

The impact of Covid-19 on head and neck oncology pre-radiotherapy dental assessments in Northern Ireland

Dr N.Markey ¹, Dr C.Moore ², Dr K.Hamilton ³, Dr L.Cullen³, Dr G. McKenna ⁴.

1 Specialty Dentist, 2 Specialty Registrar, 3 Dental Core Trainee 4 Consultant and Clinical Reader in Restorative Dentistry, Centre for Dentistry, Royal Victoria Hospital, Belfast, Northern Ireland.

BACKGROUND

Head and Neck Cancer (HANC) is the eighth most common cancer type in the UK, accounting for approximately 3% of all cancers in the UK, with in excess of 8500 cases annually. There are approximately 400 cases of such cancer in Northern Ireland annually.^{1,2} The peak age range for head and neck cancer diagnosis is between 65–69 years in both males and females, with over 95% of all cases being in individuals over the age of 40 years.³ Management of head and neck cancer typically entails an extensive multidisciplinary approach. The management may include treatment by surgery or by chemotherapy and radiotherapy, or a combination of modalities.⁴ The majority of patients receive surgery followed, in approximately 60% of cases, by radiotherapy.⁵

Guidance from the British Association of Head and Neck Oncologists states that all patients whose oral cavity, teeth, salivary glands and jaws that will be affected by treatment should have a pre-treatment dental assessment. The aim is to render the patient dentally fit prior to starting treatment.⁶ This assessment should be done as early as possible to maximise the time available for treatment.^{7, 8} Unfortunately, owing to the complexities of cancer diagnosis, treatment and management, this is challenging.⁹

The Northern Ireland HANC multidisciplinary team convene weekly for case discussions. Dentate HANC patients who require pre-radiotherapy dental assessment are identified at the multidisciplinary meeting. These patients are subsequently referred to the restorative dentistry department in the Belfast dental hospital for dental assessment.

The Covid-19 pandemic has placed increased stress on healthcare systems worldwide due to critical resource shortages and delays in care.¹⁰ Head and neck cancer has been directly affected from diagnosis to treatment in patients with this disease and even those who have not yet been diagnosed with this pathology. This is due to the interruption of healthcare that has been significantly directed at dealing with the pandemic. The Covid-19 pandemic has required triage and delays in surgical care throughout the world. Outpatient elective activities have been suspended or reduced at times, and a delay in the diagnosis of primary head and neck cancer has been expected. It has also been suggested that a lack of timely access to healthcare could lead to increased presentation of advanced stage HANC.¹¹⁻¹³

During the 'first-wave' of the Covid-19 pandemic in 2020, the Belfast Health Trust suspended a significant number of 'face to face' patient appointments as existing staff were redeployed to other service areas to deal with the pandemic. Suspended appointments included 'face to face' pre-radiotherapy dental assessments. 'Face to face' outpatient appointments recommenced at the beginning of June 2020, after which many hospital services attempted to re-build and function.

AIMS AND OBJECTIVES

- To determine how the Covid-19 pandemic has impacted on the pre-radiotherapy dental assessment service for dentate head and neck cancer (HANC) patients in Northern Ireland.

- To compare HANC patient presentations and service delivery between calendar year 2019 (pre-Covid-19) and a year-long period from June 2020- May2021 (following commencement of 'face to face' services following the 'first wave' of the Covid-19 pandemic).

METHODS

Dental records of dentate HANC patients who had previously attended the School of Dentistry, Belfast for pre-radiotherapy dental assessment in the calendar year 2019 were reviewed.

Dental records of dentate HANC patients who attended for pre-radiotherapy assessment following the 'first wave' of Covid-19 and resumption of 'face to face' clinics were collected prospectively over a 1-year period from the beginning of June 2020 until the end of May 2021.

