

# Symptom trajectory following radiotherapy for head and neck cancer

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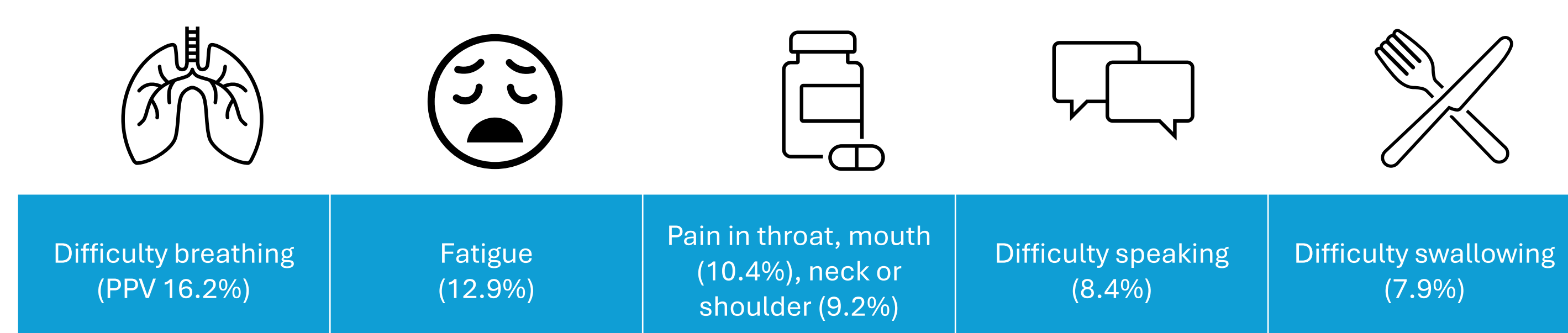
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## Background

Patients with Head and Neck Cancer (HNC) undergoing radiotherapy experience acute toxicities occurring from around 1-2 weeks after starting treatment. Early side-effects include radiation-induced dermatitis, mucositis, odynophagia and fatigue. Patients continue to suffer the effects of radiotherapy long after treatment.

In the retrospective review of HNC follow-up appointments in the UK performed by INTEGRATE<sup>1</sup>, the symptoms with the highest positive-predictive value (PPV) for recurrence following treatment were:



In this literature review we analysed the trajectory of these key symptoms following radiotherapy treatment for HNC to delineate what is expected morbidity versus possible recurrent disease.

## Method

PubMed(MEDLINE) was searched Jan 2010 - Dec 2023 for difficulty breathing, tiredness, pain, difficulty speaking and dysphagia where they were recorded at  $\geq 2$  time points after completing radiotherapy (RT). A cut-off of 2010 was chosen to reflect when IMRT became the standard of practice in most specialist centres.

### Inclusion criteria:

- Adults with HNSCC who underwent curative RT +/- chemotherapy,
- Outcome measures relating to key symptom/s recorded at  $\geq 2$  time points after completion of RT,
- Full-text available in English.

### Exclusion criteria:

- Primary thyroid, cutaneous, oesophageal cancer and lymphoma,
- Patients receiving RT comprise <half of cohort and data not reported separately,
- RT with palliative intent,
- Trial of a novel (chemo)RT dose, regimen, or other non-standard treatment.

## Results

Using the search terms and parameters above, 132, 252, 915, 886 and 1476 results were found for difficulty breathing, tiredness, pain, difficulty speaking and difficulty swallowing respectively.

The primary reasons for exclusion were assessment of symptoms at fewer than 2 time-points after completion of RT or excluded cancer type. In total 78 papers were reviewed.

Figure 1 demonstrates the trajectory of opioid use after radiotherapy, as reported in 5 papers.

