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## ORIGINAL ARTICLE

# Education of Dental Hygienists and Dental Therapists Working With Head and Neck Cancer Patients in Oral and Maxillofacial Surgery Departments in the United Kingdom—A Quantitative Study

Jocelyn Harding<sup>1</sup> | Kenneth Eaton<sup>2</sup> 

<sup>1</sup>Confident Dental and Implant Clinic, Gloucestershire, UK | <sup>2</sup>Visiting Professor University of Portsmouth, Honorary Professor University of Kent, Kent, United Kingdom

**Correspondence:** Jocelyn Harding ([mouthcareforcancerpatients@gmail.com](mailto:mouthcareforcancerpatients@gmail.com))

**Received:** 17 June 2024 | **Revised:** 19 September 2024 | **Accepted:** 18 October 2024

**Funding:** The authors received no specific funding for this work.

**Keywords:** dental hygienist | dental therapist | education | head and neck cancer | mouth cancer | oral cancer | survey | teaching

## ABSTRACT

**Aim:** To investigate Dental Hygienists' (DHs) and Dental Therapists' (DTs) current undergraduate and postgraduate education with regard to the treatment of head and neck cancer (HANC) in Oral & Maxillofacial Surgery (OMFS) departments in the United Kingdom.

**Methods:** A purposive sample of DHs and DTs, who were employed, or had been previously employed, in OMFS departments in the United Kingdom were asked to complete an online questionnaire about their education in the care and management of patients with HANC. The questionnaire was sent to members of the British Society of Dental Hygiene and Therapy (BSDHT), and the British Association of Dental Therapy (BADT) and was also posted via online forums.

**Results:** The questionnaire received 55 responses (response rate 83%): 54 female respondents and 1 male. Thirty-one (56%) respondents had not undertaken any HANC training. However, on starting work in an OMFS department, nine (16%) respondents reported being provided with HANC training.

**Conclusion:** The results suggest that the UK review and standardise the provision of HANC training in the DH and DT educational curricula. Furthermore, it is recommended that the DH and DT curricula, at both undergraduate and postgraduate level, should include psychology training.

## 1 | Introduction

Head and neck cancer (HANC) is a term that collectively describes various malignant tumours affecting the upper aerodigestive tract [1]. According to Cancer Research UK head and neck cancer incidence rates in the United Kingdom have increased by more than a third (35%) since the early 1990s. Rates in females have increased by almost half (47%), and rates in males have increased by almost a quarter (23%). Between 2017

and 2019 there was an average of 35 cases reported daily, 12,800 annually, making this the eighth most common cancer in the United Kingdom. In the United Kingdom, HANC is the 13th most common cancer in females and the 5th most common in males and is most frequently diagnosed in people aged 75 years and over [2].

There has been growing interest amongst dental professionals in further expanding their knowledge of HANC, especially

prevention and early diagnosis [3]. Knowledge and awareness of oral cancer is recommended by the General Dental Council (GDC) as a topic for continuing professional development [4]. There are clinical guidelines and standards which provide evidence-based guidance for the best management and maintenance of HANC patients [1, 3, 5].

Early referral and diagnosis of the tumour whilst small with no spread to lymph nodes in the neck can improve a patient's long-term prognosis. For example, between 1999 and 2000, the difference in 2-year survival rates was stark: 90% for patients diagnosed at stage 1 (less than 2 cm in size with no node spread) and 50% for those diagnosed at stage 4 (greater than 4 cm in size with metastatic disease). The dramatic difference in survival rates confirms that early diagnosis is critical [6]. This guideline, although seemingly dated, was reviewed with a 10-year surveillance-focused literature review and no new evidence was identified. However, in 2016 a guideline specifically for cancer of the upper aerodigestive tract: assessment and management in people aged 16 years and over was published and updated in 2018 [7].

A significant challenge for dental professionals is whether a patient diagnosed with HANC regards their oral health as a priority before they receive a diagnosis. It is evident from National Health Service (NHS) surveys that, prior to the COVID-19 pandemic, only around 50% of adults regularly visited a dentist [8]. Unfortunately this was, and remains, a missed opportunity to raise awareness of HANC in the 50% of adults who do not regularly visit a dentist, or benefit from early diagnosis. This can potentially influence the planning of dental procedures pre- and post-oncology care. Planning between primary and secondary care coordination is critical should treatment be necessary.

