Identifying pain-related concerns in routine follow-up clinics following oral and oropharyngeal cancer

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Abstract

AIM: To describe clinical characteristics of head and neck cancer (HNC) patients with pain and those wishing to discuss pain concerns during consultation.

METHODS: Cross-sectional, questionnaire study using University of Washington Quality of Life, version 4 (UW-QOL) and the Patients Concerns Inventory (PCI) in disease-free, post-treatment HNC cohort. Significant pain on UW-QOL and indicating "Pain in head and neck" and "Pain elsewhere" on PCI.

RESULTS: One hundred and seventy-seven patients completed UW-QOL and PCI. The prevalence of self-reported pain issues was 38% (67/177) comprising 25% (44/177) with significant problems despite medications and 13% (23/177) with lesser or no problems but wishing to discuss pain. Patients aged under 65 years and patients having treatment involving radiotherapy were more likely to have pain issues. Just over half, 55% (24/44) of patients with significant pain did not express a need to discuss this. Those with significant pain or others wanting to discuss pain in clinic had greater problems in physical and social-emotional functioning, reported suboptimal QOL, and also had more additional PCI items to discuss in clinic compared to those without significant pain and not wishing to discuss pain.

CONCLUSION: Significant HNC-related pain is prevalent in the disease-free, posttreatment cohort. Onward referral to a specialist pain team may be beneficial. The UW-QOL and PCI package is a valuable tool that may routinely screen for significant pain in outpatient clinics.

Key words: Pain; Health related quality of life; Patient Concerns Inventory; Head and neck cancer; Mouth neoplasm; Quality of life; Questionnaire

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INTRODUCTION

Pain can be experienced at various time points in the cancer journey of an individual with head and neck cancer (HNC)\(^\text{[1]}\). Cancer-related pain is due to the direct effect of the tumor and/or the consequence of HNC treatment. Non-cancer related pain can co-exist and may contribute to the overall pain experience\(^\text{[2,3]}\). Pain experienced by HNC patients may have a detrimental impact on their general well-being\(^\text{[4]}\), cause dysfunction\(^\text{[5]}\) and distress\(^\text{[6]}\), is associated with poor sleep quality\(^\text{[7]}\) and poor health-related quality of life\(^\text{[8]}\), can mark the onset of malignant transformation\(^\text{[9]}\) and recurrence\(^\text{[10]}\), and reduces survival rate\(^\text{[11]}\). Although the impact of pain in HNC patients is significant, its management is difficult\(^\text{[12]}\) and often inadequate\(^\text{[13]}\). There are several obstacles to optimal pain management in this group of patients. There is an incomplete understanding of the HNC-related pain experience, particularly in the post-diagnosis period\(^\text{[14]}\). Current approach to cancer-related pain management emphasizes heavily on the pharmacological approach based on the World Health Organization (WHO) pain ladder\(^\text{[15]}\) with less consideration on the psycho-cognitive aspects underlying pain and how this influences coping\(^\text{[16]}\). Involvement of the pain specialist in HNC cases may be limited in many HNC set-ups\(^\text{[17]}\). There may be an inadequate appreciation by non-pain specialist practitioners of the neuropathic mechanisms involved in HNC-related pain\(^\text{[18]}\) with consequential bearing on symptom management\(^\text{[19]}\). Health professionals’ reluctance towards opioid use\(^\text{[20]}\) and patients reservations due to fear of addiction\(^\text{[21]}\) may hinder adequate pain control, especially for breakthrough pain, which is common among HNC patients\(^\text{[22]}\). Finally, HNC patients may have difficulty self-reporting pain to their medical care providers\(^\text{[23]}\) and routine screening may assist them in conveying this issue to the clinician.

