

PROTOCOL

Review title

Dental x-rays and the risk of thyroid and other cancers of the head and neck region: A systematic review and meta-analysis

Review question

What is the association between exposure to dental x-rays and the occurrence of cancers of the head and neck region?

Searches

We will search the Medline, Embase and Web of Science databases to find all studies from inception up to 9th August 2017. Search terms included "dental x-ray(s)", "tooth radiography", "teeth radiography", "dental radiography", "bitewing radiography", "diagnostic x-ray(s)", "diagnostic radiography", "ionising radiation" AND "head", "neck", "mouth", "brain", "thyroid", "glioma", "meningioma", "parotid", "salivary gland" AND "neoplasm", "cancer", "carcinoma" as free text terms. The references of all full-text articles and any relevant review articles will be searched for additional studies.

Types of studies to be included initially

Studies that report the association between dental x-rays and head and neck cancer as an odds ratio or relative risk, or that report sufficient information for the effect size to be calculated, will be included in the review. We will exclude studies based on the following criteria: they are editorials, letters, conference reports, or they do not contain sufficient information to calculate an effect size and confidence interval. For studies that report on the association between dental x-rays and a head and neck cancer but do not provide sufficient information to calculate the effect size, we will contact the author to request the relevant data.

Condition or domain being studied

Head and neck cancer

Participants/populations

Participants exposed to dental x-rays as the study population and those not exposed as the controls

Intervention(s), exposure(s)

Exposure to dental x-rays

Comparator(s)/control(s)

In cohort studies the controls will be individuals from the general population who have not been exposed to dental x-rays and in case-control studies the controls will be the selected control subjects.

Outcomes

Odds ratios and relative risks of head and neck cancer associated with exposure to dental x-rays

Data extraction (selection and coding)

After duplicate articles have been excluded, the titles of all articles identified by the literature search will be screened and irrelevant articles will be excluded. Abstracts of the relevant articles will be further screened, applying the eligibility criteria, and the full text of selected articles will be obtained and read by two independent reviewers. Any disagreement over eligibility of articles will be resolved by discussion with a third reviewer.

A descriptive summary table will be produced to summarize the eligible studies included in the review. The following information will be extracted from the selected studies: publication year, year of diagnosis, country, study design, number of cases and non-cases/controls, number of males and females, age (median and range) or participants, details of dental x-ray exposure, effect size (95%CI), and any covariates adjusted for. Where necessary, authors of eligible studies will be contacted by email/phone to provide missing or additional data.

Risk of bias (quality assessment)

Risk of bias will be assessed using the Newcastle-Ottawa scale, which judges studies on the selection of the study groups, the comparability of the groups and the assessment of exposure and outcomes.

Strategy for data synthesis

Odds ratios or relative risks for each cancer type will be pooled and summary estimates will be calculated. As we anticipate that the studies will cover diverse populations and different ways of assessing dental x-ray exposure, random effects models will be fitted throughout.

Publication bias will be investigated by examining funnel plot asymmetry.

Analysis of subgroups or subsets

Subgroup analysis will be carried out according to each type of cancer.

Dissemination plans

The authors intend to publish the review in a peer-reviewed journal and to present the results at scientific meetings.

Contact details for further information

Prof Anjum Memon
Department of Primary Care and Public Health
University of Brighton, Falmer Campus
Brighton
BN1 9PH
A.Memon@bsms.ac.uk

Organizational affiliation of the review

Department of Primary Care and Public Health, Brighton and Sussex Medical School

Review Team

Prof Anjum Memon, Brighton and Sussex Medical School
Dr Priya Paudyal, Brighton and Sussex Medical School
Dr Josefin Sundin, Karolinska Institutet
Dr Imogen Rogers, Brighton and Sussex Medical School

Anticipated or actual start date

1st August 2017

Anticipated completion date

30th April 2018

Funding sources/sponsors

There was no funding source for this study

Conflicts of interest

None known

Country

United Kingdom

Keywords

Thyroid cancer, meningioma, glioma, head and neck cancer, dental x-rays

Stage of review

Ongoing

Collaborators

None