In recent years, there has been increased international academic interest in HANC. Therefore, ongoing DH and DT undergraduate and postgraduate education has a duty to include the long-term complications and care associated with a HANC patient's dental treatment. Standardising education will support DHs and DTs, especially for those who may become employed in OMFS departments.

The GDC's document, *Preparing for Practice* (2015), supports dental professionals by listing outcomes to be achieved on completion of their training. Although not specific to HANC patient care, the health promotion and disease prevention section directs undergraduate dental training towards outcome 1.10.2 [9]. GDC Standards Document (2013): Standard 1.4.2 recognises the holistic and preventative approach to patient care [10].

Despite the publication of GDC 'Standards' (2013) and 'Preparing for Practice' (2015), specific guidelines have been lacking. There is a need to address this issue and ensure that guidelines for dental students and the dental team specifically include the oral health care of HANC patients. Standardised education, including critical long-term care, is required to reduce the burden of HANC nationally and internationally. However, at present it is unclear what training in HANC is provided for DHs and DTs, who work in OMFS departments and treat patients with HANC.

## 2 | Study Population and Methodology

The study was conducted as part of an MSc project at the University of Kent using survey methodology with an online questionnaire, which was sent to DHs and DTs who were employed, or previously employed, in OMFS departments in the United Kingdom.

Ethical approval was obtained from the University of Kent Global and Lifelong Learning Ethics Committee.

A pilot questionnaire was designed and completed by four DH and DTs currently employed, or previously employed, in OMFS departments who had responded to a request for participants via a Facebook group specific to OMFS' DHs and DTs. The pilot was emailed to the four colleagues via a link using Microsoft Forms () (<https://forms.office.com/r/TTd6TmH2HX>). This online link allowed the participants to access the questionnaire at a time suitable for them and to send feedback at their leisure [11].

The pilot questionnaire comprised 13 questions and collected information on the respondents' demographics and educational experiences throughout their dental careers before and after employment in OMFS. It was subsequently amended accordingly to minimise investigator-induced bias and ensure the questions were easily understandable. Three additional questions were added.

The final version of the questionnaire (Table 1) was then emailed to the gatekeepers before disseminating to potential participants, along with a Participant Information Leaflet (PIL). Gatekeepers' recruitment approval and permissions were sought from the Chair and Presidents of the British Society of Dental Hygiene and Therapy (BSDHT), British Association of Dental Therapists (BADT) and British Association of Oral Maxillofacial Surgeons (BAOMS), who facilitated contact with DHs and DTs working in OMFS departments.

It was estimated that the number of DHs and DTs employed, or previously employed, in OMFS was likely to be approximately 100, but this was difficult to confirm. The Care Quality Commission (CQC) was contacted to ascertain whether details were accessible via a database under the Freedom of Information Act 2000 (FOIA). This information would have been helpful when attempting to contact DHs and DTs who were not approached by social media and those who were not members of either the BSDHT or the BADT.

Shaw [12] found that 65 OMFS/Ear Nose and Throat (ENT) departments in the United Kingdom were treating HANC patients, of whom 62 departments responded to the questionnaire. A power calculation based on this number indicated that 55 responses by participants were required to achieve a confidence level of 95% and a confidence interval of 0.05.

The online questionnaire was disseminated via email by gatekeepers once and the request to complete was repeated three times on the social media platforms *Twitter*, *Facebook* and *Instagram* to ensure a high level of response.