Opportunistic evaluation of pain in HNC patients is achievable by using Health Related Quality Of Life tools. Pain is frequently assessed as part of HNC patient-reported outcomes using various health-related quality of life tools\(^\text{[24]}\), including the University of Washington Quality of Life version 4 questionnaire (UW-QOL)\(^\text{[25]}\). When the UW-QOL is used in routine oncology clinical practice, this tool may offer a platform to identify those with significant problems in any of the 12 domains assessed (including pain) and also provides a trigger mechanism for supportive intervention\(^\text{[26]}\). The UW-QOL trigger for supportive intervention is based on defined cut-off points in the response scores of each domain, beyond which patients would be expected to encounter significant dysfunction/problems. This method correlated well with validated head and neck specific questionnaires e.g., Derriford Appearance Scale (DAS-24) and the MD Anderson Dysphagia Inventory, in identifying those with significant issues with appearance and swallowing respectively\(^\text{[27]}\). However, in regard to the pain domain, the cut-off point for supportive intervention was not correlated with any pain-specific questionnaire due to the lack of a suitable HNC pain-specific questionnaire that considers the complexity of HNC-related pain. The complexity of HNC-related pain is due to in part, the influence of multiple sources of somatic tissue and neural damage resulting from cancer and/or its treatment, and also from the personal and subjective nature of the pain experienced, which may be influenced by cultural learning, the meaning of the situation, attention, and other psychologic variables\(^\text{[28]}\).

The Patients Concerns Inventory (PCI) is a 55-item checklist tool introduced to assist HNC patients in highlighting the items of concern that they may wish to discuss with clinicians during routine oncology consultations\(^\text{[29]}\). In the PCI item checklist, pain is covered in 2 items: “Pain in the head and neck” and “Pain elsewhere”. The original PCI study found that the “Pain in the head and neck” and “Pain elsewhere” were indicated as items of concern in 20% (4th most common item) and 10% (15th most common item) respectively\(^\text{[30]}\). As there is no limit to the number of PCI items that patients could choose from, patients may also indicate other items they perceive to be of concern and wish to be addressed during consultation. This includes other items that may be associated with or influence pain, such as fear of recurrence, anxiety, swallowing, saliva and shoulder\(^\text{[31-33]}\). We have found that the PCI is a valuable tool in understanding a wider scope of issues that HNC patients may experience in the post-treatment period based on previous work\(^\text{[34-39]}\) and facilitates patient-clinical discussion regarding these issues and the need for supportive care.

There is a paucity of work relating specifically to the pain experience of HNC patients who have undergone treatment\(^\text{[40]}\). The rationale for this work is to understand how post-treatment HNC patients with pain self-report their experience using the PCI in a routine clinic outpatient setting, which forms part of the ongoing work of this unit with the PCI. The aims of this paper are: First, to report the clinical characteristics of HNC patients with pain attending routine outpatients and those wishing to discuss the issue of pain in their consultation and second, to identify if the issue of pain was mentioned in the clinic letter and if onward referral was made.

MATERIALS AND METHODS

Prospective data collection from HNC patients attending routine follow-up clinics occurred from October 2008 to January 2011. Patients on the Liverpool oncology database were included if they were disease-free and under routine follow-up at least 6 wk after completing treatment. Patients were excluded if they were pretreatment, palliative, attending the clinic for other post-operative wound management or were part of another outcomes study in clinic.

Touch-screen technology (TST) was used by patients before their consultation to complete PCI, a holistic, self-reported screening tool for unmet needs/concerns and UW-QOL, version 4\(^\text{[41]}\). Following registration to clinic,
patients were invited by a hospital volunteer to complete the TST questionnaire package. TST data was collected using Microsoft Access and placed directly on to a secure hospital server and was accessible to the clinician immediately before the consultation. The PCI measure asked patients to indicate which of 55 issues they would like to discuss during their consultation, and two of these issues involved pain—pain in the head and neck and pain elsewhere. Patients were also asked to select members of staff, from a list of 14 types of health professional, who they would “like to see or be referred to”.

