

Poster Communication 11

## The role of gene-environment interactions between smoking and DNA repair SNPs in oral cancer risk: a systematic review

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### Abstract

**Background:** Oral cancer is the sixth most predominant cancer worldwide, with a poor prognosis and low survival rate. Aetiology is multifactorial, involving both genetic and environmental factors such as smoking, and it is likely that the interplay between these factors contributes significantly to the development of oral cancer [1]. **Objective:** The aim of this work was to identify gene-environment interactions (GxE) involving smoking and Single Nucleotide Polymorphisms (SNPs) in DNA repair genes, previously associated with oral cancer risk, through a systematic review of the scientific literature [2,3]. **Methods:** The systematic review was registered in the PROSPERO database and conducted according to PRISMA guidelines and PICO criteria. PubMed, Scopus and Web of Science were searched using an expression combining both MeSH and common language terms. Rayyan was used to remove duplicates and select the studies according to the predefined inclusion and exclusion criteria. All relevant data from selected articles were extracted into an Excel datasheet to be further analysed. **Results:** Most GxE interactions with smoking involved SNPs in nucleotide excision repair (NER) pathway genes (46% of significant findings), namely, *ERCC2* rs13181, *XPA* rs10817938 and *ERCC6* rs2228528. Isolated significant findings were observed in additional SNPs, but without replication from different studies. **Conclusions:** Smoking interacts with DNA repair SNPs, mainly across the NER pathway, to increase oral cancer risk. However, most of the results are scarce and unreplicated. Further studies in larger populations of different origins should be performed to confirm these findings.

**Keywords:** smoking; nucleotide excision repair SNPs; oral cancer risk

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