**TABLE 1** | Questionnaire.

| Research project questions                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Do you give consent?                                                                                                                                                                                   |
| 2. What is your gender?                                                                                                                                                                                   |
| 3. What is your year of birth?                                                                                                                                                                            |
| 4. What year did you first qualify?                                                                                                                                                                       |
| 5. At which university/school or military establishment did you qualify?                                                                                                                                  |
| 6. What is your highest qualification?                                                                                                                                                                    |
| 6.a If you selected Other, please specify:                                                                                                                                                                |
| 7. Did you receive undergraduate training specific to the care of head and neck cancer (HANC) patients?                                                                                                   |
| 7.a If you selected Other, please specify:                                                                                                                                                                |
| 8. What year did you start employment in Oral Maxillofacial Surgery (OMFS) department?                                                                                                                    |
| 9. If you are no longer in employment in an OMFS department please state the year you left?                                                                                                               |
| 10. On commencing employment in OMFS were you provided with training in preparation for treating HANC patients?                                                                                           |
| 10.a If you selected Other, please specify:                                                                                                                                                               |
| 11. If you were provided training previously or whilst working with HANC patients in OMFS please state the course or training.                                                                            |
| 12. Do you think there should be specific education for dental hygienists and dental therapists commencing employment in OMFS?                                                                            |
| 12.a If you selected Other, please specify:                                                                                                                                                               |
| 13. In your opinion, please rank in level of importance (1st highest–6th lowest) the following topics for dental hygienists and dental therapists education on commencing employment in OMFS departments? |
| 13.1 Caries management                                                                                                                                                                                    |
| 13.2 Implant care                                                                                                                                                                                         |
| 13.3 Management of periodontal diseases                                                                                                                                                                   |
| 13.4 Prosthesis care                                                                                                                                                                                      |
| 13.5 Psychology of HANC patients                                                                                                                                                                          |
| 13.6 Xerostomia management                                                                                                                                                                                |
| 14. How long are, or were, your HANC patients' appointments?                                                                                                                                              |
| 14.a If you selected Other, please specify:                                                                                                                                                               |
| 15. Is/was high fluoride toothpaste routinely prescribed for your HANC patients?                                                                                                                          |
| 15.a If you selected Other, please specify:                                                                                                                                                               |
| 16. Dry mouth products—if you do or you did routinely recommend, which did you recommend?                                                                                                                 |

This sample seemed appropriate and most suitable due to the geographical locations of the respondents and in order to be respectful of respondents' busy working days [11]. The questionnaire was accessible from 19th September 2022 to 30th November 2022. Whilst monitoring responses, the social media posts were repeated with the aim of reaching non-responders or third parties and allow snowballing, whereby respondents through networking identify other interested participants [11]. A disadvantage of this approach was that some participants received duplicated emails and Facebook posts.

To comply with General Data Protection Regulation (GDPR), the participants' responses to the questionnaire did not contain identifiable data. The data collected will be stored securely for 4 years on a password-encrypted digital device before being destroyed.

### 3 | Results

A total of 56 completed questionnaires were received. However, one response was excluded because the respondent had not worked in OMFS. All respondents answered all the questions.

The University of Kent provided guidance concerning statistical analysis and it was decided it would be inappropriate to statistically test the results as the numbers were relatively small and the percentages presented a clear picture.

#### 3.1 | Respondents and Response Rate

Fifty-five responses were analysed of which 54 (98%) were from females and 1 (2%) from a male. The overall response rate from OMFS departments was 83%, which met the target number generated by the power calculation.

#### 3.2 | Characteristics of the Study Population

All respondents answered the question requesting their year of birth which ranged from 1940 to 1999 and were recorded in decades: the participants were aged 26 to 80 years old (Table 2).

#### 3.3 | Year of Qualification

All respondents answered the question requesting their year of qualification. The years were recorded in decades and spanned from 1960 to 2019, with a range of qualification from 5 to 59 years.

#### 3.4 | Dental School Attended by Respondents

All respondents answered the question asking which dental school, university or military establishment they attended: 44 (80%) attended a dental school in England, seven (13%) in Wales and four (7%) in Scotland. No respondents reported qualifying in Northern Ireland, Republic of Ireland or overseas. This may

be for a number of reasons: in Northern Ireland there is no facility to train as a DH or DT; respondents were unaware of the questionnaire as they may not be a member of a professional representative association or society; or it may have been that these DHs and DTs do not use social media platforms.