The UW-QOL questionnaire is well established\textsuperscript{[30]} for this study the UW-QOL was analysed in terms of its two subscale composite scores, “physical function” and “social-emotional function”\textsuperscript{[32]} as well as its domains and a single six-point Likert scale “overall” QOL measure. Physical function is the simple average of the swallowing, chewing, speech, saliva, taste and appearance domain scores whilst social-emotional function is the simple average of the activity, recreation, pain, mood, anxiety and shoulder domain scores. The pain domain is scored on a five point Likert scale as: (100) I have no pain, (75) There is mild pain not needing medication, (50) I have moderate pain—requires medication (e.g., paracetamol), (25) I have severe pain controlled only by prescription medicine (e.g., morphine), (0) I have severe pain, not controlled by medication. In earlier work\textsuperscript{[21]} we defined a “significant problem” with pain as being a UW-QOL domain score of (0) or (25) or also as (50) if pain had been one of the three most important domains to the patient over the previous week. We also refer to earlier work\textsuperscript{[11]} to provide normative reference scores for pain. In regard to the single item overall QOL scale, patients were asked to consider not only physical and mental health, but also other factors, such as family, friends, spirituality or personal leisure activities important to their enjoyment of life.

Details of onward referrals regarding pain arising subsequently from consultations were obtained from clinic letters. Clinical-demographic data came from the Liverpool HNC database.

Results were analysed mainly within three patient subgroups defined by reference to whether there was any evidence of significant pain from the UW-QOL and to whether pain issues were raised for discussion on the PCI. The \(\chi^2\) test compared the patient subgroups with regard to categorical patient characteristics including the presence or absence of significant problems on each of the other domains of the UW-QOL. The Kruskal-Wallis test compared the subgroups in regard to age, months from primary treatment, UW-QOL overall Likert scale, UW-QOL subscale scores for physical and social-emotional function, number of PCI concerns raised and number of staff members selected. As the UW-QOL and PCI TST package is integrated into routine clinical practice in this setting, this study was approved by the University Hospital Aintree Clinical Audit department in the context of service evaluation.

RESULTS

There were 396 TST sets of data that included both PCI and UW-QOL, from 177 patients during the course of 79 clinic sessions. Nearly two-thirds of patients (63\%, 112/177) attended clinic more than once during the study, with 1\% attending two, 29 attending three, 19 attending four and 11 attending five to seven times. Males comprised 63\% (112) and the mean (SD) age at first clinic was 62 (12) years (range 24-86 years). Most patients (89\%, 158) had a primary diagnosis of squamous cell carcinoma, with others including: low grade polymorphous adenocarcinoma (4), adenoid cystic carcinoma (2), mucoepidermoid carcinoma (2), and verrucous carcinoma (2). Most (71\%, 126) had oral tumors, with 23\% (41) pharyngeal and 6\% (10) others. Overall, 19\% (34) had advanced T3-T4 tumors and 20\% (36) were clinically neck node positive. Just over half (58\%, 103) had been treated by surgery alone, 32\% (56) by surgery with adjuvant radiotherapy, and 10\% (18) without surgery (by radiotherapy/chemotherapy). Overall 43\% (76) had free-flap primary surgery with selective neck dissection. At first clinic 41\% (73) were within 12 mo of diagnosis, 13\% (23) within 12-23 mo, 21\% (37) within 24-47 mo and 25\% (44) after 48 mo.

Before the first study clinic consultation, 25\% (44/177) of patients reported significant problems with pain (i.e., scores of 0 or 25 or 50 and important on the UW-QOL). This contrasts with significant problem levels of 13\% (44/349) in data reanalysed for non-cancer patients routinely attending ten general dental practices and 100\% (23/23) for non-cancer patients attending these practices in an emergency\textsuperscript{[30]}.

“Pain in the head and neck” was raised by patients on the PCI in 18\% (32/177) of cases, and “Pain elsewhere” by 10\% (17/177), with one or the other raised by 24\% (43/177). A total of 38\% (67/177) reported significant pain problems on the UW-QOL or highlighted issues of pain on the PCI for discussion (Table 1), with 25\% (44/177) meeting the UW-QOL criteria while an extra 13\% (23/177) met only the PCI criteria (more minor concerns they wanted to discuss). One-half (55\%, 24/44) of those with a significant pain problem did not wish to discuss it. Subsequent analyses focus on three groups for comparison: the 62\% (110) of patients without significant pain and with no wish to discuss pain (Group A), the 25\% (44) with significant pain (Group B), and the 13\% (23) without significant pain who wanted to discuss pain (Group C, 18 to discuss head and neck pain, 5 to discuss pain elsewhere).

