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Influence of deprivation on health-related quality of life of patients with cancer of the head and neck in Merseyside and Cheshire

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Abstract

The incidence of cancer of the head and neck, and the outcome of treatment in terms of survival and health-related quality of life (HRQoL), is linked to deprivation. We have explored the association of social deprivation with HRQoL and with fear of recurrence in patients treated for cancer of the head and neck in Merseyside and Cheshire. In 2013, we posted cross-sectional surveys to 805 patients treated for oral, oropharyngeal, or laryngeal tumours. We used the University of Washington quality of life score (UW-QoLv4) to measure HRQoL, a 7-item questionnaire to measure fear of recurrence, and the 2010 Index of Multiple Deprivation (IMD) to measure deprivation. There was a 60% (448) response to the survey, with response ranging from 52% (167/322) from those living in the most deprived national quartile of residential areas to 74% (110/148) living in the least deprived quartile. Relative to the national distribution, the sample was notably deprived as 37% (167/448) lived in the most deprived quartile. After adjusting for clinical and personal characteristics, the results suggest a residual association between deprivation and overall quality of life (QoL), particularly socioemotional function. The association seemed weaker in regard to fear of recurrence and physical function. Our findings emphasise the need to explore ways to encourage more patients to attend follow-up appointments as this might improve their QoL, reduce distress, and help them to improve their life-style. It could also have an impact on survival.

Keywords: Deprivation; Quality of life; health-related quality of life; Head and Neck Cancer; UW-QOL; Patient-Reported Outcomes

Introduction

Deprivation has an effect on the incidence, presentation, and outcomes of patients with cancer of the head and neck, and a growing body of international evidence shows that patients from a lower socioeconomic group are more likely to be affected,[1–3] to present later,[4] to have lower survival rates,[5,6] and a poorer health-related quality of life (HRQoL).[7]

Definitions for, and the assessment of, deprivation and socioeconomic position are complex.[8] Social deprivation arises from the inequity of a person's socioeconomic position when compared with that of others, and comes about because of the hierarchical distribution of wealth, welfare, and opportunities in society.[8,9] It covers a broad range of issues and refers to needs not being met because of a lack of financial, as well as other, resources.[10]

HRQoL is now a recognised outcome of treatment,[11] but to our knowledge, few authors have explored its association with

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deprivation[7] even though factors such as smoking, alcohol consumption, and coexisting conditions, are associated with both.[12] Other factors that influence HRQoL and distress are personality and choice of coping strategies.[13] In terms of anxiety, distress, and HRQoL during follow-up, patients are most concerned about recurrence.[14]

We aimed to explore the association of social deprivation with HRQoL and with fear of recurrence in patients treated for cancer of the head and neck in Merseyside and Cheshire. This is particularly pertinent in this area, as it includes some of the most deprived boroughs in England.[10] We report the responses to a postal survey in terms of deprivation, and comment on response bias to questionnaires and the impact this might have on patient-reported outcomes.

Material and methods

We retrieved the records of patients treated for primary oral, oropharyngeal, or laryngeal squamous cell carcinoma between 2008 and 2012 from the database at Aintree University Hospital, and tracked deaths to 1 March 2014 through the Office for National Statistics and the hospital's Sigma system. Patients aged over 85, those treated palliatively, those with active recurrence or cognitive impairment, and those who lived overseas or who did not want to be sent any more questionnaires, were excluded from the postal survey. The Clinical Audit Department at the University Hospital approved the study.

We used the postcode of each patient resident in England at diagnosis and when the survey was done to obtain scores and ranks from the 2010 Index of Multiple Deprivation (IMD).[15] This provides a relative measure of deprivation for small areas across England, and the 2010 score combines 7 weighted, standardised domain scores. We grouped the IMD ranks under national quartiles, with the most deprived quartile comprising areas ranked 1-8210, and the least deprived comprising those ranked 24633-32482.

The University of Washington Quality of Life (UW-QoL) questionnaire is well established.[16] Version 4 includes 12 single-question domains with between 3 and 6 responses scaled evenly from 0 (worst) to 100 (best) according to the hierarchy of response. It has two subscale scores: physical and socioemotional function.[16]

The physical function score is the mean of the swallowing, chewing, speech, saliva, taste, and appearance domains, and socioemotional function is the mean score of the activity, recreation, pain, mood, anxiety, and shoulder domains. Subscale scores were computed if 4 or more of the 6 domain scores were available. Criteria derived from earlier work can indicate the areas in which patients have a serious problem.[17] There is also a single-item overall QoL question that asks patients to consider not only their physical and mental health, but also other factors such as family, friends, spirituality, or personal leisure activities, which are important to their enjoyment of life.

The survey also included a 7-item fear of recurrence questionnaire.[18,19] Surveys were posted on 28 February 2014 and reminders on 12 May 2014. Data were analysed with the help of SPSS Statistics for Windows, version 19 (IBM Corp, Armonk, USA).

We used the Wilcoxon matched-pairs test to test for change in the IMD of patients who had changed their address between diagnosis and survey. We used the Mann-Whitney test to compare the distribution of IMD scores or ranks between responders and non-responders, and to compare IMD scores between those with and without dysfunction on each of the UW-QoL domains. The Mann-Whitney test (2 subgroups) or Kruskal-Wallis test (more than 2 subgroups) was used to compare patients' clinical and personal characteristics in respect of their IMD scores. Spearman's correlation was used to assess the association of the IMD score with the patient's age and time from baseline treatment to survey, with UWQoL subscale scores, and with the ordinal scales for overall QoL and the Fear of Recurrence questionnaire. We used logistic regression to model survey response, and to assess the association between the IMD measures associated with UW-QoL and Fear of Recurrence binary outcomes, after adjusting for clinical and patients' characteristics. Probabilities of less than 0.01 were accepted as significant because of the large number of tests. Missing data are indicated by differing denominators.

Results

We sent questionnaires to 805 patients treated for oral, oropharyngeal, or laryngeal tumours and 484 responded (60%). Of the 805 surveyed, we obtained IMD data for 747 postcodes at diagnosis and 743 at the time of the survey. The geographical proximity to North Wales and the Isle of Man was the main reason why English IMD data were not available. A total of 78 patients had moved house between diagnosis and survey, but the median (IQR) change in overall IMD ranking was 0 (-6055, 3099) as there was no evidence of a systematic shift in deprivation of the residential area after diagnosis ($p = 0.52$); this was similar for IMD domains. Analyses continued with the 747 who had English IMD data at diagnosis, and of them, 448 had responded (60%).

The overall IMD (2010) score and rank were associated with response to the survey (Table 1) with the worse response being from those who lived in a deprived area at diagnosis (by national quartile 52%, 60%, 64%, and 74%, respectively). We used logistic regression to model the response to the survey, and considered the age at survey, sex, primary treatment (operation only, operation and adjuvant radiotherapy, or chemoradiotherapy alone), site of primary tumour (oral, laryngeal, or pharyngeal) and overall clinical stage (early/late), time from primary treatment, and IMD rank, as potential predictors. Stepwise logistic regression at $p < 0.01$ for entry selected the overall IMD rank, primary treatment, months from primary treatment, and age at survey, in this order, as independent predictors of response. Figure 1 shows response by IMD national quartile and primary treatment.