### 3.5 | Highest Qualification

All respondents reported their highest qualification. Five (10%) answered the 'Other' category as their highest qualification. It was assumed that the respondents held the Central Examination Board Certificate of Proficiency in Dental Hygiene; however, the survey did not clarify this (Table 3).

### 3.6 | Undergraduate Training Concerning HANC Patient Care

All respondents answered Question 7 which revealed that 20 (36%) respondents had received HANC training as an undergraduate; 31 (56%) reported having received no HANC training; and 4 (7%) answered 'Other'. The four respondents in the 'Other' category gave an insight as to their training and commented:

Not that I recall, although did treat one patient on clinic as a student with advanced H&N cancer.'

'I cannot remember any specific training.'

**TABLE 2** | Year of birth.

| Decade of birth | Number of respondents | Percentage of respondents |
|-----------------|-----------------------|---------------------------|
| 1940–1949       | 1                     | (1.8%)                    |
| 1950–1959       | 2                     | (3.6%)                    |
| 1960–1969       | 22                    | (40%)                     |
| 1970–1979       | 12                    | (21.8%)                   |
| 1980–1989       | 13                    | (23.6%)                   |
| 1990–1999       | 5                     | (9.1%)                    |

**TABLE 3** | Respondents' highest qualification.

| Qualification      | Number of respondents | Percentage of respondents |
|--------------------|-----------------------|---------------------------|
| DipDH and/or DipDT | 33                    | (60%)                     |
| BSc                | 8                     | (14.5%)                   |
| PGCert             | 3                     | (5.5%)                    |
| PGDip              | 0                     |                           |
| MSc or Master's    | 6                     | (11%)                     |
| PhD                | 0                     |                           |
| Other              | 5                     | (9%)                      |

'In part, under a module 'working in a hospital.'

'Some theory training but no practical training.

### 3.7 | Length of Employment in OMFS

All respondents answered questions 8 and 9 with 18 (30%) reporting that they were still working in OMFS departments. One respondent did not state the year they left OMFS, only that they, *...left to move to private practice*. The majority (37%–67%) were no longer working in OMFS departments. The range of time respondents were employed in OMFS' posts was from one to 31 years, with a mean time of employment in OMFS of 6.39 years (Table 4).

### 3.8 | Training Provided for HANC in OMFS

The majority of participants reported that they had not been provided with training when they first began working in OMFS: one respondent chose the 'Other' category, and expanded in further detail:

Shadowed consultant and SPRs [Specialty Registrars] for a few sessions. No specific training.

### 3.9 | Details of HANC Training

Question 11 asked if respondents had been provided with training previously, or whilst working with HANC patients in OMFS, and if this had been the case, to state the course or training and who facilitated the course. Fifteen (30%) respondents reported having been provided with training. However, four (7%) reported either 'N/A' or 'None'. Eleven respondents offered more in-depth details of the training facilitated, for example:

Was informal from consultant dentist.'

'Cardiff dental postgraduate department.'

'A two-day course on head and neck cancer treatment (Swansea UHB).'



**TABLE 4** | Year of qualification and length of time employed in OMFS.

| Decade of qualification | Number of respondents | Mean time of employment in OMFS | Percentage of respondents |
|-------------------------|-----------------------|---------------------------------|---------------------------|
| 1960–1969               | 1                     | 6                               | (2%)                      |
| 1970–1979               | 1                     | 16                              | (2%)                      |
| 1980–1989               | 11                    | 90                              | (20%)                     |
| 1990–1999               | 14                    | 116                             | (25%)                     |
| 2000–2009               | 13                    | 63                              | (24%)                     |
| 2010–2019               | 15                    | 53                              | (27%)                     |

**TABLE 5** | Important topics for DHs' and DTs' education in OMFS.

| Important topics for DHs' and DTs' education in OMFS | Number of respondents | Percentage of respondents |
|------------------------------------------------------|-----------------------|---------------------------|
| Psychology                                           | 25                    | (45%)                     |
| Xerostomia                                           | 15                    | (27%)                     |
| Dental caries                                        | 7                     | (13%)                     |
| Periodontal diseases                                 | 3                     | (6%)                      |
| Prosthesis care                                      | 3                     | (5%)                      |
| Implant care                                         | 2                     | (4%)                      |

‘Shadowing restorative dental consultant and more general training for managing cancer patients with Macmillan.’

