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The prevalence of oropharyngeal dysphagia in adults presenting with temporomandibular disorders associated with rheumatoid arthritis: a systematic review and meta-analysis

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Citation

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Review question(s)

What is the prevalence of oropharyngeal dysphagia in adults presenting with temporomandibular disorders associated with rheumatoid arthritis?

Searches

Electronic databases to be searched: Embase (inception - February 2016), PubMed (inception - February 2016), CINAHL (inception - February 2016), Web of Science (inception - February 2016), Elsevier Scopus (inception - February 2016), Science Direct (inception - February 2016), AMED (inception - February 2016), The Cochrane Database of Systematic Reviews (inception - February 2016), and ProQuest Dissertations and Theses A & I (inception - February 2016).

Conference proceedings to be searched: Conference proceedings of the annual scientific meetings of the American College of Rheumatology (published in Arthritis and Rheumatology) and the International Association for Dental Research (published in The Journal of Dental Research).

Reference lists to be searched: ÓG will search reference lists of included studies to assess if any novel citations which were not identified by the original search are present.

No language or date restrictions will be applied across any searches.

Additional details of the search strategy can be found in the attached PDF document.

Types of study to be included

Inclusion criteria:

All published observational, cross-sectional, case-control, or prospective cohort studies which provide original prevalence figures related to adults presenting with signs/symptoms of oropharyngeal dysphagia caused by TMDs associated with RA will be considered for inclusion, with no language or date limit applied.

Exclusion criteria:

Authors will not consider editorials or case reports eligible for inclusion in this systematic review.

Condition or domain being studied

Rheumatoid arthritis (RA) is a systemic autoimmune disorder of unknown aetiology which affects an estimated 1-3% of the global adult population (Helmick et al., 2008). It is characterised by progressive and persistent immune-mediated polyarticular inflammation of symmetrical synovial joint tissue, joint effusion, and synovial proliferation, progressing to ultimate joint destruction, deformity, and/or ankylosis (Kosztyla-Hojna, Moskal & Kuryliszyn-Moskal, 2015). The clinical course of RA is characterized by repeated periods of remissions and exacerbations of pain,

swelling and stiffness of joints which is worst in the morning and improves throughout the day (Sidebottom & Salha, 2013).

RA typically affects the small diarthrodial joints of the hands and feet (Voulgari et al., 2005) however peripheral articular manifestations can include the temporomandibular joint (TMJ) (Helenius et al., 2006). Disease processes within the TMJ can result in the development of temporomandibular disorders (TMDs). TMD includes a range of conditions associated with pain and dysfunction of the TMJ and masticatory apparatus that are characterised by heterogeneous signs and symptoms, and typically include pain and dysfunction (Di Fabio, 1997; Morales & Cornelius, 2015; Cooper & Kleinberg 2007). Implication of the TMJ can result in oropharyngeal dysphagia (Ueno et al., 2003; Roy, Stemple, Merrill & Thomas, 2007; Bessa-Nogueira et al., 2008; Lin et al., 2007). Oropharyngeal dysphagia is a swallowing disorder characterized by difficulty transferring food and/or fluids from the mouth to the stomach, and is associated with emotional, cognitive, sensory and/or motor problems (Tanner, 2006). Roy et al., (2007) found that RA of the TMJ in independently living elderly participants is frequently associated with a long clinical history of poor oral hygiene, masticatory and oropharyngeal swallowing difficulties. For example: xerostomia associated with mandibular restrictions in movement, difficulties when completing oral health routines due to restricted mouth opening leading to potential oral bacterial infections, masticatory dysfunction, impaired oral and pharyngeal motility and increased oral transit times (Wise & Murray, 2006). Dysphagia caused by TMD associated with RA is an important area to study, as pain may impact upon psychosocial wellbeing and health-related quality of life, thus restricting participation in activities of daily living (Schiffman et al., 2014; Hazazi, 2015; Bessa-Nogueira et al., 2008).