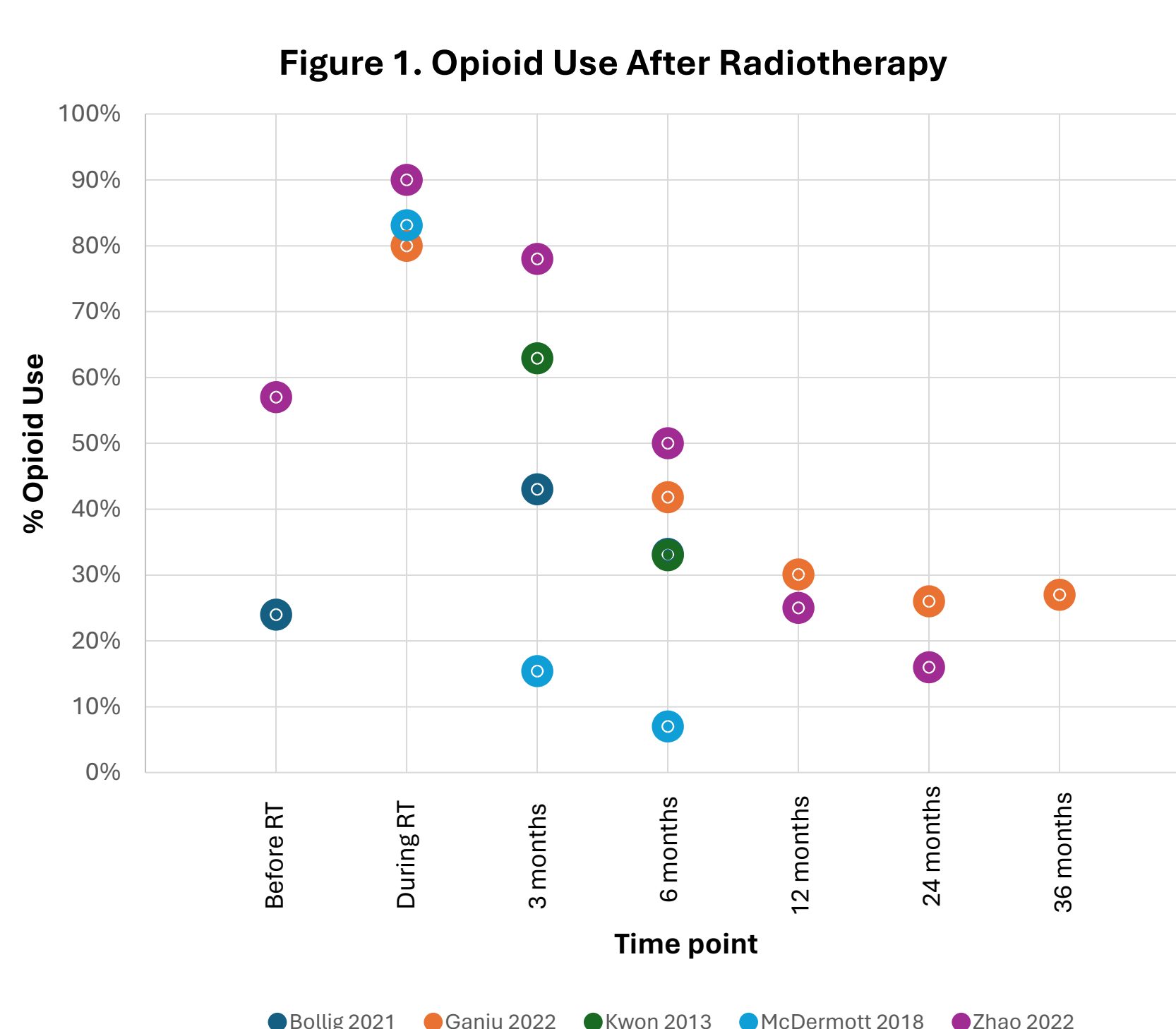


Table 1 summarises the key findings. There was significant heterogeneity in the method and time points of measuring symptom burden. Smokers have inferior functional outcomes in several domains.

**Table 1. Summary of findings**

Symptom search terms	Key findings
dyspnoea OR "shortness of breath" OR breathlessness OR "difficulty breathing"	<ul style="list-style-type: none"> <li>▪ Most patients experience little or no dyspnoea</li> <li>▪ Any degree of increased SOB post-treatment is abnormal</li> </ul>
tiredness OR fatigue	<ul style="list-style-type: none"> <li>▪ Maximal fatigue end of RT - 3 months</li> <li>▪ Increased tiredness and sleep disturbance from baseline at 1-year post-treatment</li> <li>▪ Significant associations with tumour stage, bilateral neck RT, physical symptoms, depression and anxiety</li> </ul>
pain	<ul style="list-style-type: none"> <li>▪ Pain is maximal at end of RT</li> <li>▪ Average length of opioid course variable (3 weeks - 6 months)</li> <li>▪ Prolonged opioid use associated with use pre-treatment, surgery, active smokers and psychiatric illness</li> </ul>
dysphoni* OR voice OR speaking OR speech	<ul style="list-style-type: none"> <li>▪ Voice impact varies by subsite; generally, nadir is end of RT</li> <li>▪ Improvements observed by 1 month but may continue to normalise up to 2-years</li> <li>▪ Patient and expert grading of voice quality often disagree</li> </ul>
dysphagia OR "difficulty swallowing" OR "problem swallowing"	<ul style="list-style-type: none"> <li>▪ Modified diet or feeding tube dependency maximal at end of RT</li> <li>▪ Pre-treatment dysphagia, surgery and radiation dose to key structures impact swallowing outcomes</li> <li>▪ Persistent perception of reduced swallow function and preference for soft diet in the long term, likely due in part to xerostomia</li> </ul>

## Discussion

A common limitation of the studies in this review is their analysis of patients lost to follow-up. Patients who die or have progressive disease are excluded thereby introducing a survival bias which favours patients with better functional outcomes.

Typically, patients experience treatment-related morbidity up to 2 years after radiotherapy. The trajectory of these symptoms is highly variable and dependent on several other factors but if patients are experiencing prolonged or excessive symptoms, it may indicate residual or recurrent disease.

## Conclusion

Updated UK guidelines recommend recording patient outcome measures at baseline and in the early and late post-treatment period where an effect on speech, voice or swallow is anticipated.<sup>7</sup> This review highlights the importance of understanding typical symptom trajectory after RT to allow clinicians to advise patients accurately about their recovery and identify patients whose symptoms may indicate recurrent disease.

## References

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