‘Line manager.’

‘Informal training on the clinics by consultants/ registrar.’

‘On site direct from oral surgeons.’

‘Internal Induction week ...’

‘Just shadowing previous hygienist for day or so.’

‘Undergraduate.’

‘OMFS Study Day at Swansea (Oct 2014.)

Three respondents specifically mentioned training undertaken in Wales.

### 3.10 | Education for DHs and DTs Starting in OMFS

All respondents answered Question 12, with 51 (93%) stating that there should be specific education for DHs and DTs on commencement of employment in OMFS. The remaining four (7%) answered ‘Maybe’, and ‘No’.

One respondent shared their thoughts about the benefits and drawbacks of specific OMFS training:

Yes, but I don't know how this should be given/offered. Having previously worked in CDS [Community Dental Service] I knew some things. Concerned a specific training course being required would out of [sic] applicants [sic]. But the role I'm in now has suffered from a lack of support/training for DHTs in the past leading to resignations.

### 3.11 | Important Topics for DHs' and DTs' Education in OMFS

All respondents answered Question 13 which asked them to rank the importance of a number of topics relevant to the care of HANC patients by DHs and DTs. Twenty-five (45%) of the respondents ranked psychology as the most important topic. Just over 14 (25%) placed xerostomia second; dental caries placed third; periodontal diseases and prosthesis care followed; and implant care was the lowest placed topic (Table 5).

### 3.12 | Length of Appointments

The typical length of appointments for DHs and DTs treating HANC patients in OMFS was of particular interest since it is currently unknown whether or not there was a standard appointment time. All respondents answered this question, with

22 (40%) stating that their appointments each lasted 30 min. For 16 (29%) respondents their appointments lasted 1 h, and for nine (16%) their appointments lasted 40 min. One respondent said that 20 min was allocated for an appointment. The researcher found this short appointment time concerning due to the outcome of Question 13 which ranked psychology as the main topic for those new to the role in OMFS. Conversations alongside treatment for HANC patients can often be involved; therefore, appropriate time must be allowed.

In the free text, the 'Other' section was expanded:

45 minutes generally, 30 minutes for solely implant retained prosthesis. As long as I need for restorative work. 15–20 minutes for new patient/new diagnosis post dental screen OHI booked between/over other patients.'

'What I needed was them to be 45 minutes.'

'Variable—I was able to book any appointment length required for the effective treatment of the individual patient.'

'Varied from 30–90 minutes.'

'As long and as often as required.'

'This was patient centred care that time allocation was tailored for.'

'Variable (30 minutes, maximum 1 hour).

These responses provided more detail to some of the respondents' answers and highlighted these DH's and DT's clinical autonomy. A consideration of this question may be the availability of appointments and the hours a DH or DT is employed per week. However, exactly how the length of appointment times then influences the treatment outcomes for the HANC patient and DHs and DTs remains poorly understood.

## 4 | Discussion

For the benefit of their patients, oral health professionals in general, and DHs and DTs in particular, have a vested interest in further expanding their knowledge of HANC, especially its prevention and early diagnosis [3]. Brocklehurst et al. [14] acknowledged DHs and DTs capabilities, alongside other dental professionals, to recognise mouth cancer. The results of that particular study were advantageous as in 2013 the GDC incorporated oral cancer as a post-graduate essential topic. This was also the year that Direct Access in the United Kingdom was gained: DHs and DTs were allowed to treat the general public directly without first receiving a dentist's prescription [15].

One of the main obstacles with this research project was the paucity of studies specifically regarding the education of DHs and DTs in OMFS. Studies concentrated mainly on DHs and DTs working

in primary rather than secondary care. The study identified the demographic of the respondents with questions about gender, the year of birth, date of qualification and from which dental schools the respondents had qualified. It was interesting to see that the majority of respondents (80%) qualified in England, with 13% in Wales and 7% in Scotland. As explained previously, no respondents qualified in Northern Ireland, the Republic of Ireland or overseas, which would have added beneficial data to the study.