Patients aged 65 years and older reported less significant pain and fewer wished to discuss pain than younger patients (Table 2). Patients having primary treatment without surgery reported higher levels of significant pain. Significant problems in physical functioning were reported more often by patients with significant pain (Table 3). Both Group B and C reported more problems relating to social and emotional function and to overall QOL than
Group A. In particular, half of Group B and C patients had significant problems with mood and/or anxiety in contrast to 14% of Group A. Similarly, overall QOL was less than good for half of Group B and C patients compared to 14% of Group A. Similarly, overall QOL was less than good for half of Group B and C patients compared to 14% of Group A.

In regard to PCI concerns, Figure 1 indicates that Group B and C raised considerably more issues to discuss than Group A. The median (interquartile range [IQR]) total number of concerns per patient were 7 (4-12), 7 (5-10) and 2 (1-5) respectively, $P < 0.001$. In total there were 940 issues raised by the 177 patients (Table 4): the 23% of all patients that form Group B raised 39% (369) of all issues, whilst the 13% in Group C raised 21% (195) of issues and the 62% in Group A raised 40% (376) of issues.

There were no notable differences between groups in terms of selected members of staff (Figure 2) apart from Group B who more often wanted to see or be referred on to dental services. The median (IQR) total number selected per patient were 0 (0-1), 1 (0-1) and 0 (0-1) respectively, $P = 0.07$. For patients attending clinic more than once in the study, the median (IQR) time between first and second clinics was 4 (2-9) mo, 11 (5-15) mo between first and third and 13 (8-20) mo between first and fourth. The longitudinal perspective in following through the three clinical groups from first study clinic is shown in Table 5. Of those with significant pain at first...
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Table 3  Quality of life as measured by the University of Washington Quality of Life questionnaire, by whether there was any evidence of significant pain from the University of Washington Quality of Life questionnaire and by whether pain issues were raised for discussion on the Patients Concerns Inventory at the first study clinic *n* (%)  

| Issue                          | No significant pain and no wish to discuss pain (*n* = 110) | Significant pain (*n* = 44) | No significant pain but wish to discuss pain (*n* = 23) | *P* value *2* |
|--------------------------------|----------------------------------------------------------|-----------------------------|-------------------------------------------------------|---------------|
| ### Significant problems *1*    |                                                          |                             |                                                       |               |
| Appearance                     | 5 (5)                                                    | 14 (32)                     | 2 (9)                                                 | < 0.001       |
| Swallowing                     | 17 (15)                                                  | 14 (32)                     | 3 (13)                                                | 0.05          |
| Chewing                        | 15 (14)                                                  | 9 (20)                      | 1 (4)                                                 | 0.19          |
| Speech                         | 5 (5)                                                    | 7 (16)                      | - (-)                                                 | 0.02          |
| Taste                          | 15 (14)                                                  | 7 (16)                      | - (-)                                                 | 0.14          |
| Saliva                         | 17 (15)                                                  | 12 (27)                     | 7 (30)                                                | 0.04          |
| Physical function subscale, median (IQR) | 80 (62-95)                                             | 58 (45-72)                  | 68 (54-72)                                            | < 0.001       |
| ### Significant problems *1*    |                                                          |                             |                                                       |               |
| Activity                       | 7 (6)                                                    | 8 (18)                      | 4 (17)                                                | 0.06          |
| Recreation                     | 7 (6)                                                    | 4 (9)                       | 3 (13)                                                | 0.53          |
| Shoulder                       | 6 (5)                                                    | 7 (16)                      | 7 (30)                                                | 0.001         |
| Mood                           | 10 (9)                                                   | 21 (48)                     | 6 (26)                                                | < 0.001       |
| Anxiety                        | 11 (10)                                                  | 18 (41)                     | 7 (30)                                                | < 0.001       |
| Mood and/or anxiety            | 15 (14)                                                  | 23 (52)                     | 11 (48)                                               | < 0.001       |
| Social-emotional subscale *3*, median (IQR) | 85 (73-94)                                             | 60 (45-73)                  | 63 (54-79)                                            | < 0.001       |
| Overall QOL                    | Very poor                                                | - (-)                       | - (-)                                                 | < 0.001       |
| Poor                           | 4 (4)                                                    | 6 (14)                      | 2 (9)                                                 |               |
| Fair                           | 16 (15)                                                  | 17 (40)                     | 9 (41)                                                |               |
| Good                           | 32 (29)                                                  | 13 (30)                     | 6 (27)                                                |               |
| Very good                      | 44 (40)                                                  | 6 (14)                      | 5 (23)                                                |               |
| Outstanding                    | 14 (13)                                                  | 1 (2)                       | - (-)                                                 |               |
| % less than good               | 20 (18)                                                  | 23 (53)                     | 11 (50)                                               | < 0.001       |

