some community dental services do not employ a sufficient pool of therapists to release them from clinical duties for epidemiological surveys, espe-

cially when compared to the number of dental officers employed.

The staff costs involved in dental epidemiological fieldwork relate to the clinical examiners and the data recorders. Community based dental officers are costly as examiners and their withdrawal from clinical services for surveys may impact on service delivery. A crude estimate of cost savings based on midpoint salaries for community dental services staff in Somerset showed, by utilising a therapist in place of a dental officer a saving of £720 was made across a twenty 4-hour session survey. In some areas, like Somerset, senior dental officers would normally be used in surveys then a saving of £1,325 could be made (Table 1). Although this may not be considered a large saving, considering the frequency of dental surveys, the cumulative benefit could be appreciable.

It is difficult to consider efficiency of using therapists compared to dental officers and senior dental officers as the number of subjects examined depends on the size of the schools and the response rate. However, we can broadly compare the therapist to dental practitioners also involved in the survey reported here. The therapist spent 10 days on the epidemiology programme, visited 36 schools and examined 438 children. The dental officer spent 7 days on the programme, visited 21 schools and examined 305 children. The senior dental officer spent 13 days on the programme, visited 38 schools and examined 537 children. Therefore, broadly speaking, the therapist was as 'efficient' as the dental practitioners in the survey.

Calibration exercises were key in considering whether dental therapists would meet national standards for epidemiology surveys. Previous pilot work undertaken by Kwan and Prendergast (1996) found that dental care professionals could be trained and calibrated as reliable examiners in caries prevalence studies for 5 year olds. Their subsequent feasibility study found that although successful calibration was achieved for 5 years olds, it was not attained for 12 year olds (Kwan and Prendergast, 1998).

The South West 2011/12 NHS DEP training and calibration exercises for a survey of 5-year-olds were undertaken over two days. A total of three therapists and twenty-four dental practitioners were trained and calibrated against two gold standard examiners.

Led by a local gold standard examiner the exercise involved a "classroom" training session based on the national protocol for the dental epidemiology programme. (BASCD *et al.*, 2011). The protocol covers methods of sampling, consent, personnel, conduct of the survey, fieldwork including equipment, instruments and materials, use of computers and software, entering data, coding and scoring criteria for each clinical and non-clinical variable.

In addition, knowledge of referrals to the appropriate clinic for suspected oral pathology and child protection training (level 2) in the survey were refreshed.

The examiners then undertook a real-life training exercise in a school setting. Each examiner saw two pre-selected groups of children previously examined and scored by the regional gold standard examiner. After both of these two training sessions all examiners were given feedback on their level of agreement with the gold standard and the opportunity to re-examine and discuss with the gold standard any discrepancies of scoring particular cases. The NHS DEP Regional co-ordinator quality assured the training and the substantive calibration session and undertook statistical analysis to determine the level of agreement between each examiner and the regional gold standard based on Cohen's kappa from this. Statistical analysis followed the relevant BASCD guidance (Pine *et al.*, 1997). Agreement between all examiners and the gold standards was "very good" or "good", with weighted Kappa scores ranging from 0.86 to 0.98. All examiners calibrated to meet BASCD national standards. The weighted kappa scores for the three dental therapists were 0.94 or higher.

In an attempt to manage the potential risks involved in using dental therapists, a comprehensive local risk assessment was undertaken (summary appended to the online version of this paper). Following this risk assessment, the general consensus was that careful management of the risks would reduce the likelihood of an adverse outcome, and that the benefits of using therapists outweighed the potential risks.

Actual outcome

In light of the enthusiasm from the dental therapists approached, cost savings and successful calibration, dental therapists working within the community dental services took part in the NHS DEP survey of 5 year-olds in 2011/2012 in Somerset. This was undertaken over 30 days by a range of therapists, dental officers and senior dental officers.

Therapists went to each school with a data recording dental nurse but with no dental practitioner on site. GDC regulations permit therapists to work independently but under the prescription of a dental surgeon. To ensure GDC compliance, and yet maintain cost effectiveness, a blanket prescription to instruct each of the therapists of the data collection specification was placed by a dental practitioner. Thus, although each therapist was working under the prescription of a dental practitioner, it was not deemed necessary for the practitioner to be on site.

Table 1. Costs of using different grades of staff in epidemiological surveys

Position	GBP/Hour ^a	Cost per 4 hour session	Total survey cost ^b
Senior Dental Officer (Band 5)	£30.73	£122.92	£2,458.40
Dental Officer (Band 4)	£23.17	£92.68	£1,853.60
Dental Therapist (AFC Band 6)	£14.17	£56.68	£1,133.60

^a Calculations based on midpoint of scale for a whole time equivalent in each case

^b Calculation based on 20 sessions completed in southwest England

No adverse incidents occurred during data collection, and the project was well received by therapists, schools, parents and children.

Challenges addressed

The main challenge addressed was gaining GDC agreement for the use of therapists in the survey. It was clarified by one of the authors to the GDC that dental epidemiology does not involve diagnosis but rather the replication of an agreed process of observation of certain characteristics associated with the dentition. Following verbal and written correspondence, the involvement of dental therapists in epidemiological surveys was agreed, on the premise that *'they will not be diagnosing disease or giving out advice directly to patients'*. In addition *'if they are asked questions or for advice outside of their scope they should refer the query to the appropriate registrant'* (Personal communication with GDC standards, information and project officer).

Survey implementation was managed closely by a Consultant in Dental Public Health to ensure compliance to GDC guidance and so legal advice at trust level was not deemed necessary.