The highest qualification of respondents along with specific details of HANC training at undergraduate level was included in the questionnaire. A large majority of respondents did not receive training in preparation for treating HANC patients. Eleven respondents (20%) provided more detail about their formal or informal training. Reassuringly, 3 of the 11 responses reported receiving HANC training at universities in Wales highlighting evidence of training provided. The survey questions were successful as they identified establishments that provided students with HANC education.

The mean length of employment in OMFS departments for respondents in the current study was 6.39 years, an interesting outcome since the job role is perceived as having a high turnover. As one respondent observed, if formal training were standardised, the length of employment could be seen to increase and staff turnover reduced as the DH and DT would feel more supported.

Question 13 asked the respondents to place six topics in rank order considered necessary for DH and DT future education commencing in OMFS. Psychology ranked highest of the six topics, for 25 (45%) respondents. The following five topics in order from highest to lowest were: xerostomia; dental caries; prosthesis care; periodontal diseases; implant care.

It was concerning to find that psychology ranked top, despite this subject not being part of the undergraduate curricula. This is a significant result as this skill is required when treating all patients. Nevertheless, the participants emphasised the importance of addressing this issue as a top priority. This would support clinicians in managing the psychological and physiological impact of treatment on patients, as well as the clinician's personal stress levels. The nature and consequences of HANC treatment have varying outcomes, which are not always predictable [13]. Experienced clinicians often agree that in conversations during DH and DT appointments, patients will discuss far more than their oral health. Education in psychology would help DHs and DTs to manage HANC patients better.

As xerostomia was the next highest topic it was relevant to see the product range recommended for HANC treatment and if a high fluoride toothpaste prescription was prescribed as this is in line with current evidence-based guidelines. The long-term, often prohibitive, dental care and financial burden to HANC patients can be influenced by the up-to-date knowledge of the dental professionals' practice. The State of Mouth Cancer UK Report 2022 estimates the cost to be up to £1500 over 5 years for HANC patients [16].

This study appears to be the first to investigate the experiences of DHs and DTs working in hospitals and treating HANC patients. The findings provide a new understanding of the difficulties

they have experienced in this role. The most apparent findings highlighted from this study were identifying the frequent lack of HANC education for DHs and DTs on commencing employment in OMFS departments alongside locating DHs' and DTs' positions. It was interesting and reassuring to find HANC courses undertaken by the respondents in Wales since it was believed no such specific programmes were available in the United Kingdom.

This research might not be generalisable due to the sample group size with specific experiences. Despite the paucity of literature available for this area of care, and the absence of a register of OMFS DHs and DTs posts, a strength of this study's results was the number of responses received within the short timeframe.

## 5 | Conclusion

The results suggested that the United Kingdom needs to standardise the provision of HANC training in the DH and DT curricula. Furthermore, it is recommended that the DH and DT curricula, at both undergraduate and postgraduate levels, should include psychology training, especially for those about to embark on a role in OMFS.

## 6 | Clinical Relevance

### 6.1 | Scientific Rationale for the Study

Evaluating the educational experiences of OMFS DHs and DTs could aid in the development of the DHs and DTs educational curricula improving knowledge in this specialised area of care.

### 6.2 | Principal Findings

The primary finding of the study highlights the lack of education provided to DHs and DTs as they enter employment in OMFS. The respondents indicated psychology should be integrated into undergraduate education.

### 6.3 | Practical Implications

Further investigation is needed to strengthen and advance DHs' and DTs' knowledge and abilities for an increasingly complex area of care.

#### Author Contributions

J.H. designed and composed the project proposal, collected and analysed the data, and is the first author. K.E. was the academic supervisor of the study and was involved in its execution, analysis of the data, guided writing the drafts and final version of the study report and this paper.

#### Acknowledgements

The research was undertaken as part of a self-funded MSc dissertation. The researcher would like to thank the participants.

#### Conflicts of Interest

The authors declare no conflicts of interest.

#### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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