*1* The social-emotional subscale score was computed using five domains only, i.e., after excluding pain; *2* *χ* *2* test, apart from using the Kruskal-Wallis test with actual subscale scores and with the ordinal scale for overall Quality of Life (QOL); *3* The criteria used for determining if there was a significant problem can be found in previous work [21]. IQR: Interquartile range.

Table 4  The most common concerns raised by patients on the Patients Concerns Inventory for each clinical group  

| Issue                          | No significant pain and no wish to discuss pain (*n* = 110) | Significant pain (*n* = 44) | No significant pain but wish to discuss pain (*n* = 23) | % |
|--------------------------------|----------------------------------------------------------|-----------------------------|-------------------------------------------------------|---|
| Fear of the cancer coming back  | 26                                                       | 37                          | 78                                                    | 78 |
| Dental health/teeth            | 21                                                       | 46                          | 61                                                    | 61 |
| Chewing/Eating                 | 21                                                       | 39                          | 44                                                    | 44 |
| Salivation                     | 16                                                       | 39                          | 39                                                    | 39 |
| Swallowing                     | 15                                                       | 39                          | 35                                                    | 35 |
| Mucous production              | 13                                                       | 32                          | 35                                                    | 35 |
| Fatigue/tiredness              | 13                                                       | 30                          | 30                                                    | 30 |
| Mouth opening                  | 12                                                       | 30                          | 30                                                    | 30 |
| Breathing                      | 11                                                       | 27                          | 26                                                    | 26 |
| Sleeping                       | 11                                                       | 27                          | 26                                                    | 26 |
| Weight                         | 11                                                       | 25                          | 26                                                    | 26 |
| Taste                          | 11                                                       | 25                          | 26                                                    | 26 |

There was greater variability noted in later clinics for those without significant pain but wanting to discuss pain at the first clinic (Group C). Those in Group B and C had pain mentioned in about half of the clinic letters subsequent to the clinic (Table 6), in contrast to just 12% of clinic letters from patients in Group A. The rates of onward referral for pain were 11%, 8% and 0.8% of clinics respectively for groups B, C and A. Details from the clinic letters as to whom the patient was referred, the medications that were
Figure 1  Percentage of Patients Concerns Inventory issues raised before consultation, by whether patients reported significant pain problems on the University of Washington Quality of Life questionnaire and/or wished to discuss pain.

- No significant pain and no wish to discuss pain
- Significant pain
- No significant pain but wish to discuss pain

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Figure 1  Percentage of Patients Concerns Inventory issues raised before consultation, by whether patients reported significant pain problems on the University of Washington Quality of Life questionnaire and/or wished to discuss pain. n = 177 at first study clinic.
mentioned and the nature and location of the pain are given in Table 6.

**DISCUSSION**

This work surveyed self-reported pain in a HNC cohort using the UW-QOL and PCI TST in a routine clinic setting. The main strength of this study lies in the description of self-reported pain in a disease-free, post-treatment group through exclusion of active, residual or recurrent disease because this subgroup may present with a slightly different management approach. The estimated prevalence of self-reported pain issues in this group was 38%, of which 25% had significant pain. Patient who self-report significant pain or others wanting to discuss pain were more likely to have problems in both physical and social-emotional functioning, report suboptimal overall QOL and raise more items other than pain for discussion on the PCI. Those having treatment with radiotherapy/chemotherapy were more likely to report significant pain or wish to discuss pain. However, just over one-half of those reporting significant problems with pain did not wish to discuss this during their consultation.