There were also ethical considerations to be addressed prior to implementation. Studies on the social acceptability of dental therapists have shown variable public awareness (Dyer *et al.*, 2010) and so clear guidance to parents was essential to enable full and valid parental consent. Phrasing of all documents and consent forms sent was carefully considered to avoid misleading parents. In all letters to the school, the phrase 'dentist or dental therapist' was used, and emphasised that the survey did not replace a full dental check-up. Irrespective of whether a dental practitioner or dental therapist undertook the examination, all participants would have been advised to seek routine dental care and so this was not a deviation from the messages in previous surveys. A consultant in dental public health reviewed all parental correspondence before the start of the programme to ensure valid informed consent was achieved.

Future implications

The use of dental therapists in epidemiological studies has been considered for some time. This is the first programme that has successfully used dental therapists in dental health surveys, and could set a precedent for future work.

Dental therapists are a cost effective and accessible work force, able to adapt to working in population surveys. Further, the therapists who took part in this survey enjoyed the experience and felt it added to their professional duties. The work undertaken in the South West provides a guide to the potential use of dental therapists in surveys of 5 year-old children. The next step will be to consider the potential for successful calibration and data collection of other ages and population groups. With GDC agreement, public acceptance and the potential widening of the GDC scope of practice, there may be opportunities in the future to broaden the use of dental therapists in a range of epidemiological programmes.

Future work should therefore consider the successful calibration and feasibility of using dental therapists in other age and population groups, and the potential use of hygienists in epidemiology.

Learning points

- Dental epidemiology is not diagnosis but rather the replication of an agreed process of observation of certain dental characteristics
- The UK General Dental Council have agreed the use of dental therapists in population surveys as long they work within their remit, and do not advise or diagnose disease
- The dental therapist workforce in this survey were keen to develop their skills and welcomed extended duties
- Dental therapists are a cost effective work force that can be successfully calibrated to undertake epidemiological surveys in 5 year olds
- Participants and or parents must be fully informed of the use of a dentist or a dental therapist in the survey to ensure valid consent.
- Future work should consider the successful calibration and feasibility of using dental therapists in 12 year old and adult surveys, as well the potential use of dental hygienists in epidemiological surveys.

References

- BASCD, NHS Dental Observatory, NW PHO (2011): *NHS Dental Epidemiological Oral Health Survey of 5-year-old children in England 2011/2012, National protocol*. [www.nwph.net/dentalhealth/survey-results%205\(11_12\).asp](http://www.nwph.net/dentalhealth/survey-results%205(11_12).asp)
- British Association of Dental Therapists (1989): *Dental therapist's survey*. London: BADT.
- Dyer, T.A. Humphris, G. and Robinson, P.G. (2010): Public awareness and social acceptability of dental therapists. *British Dental Journal* 208, E2.
- General Dental Council (2009a): *Developing the dental team - second edition (interim) 2009*. London: GDC.
- General Dental Council (2009b): *Scope of Practice*. London: GDC.
- Kwan, S.Y. and Prendergast M.J. (1998): The use of clinical dental auxiliaries as examiners in caries prevalence surveys in the United Kingdom: a feasibility study. *Community Dentistry and Oral Epidemiology* 26, 194-200.
- Kwan, S.Y., Prendergast M.J. and Williams S.A. (1996): The diagnostic reliability of clinical dental auxiliaries in caries prevalence surveys--a pilot study. *Community Dental Health* 13, 145-149.
- Medical Education England, Dental Programme Board (2012): *A review of skill mix in dentistry*. www.mee.nhs.uk/pdf/Skill_Mix_in_Dentistry.pdf
- Ohrn, K., Crossner, C.G., Börgesson, I. and Taube, A. (1996): Accuracy of dental hygienists in diagnosing dental decay. *Community Dentistry and Oral Epidemiology* 24, 182-186.
- Pine, C. M., Pitts, N.B. and Nugent, Z.J. (1997): BASCD guidance on the statistical aspects of training and calibration of examiners for surveys of child dental health. *Community Dental Health* 14, Supplement 1:18-29
- Wang, N.J. and Riordan, P.J. (1995): Recall intervals, dental hygienists and quality in child dental care. *Community Dentistry and Oral Epidemiology* 23, 8-14.
- Ylipää, V., Arnetz, B., Preber, H. and Benkö, S. (1996): Determinants of work satisfaction among Swedish dental hygienists. *Scandinavian Journal of Caring Science* 10, 247-253.

Appendix 1. Summary of the local risk assessment undertaken when considering the use of dental therapists for epidemiological surveys

<i>Risk</i>	<i>Issue</i>	<i>Impact</i>	<i>Risk management</i>
Therapist exceeds authority and provides examination and advice.	Outside scope of practice	Legal challenge Reputational	Training and calibration. Induction. Supporting documentation
Epidemiological assessment perceived as examination and diagnosis by patient or parent	Outside scope of practice	Legal challenge Reputational	Ensure all parent / patient documentation is clear on purpose of assessment and examiner role
Therapist does not meet training and calibration standard	Not able to participate in survey	Organisational, delay to survey	Only use therapist as part of team until effectiveness demonstrated
Negative Impact on consent rates	Reduced survey participation rates	Reduced accuracy of survey results	Review all supporting documentation to ensure consistency and clarity
Follow up protocol implies examination taken place	Outside scope practice	Legal challenge Reputational	Review all supporting documentation to ensure consistency and clarity. All follow up via clinical director.
Different documentation for dentist and therapist examiners leads to administrative errors in following up patients with active disease	Therapist may appear to exceed scope of practice	Legal challenge Reputational	Revise supporting documentation to enable identical forms to be used by dentist and therapist