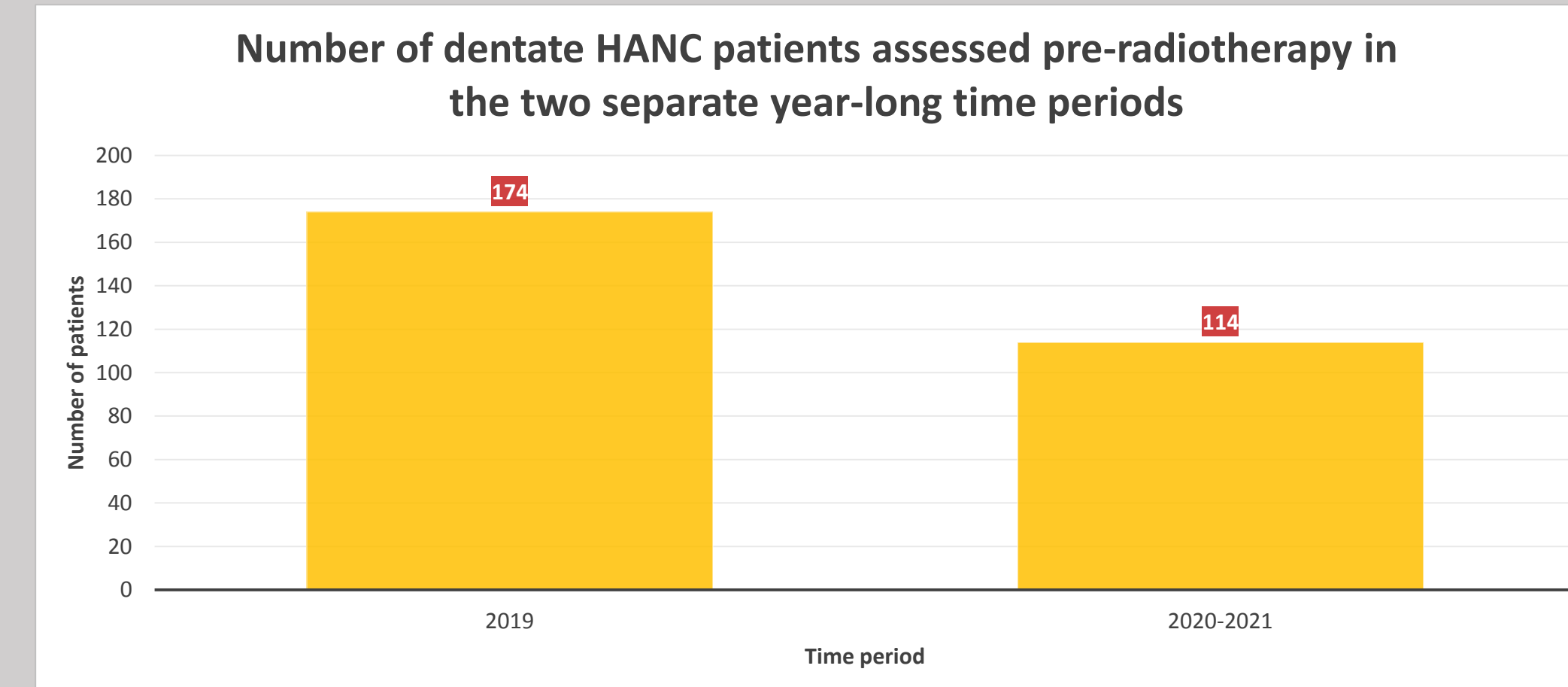
Clinical data analysed included:

- The total number of patients assessed at pre-radiotherapy dental assessment clinics
- The TNM staging of HANC patients at presentation.
- The number of HANC patients receiving palliative radiotherapy only.

RESULTS

Attendance

Figure 1 displays the total number of dentate HANC patients who attended in the calendar year 2019 compared to a year-long period from June 1st 2020 until May 31st 2021.



There has been a decrease of 60 (34.5%) dentate HANC patients who attended in the year long period from the June 1st 2020 until May 31st 2021 compared to the calendar year 2019. (p=0.02)