There are several issues that may limit this study. Firstly, the sample size \( n = 177 \) is relatively small and mainly of patients with oral cancer. A larger cohort could better elicit any other potential trends from the data. The database also lacks sufficient longitudinal data to comment confidently on the stability of pain and the successful management of those patients in significant pain. Following the cohort through future outpatient clinics would achieve this, but the problem of a small study sample would persist. Secondly, this study did not use any specialised self-reported pain questionnaire or clinical examination to qualify the pain experienced by the cohort. This may be relevant from a clinical management perspective.
Table 6  Mention of pain in clinic letters and onward referral

| No significant pain and no wish to discuss pain | Significant pain | No significant pain but wish to discuss pain |
|-----------------------------------------------|------------------|---------------------------------------------|
| Number of clinics (number of patients)         | 256 (110)        | 85 (44)                                     | 55 (23)                                      |
| Number of clinics with clinic letters found    | 240              | 79                                          | 51                                           |
| Pain mentioned in clinic letter                | 12% (29/240) from 27 patients (26 patients once, 1 patient 3 times) | 56% (44/79) from 29 patients (19 patients once, 7 patients twice, 1 patient three times, 2 patients four times) | 47% (24/51) from 19 patients (14 patients once, 5 patients twice) |
| Onward referral for pain                      | 0.8% (2/240)     | 11% (9/79) (1 patient once, 2 patients twice, 1 patient 4 times) | 8% (4/51)                                    |
| Who was patient referred to                   | Consultant gastroenterologist (1) | Patient 1: first to consultant orthopaedic surgeon then three times to chronic pain team | Patient 4: to consultant in oral medicine |
|                                             | Consultant restorative dentist (1) | Patient 2: first to senior physiotherapist then to chronic pain management programme | Consultant in oral medicine (1) |
|                                             |                   | Patient 3: first to consultant orthopaedic surgeon then to palliative care | Consultant in pain relief (1) |
| Pain medications mentioned in letter (often in combination) | Gabapentin (1), Oromorph (1), MST (1) | Aciclovir (1), Aspirin (1), Brufen (2), Codeine phosphate (1), Dicofenac (1), Fentanyl patch (1), Gabapentin (7), Morphone patches (2), MST (1), Oromorph (6), Oxynorm (3), Oxycontin (2), Paracetamol (4), Solpadeine (1), Solpadol (1) | None mentioned |
| Pain as mentioned in letter (number of occasion) | Oral and teeth pain (7) | Single site: Jaw (7), Neck (3), Teeth (1), Face (2), Oral/throat (5), Chest (1), Shoulder (2), Hip (1) | Oral/throat pain (4) |
|                                             | Jaw pain (4)      | Multiple sites: 10                          | Generalised pain in treated area (2)         |
|                                             | Facial pain (3)   | Related to function: 1                      | Back pain (2)                                |
|                                             | Shoulder pain (4) | Related to fear of cancer recurrence: 3     | Shoulder pain (2)                            |
|                                             | Neck pain (2)     | Related to fear of addition to analgesia: 1 | Neck (4)                                    |
|                                             | Ear pain (2)      |                                           | Shoulder and neck pain (2)                   |
|                                             | Stomach pain (2)  |                                           | Shoulder pain                                |
|                                             | Back pain (1)     |                                           | Jaw pain (1)                                 |
|                                             | Chest wall pain (1)|                                         |                                              |

Finally, this study did not have a pre-diagnosis baseline of the pain experience, which has been shown to influence the post-treatment experience of pain[9].

There is a wide range of published prevalence rates (6%-100%) for self-reported pain in HNC patients due to variation in the methodology employed[6], namely, the time point of the HNC journey selected (e.g., pre-diagnosis or postdiagnosis; remission or recurrence/active disease), clinical setting surveyed (e.g., oncology outpatient or specialist pain clinic) and treatment received (e.g., unimodality or multimodality). The prevalence of self-reported pain in our cohort was 38% (54% of patients studied were within 24 mo from the completion of treatment). This is higher than that found by Chaplin and Morton[9], who reported prevalence of 25% and 26% at 12 and 24 mo respectively. The reason for our higher prevalence is unclear although oral and oropharyngeal cancer accounted for only 29% of their sample, which also showed treatment preponderance for radiotherapy.