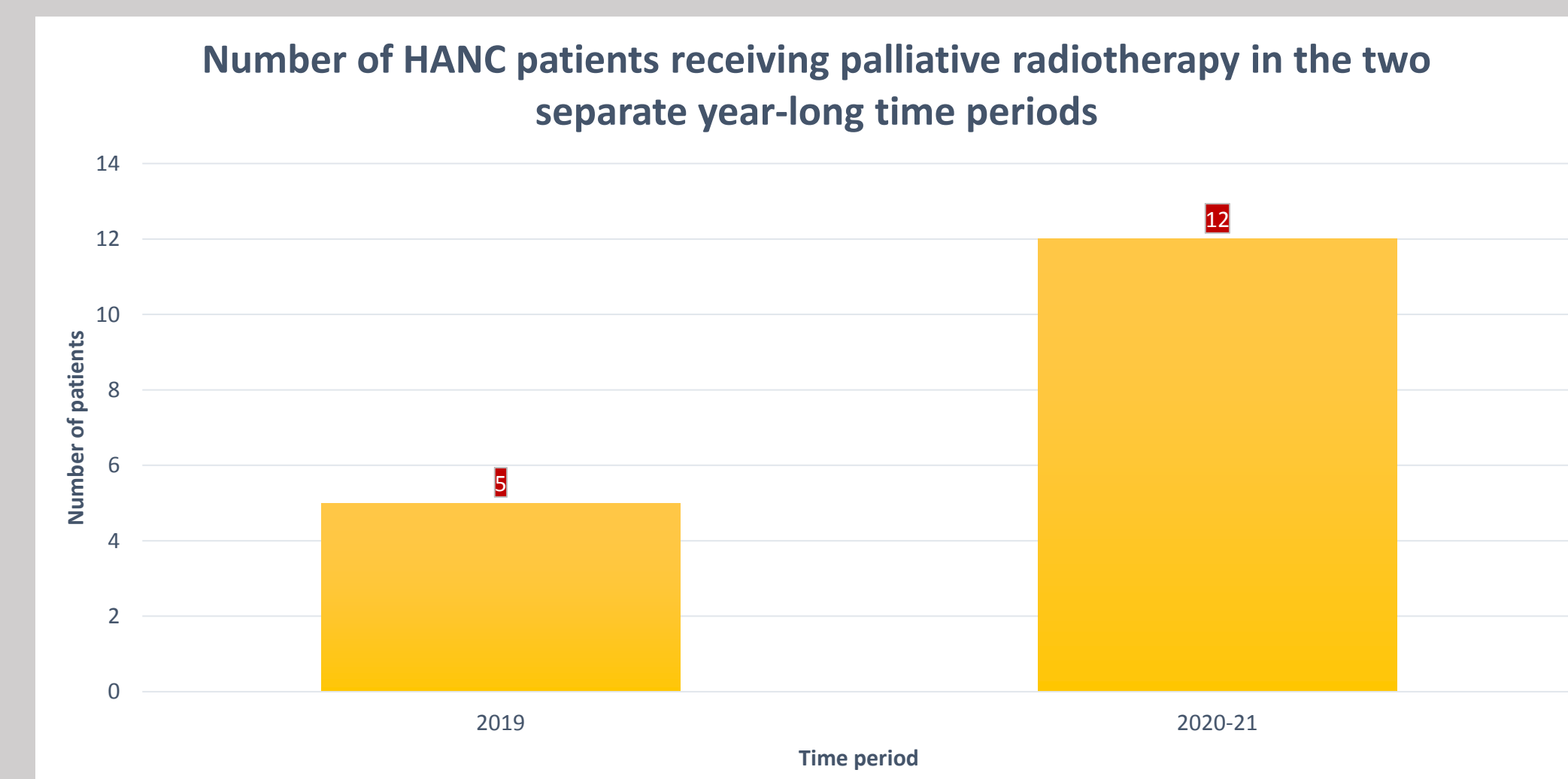
Demographic data

Table 1 displays basic demographic data of the dentate HANC patients who attended for pre-radiotherapy dental assessment in the two separate year-long time periods.

	2019	2020-21
Gender – Male (number of patients/percentage of total)	117 (67.2%)	79 (69.3%)
Gender- Female (number of patients/percentage of total)	57 (32.8%)	35 (30.7%)
Average age (years)	59.9	62.6
Age range (years)	31-81	29-91

Palliative radiotherapy

Figure 2 displays the number of dentate HANC patients who attended with an oncology treatment plan for palliative radiotherapy in the two separate year-long time periods



The number of HANC patients requiring palliative radiotherapy in the year-long time period 2020-21 was more than double that of the calendar year 2019. Patients in 2020-2021 (10.5%) were significantly more likely to receive palliative radiotherapy compared to patients assessed in 2019 (2.9%) (p=0.01).

TNM Staging

Table 2 displays the TNM staging of the diagnosis of the dentate HANC patients who attended for pre-radiotherapy dental assessment from the two separate year-long time periods (calendar year 2019 compared to a year-long period from June 1st 2020 to May 31st 2021).

T-staging	2019 HANC patients	2020-21 HANC patients
T0	5	2
T1	26	10
T2	56	24
T3	42	25
T4	42	51
TX	3	2
N-staging	2019 HANC patients	2020-21 HANC patients
N0	77	60
N1	27	8
N2	57	37
N3	13	9
M-staging	2019 HANC patients	2020-21 HANC patients
M0	174	112
M1	0	2

A statistically significant increase was also noted in the proportion of HANC patients who were staged as T4 tumour size via TNM staging in the 2020-2021 year-long time period (44.7%) compared to the calendar year 2019 (24.1%) (p<0.001).

T3 and T4 tumours together accounted for 48.3% of HANC patients in 2019 and 66.7% of HANC patients examined in 2020-21 year-long time period. There has also been a statistically significant increase in the proportion of T3 and T4 cases together between the two time periods (p=0.02).

There is no statistically significant difference in the proportion of patients with nodal involvement between the two separate year-long time periods (p=0.185).

DISCUSSION

As a result of the Covid-19 pandemic, there has been a significant decrease (34.5%) in the number patients who attended for pre-radiotherapy dental assessment from the two time periods. The Northern Ireland regional head and neck cancer multidisciplinary team have seen an overall reduction in 21.1% of HANC cases managed between the calendar years of 2019 and 2020. There may be a reduction in HANC diagnoses which may be linked to primary healthcare access issues which may also result in delayed diagnoses.

The proportion of tumours staged as T4 at presentation has also increased by 20.6% (p<0.001) between the two time periods. With the advanced size of T4-staged tumours, this represents a poorer prognosis for the patient.⁸

There has been subsequent increases in the proportion of patients receiving palliative care. There has been a statistically significant increase in the proportion of patients receiving palliative radiotherapy between 2019 (2.9%) and 2020-21 (10.5%) (p=0.01) year-long time periods. These trends have major impacts on dental management and treatment-planning prior to radiotherapy as well as patient morbidity and mortality.

Figure 3 is an OPT radiograph of a 70-year old male patient who has been diagnosed with a T4N3M0 squamous cell carcinoma of the oropharynx. This patient has received an oncological treatment plan for palliative radiotherapy.

This patient attended for a pre-radiotherapy dental assessment. This patient had poor dental attendance and was unregistered with a general dental practitioner. Clinically, the patient had very poor oral hygiene along with grossly carious 37 and 46 molar teeth. Caries was also noted on the upper incisor teeth. A communication along with suppuration was also noted from an unerupted 48 wisdom tooth.

The patient was having no dental pain or symptoms. The patient was counselled on the effects of radiotherapy and the possible risks of osteoradionecrosis. A pre-radiotherapy management discussion with the patient advised and included the extractions of 37 and 46 teeth along with investigation of the suppuration from the unerupted 48 tooth. The patient was aware of his prognosis and declined any treatment prior to radiotherapy as he was keen to progress to receiving radiotherapy and didn't want any delays.



Figure 3.

Those patients with advanced disease and who require palliative management can face difficult decisions regarding their dentition and any subsequent extractions as it may impinge on their quality of life. Patients with advanced disease may be faced with challenging decisions of radical dental intervention such as multiple extractions while also facing a poor disease prognosis.

CONCLUSION

The Covid-19 pandemic has resulted in a reduction in the number of dentate HANC patients referred for pre-radiotherapy dental assessment in Northern Ireland. This may be linked to a reduction in diagnoses of HANC, which in turn may be related to patient difficulties in accessing primary dental and medical healthcare services resulting in delayed diagnoses. The proportion of HANC patients with advanced tumour size attending for pre-radiotherapy dental assessment has also increased. The proportion of HANC patients who require palliative radiotherapy attending for pre-radiotherapy dental assessment has increased also.

References

1. Barclay S and Turani D. Current practice in dental oncology in the UK. *Dental Update* 2010; 555-561.
2. Belfast Health and Social Care Trust. Head and neck cancer multidisciplinary team annual report 2019. Belfast: BHSC, 2019.
3. Jones O, Hackett S, Chatzistavrianou D and Newsom D. Head and Neck Cancer Part 1: Diagnosis and Classification. *Dental Update* 2019; 46: 722-729.
4. McCaul L. Oral and dental management for head and neck cancer patients treated by chemotherapy and radiotherapy. *Dental Update* 2012; 39: 135-140.
5. MacCarthy D, Omer O, Nunn J, Cotter E. Oral health needs of the head and neck radiotherapy patient: 1. Epidemiology, effects of radiotherapy and role of the GDP in diagnosis. *Dental Update* 2005; 32: 512-522.
6. Critchlow SB, Morgan C, Leung T. The oral health status of pretreatment head and neck cancer patients. *Br Dent J* 2014; 216: E1.
7. Butterworth C, McCaul L, Barclay C. Restorative dentistry and oral rehabilitation: United Kingdom national multidisciplinary guidelines. *J Laryngol Otol* 2016; 130(S2): S43-S44.
8. Moore C, Mc Lister C, O'Neill C, Donnelly M, Mc Kenna G. Preradiotherapy dental extractions in patients with head and neck cancer: a Delphi study. *Journal of Dentistry* 2020; 97: 1-10.
9. Barclay S and Turani D. Current practice in dental oncology in the UK. *Dental Update* 2010; 555-561.
10. Brody RM, Albergotti WG, Shimunov D, Nicolli E, Patel UA, Harris BN, et al. Changes in head and neck oncologic practice during the Covid-19 pandemic. *Head and Neck* 2020; 42: 1448-1453.
11. Chone CT. Increased mortality from head and neck cancer due to SARS-CoV2 pandemic. *Brazilian Journal of Otorhinolaryngology* 2021; 87: 1-2.
12. Bowman R, Crosby DL, Sharma A. Surge after the surge: Anticipating the increased volume and needs of patients with head and neck cancer after the peak in Covid-19. *Head and Neck* 2020; 42: 1420-1422.
13. Han AY, Miller JE, Long JL, St. John MA. Time for a paradigm shift in head and neck cancer management during the Covid-19 pandemic. *Otolaryngology-Head and Neck Surgery* 2020; 163(3): 447-454.