We found that the clinical factors associated with pain issues were age and primary treatment modality, not seen in the New Zealand cohort[10]. Those aged 65 years and older reported less significant pain and fewer wished to discuss their pain compared to younger people. This may be due to the possibility that older adults experience lower levels of pain severity and interference from cancer-related pain compared with the younger age group[9]. However, the contrary was found in the Taiwanese group, where the older group reported more pain and this was attributed to lower pain endurance ability[34]. In our cohort, patients who received radiotherapy as their primary treatment reported greater levels of significant pain or wanted to discuss pain. Persistent pain after the completion of radiotherapy is commonly reported[8]. Normal radiotoxicity can result in mucositis, xerostomia, brachial plexopathy and osteoradionecrosis of varying degree, which may cause orofacial pain. Pain secondary to oral mucositis is frequently reported during treatment and the radiation-mediated tissue changes are progressive, suggesting the role of neuropathic mechanisms[8].

Our cohort was split into three groups to facilitate statistical analysis: A, B and C based on the presence of a significant pain problem and the expression of need to discuss the issue of perceived pain. Group A (n = 110) did not have significant pain and did not wish to discuss pain on the PCI. This group includes those with manageable levels of pain as well as those who are pain-free, all of whom perceive pain to be of no concern. Group B (n = 44) had significant pain and includes some (just over half) who did not wish to discuss this during consultation. This group may provide a challenge for clinicians because of the unresolved problem of symptom control, the association of pain with physical dysfunction, the increased likelihood of having problems in the social-
emotional areas and that so many of this subgroup do not wish to discuss this in clinic. Group C (n = 23) had no significant pain but still wanted to discuss pain in the consultation, indicating that this group may benefit from non-pharmacological interventions for their pain, especially as they were also associated with problems in social-emotional functioning.

Our study found that Groups B and C raised significantly more issues on the PCI than those in Group A (Table 4), where the median number of complaints of patients in Groups B, C and A was 7, 7 and 2, respectively. Interestingly (Tables 3 and 4), Group B and C also seem to struggle with mood, anxiety and depression, far more so than those in Group A. Other studies also report that depression and anxiety contributed to the pain quality ratings in post-treatment HNC patients[6,10]. Fear of recurrence was a prevalent concern across all groups (Table 4) and this could represent the perception that pain precedes the return of cancer[12]. Groups B and C had pain mentioned in almost half of their cohort’s clinic letters compared to just 12% of clinic letters from Group A (Table 6). Despite this, only 11% of patients from Group B and 8% from Group C were referred onwards for further management of their pain. In Groups B and C, referrals made were to pain specialist professionals (5/12 referrals) and non-pain specialist professionals (7/12 referrals).

Based on the clinic letters, most pain locations were in the head, neck and shoulder region, which compares with another report[2]. A much smaller proportion was reported at distant sites, including donor site morbidity. Both descriptors of noxious and neuropathic pain were used in the clinics letters. However, conclusions regarding the possible mechanisms of pain in this cohort cannot be derived from this list because we are unable to verify if these were the actual terms used by patients in clinic. Nevertheless, the list of medications described in clinic letters used for analgesia in Group B indicates that the range of medication on the WHO pain ladder[13] have been used, including adjunctive drugs for significant pain.

This may support for a more prominent role for the specialist pain team in the multidisciplinary team management of these patients.

In conclusion, pain remains a significant problem for those with HNC and can arise for many different reasons. Increased levels of pain tend to follow treatment that involves radiotherapy. Those with significant pain and others wanting to discuss pain tend to have multiple other areas of concern, including worries over depression and anxiety. Effective pain management is crucial to ensure a good quality of life and the role of the pain team in HNC is to be evaluated. The PCI approach to help patients highlight issues of concern during routine clinic review is potentially a useful way to help screen oncology patients for pain-related symptoms. Further modular development of the PCI concept in breast cancer and other cancer sites will allow this type of adjunct to be incorporated more widely in oncology.

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