Participants/ population

Inclusion criteria:

With regards to exposures, authors will consider adult human patients aged 18 years and over of any gender and race seen in any setting (e.g.: hospital, primary care setting, dental practice, etc.) exposed to RA, who are experiencing arthritis-related TMDs characterised by oropharyngeal dysphagia. Patients presenting with such signs and symptoms will be included regardless of severity levels and no disease activity duration restriction will be applied.

Observational, cross-sectional, case-control, or prospective cohort studies will be considered appropriate for inclusion if they report original prevalence figures for the condition of interest, or if authors provide data to calculate prevalence on request.

Exclusion criteria:

Individuals with histories of relevant comorbid conditions affecting the mandibular region (e.g.: orthopaedic trauma to the mandibular region, cancer in the head and neck region, or neurological disease affecting functioning in this area), or histories of syndromic characteristics affecting mandibular functioning (e.g.: congenital malformations of the mandible with associated growth disorders, micrognathia, cleft palate, etc.) will be excluded. Studies will be excluded if they present data pertaining to children, if they present mixed demographic data which cannot be stratified appropriately, or if authors do not reply following two contact attempts and clarification regarding key study details and/or data is required for analysis. Editorials and case reports will not be considered for inclusion.

Intervention(s), exposure(s)

Owing to the nature of this study being that of a prevalence systematic review and meta-analysis, details regarding intervention procedures will not be relevant to data extraction.

Comparator(s)/ control

Not relevant.

Context

Authors will include research conducted in any setting, and in any location.

Outcome(s)

Primary outcomes

1. The prevalence of impaired ability to swallow, as reported subjectively or detected objectively using clinical,

radiological or endoscopic assessment.

2. The prevalence of impaired masticatory ability, as reported subjectively or detected objectively using clinical, radiological or endoscopic assessment.
3. The prevalence of pain on mastication, as reported by the patient.
4. The prevalence of fatigue on mastication, as reported by the patient.

Not relevant.

Secondary outcomes

1. The prevalence of diet modification by patients in response to signs and symptoms of oropharyngeal dysphagia due to temporomandibular joint disorders associated with RA.
2. The prevalence of weight loss due to oropharyngeal dysphagia due to temporomandibular joint disorders associated with RA.

Not relevant.

Data extraction, (selection and coding)

Database searching: Searches of 9 electronic databases (Embase, PubMed, CINAHL, Web of Science, Elsevier Scopus, Science Direct, The Cochrane Database of Systematic Reviews, AMED, and ProQuest Dissertations and Theses A & I) will be conducted by ÓG. Hand-searches of the annual scientific meetings of the American College of Rheumatology (published in *Arthritis and Rheumatology*) and the International Association for Dental Research (published in *The Journal of Dental Research*) will also be searched, as these societies aim to prioritize research regarding the improvement of the health of individuals with rheumatic diseases, and the advancement of knowledge for the improvement of oral health, respectively.

Screening: Following duplicate deletion, double screening of titles and abstracts will be conducted by ÓG, IH, and GS to exclude obviously ineligible results. Following this, articles identified as potentially relevant will be screened for eligibility. This will be achieved by ÓG and IH screening one third of results, IH and GS screening another third, and ÓG and GS screening the final third of records. This strategy aims to ensure that all records are screened by two authors. ÓG will scan reference lists of included studies to identify further relevant articles. A fourth independent reviewer, MW, will mediate disagreements via focused discussion if they occur. References will be managed using bibliographic management system Zotero (www.zotero.org).

Coding: ÓG will pilot an adapted electronic data extraction form on a representative sample of studies, with subsequent use for independent data extraction by ÓG and MW. Data will be extracted regarding: study design, setting, participant demographics, outcome measurement, prevalence figures and statistical robustness. Descriptive analysis will initially be accomplished using Excel (Microsoft Corporation) spreadsheets, with subsequent exportation to statistical software, as appropriate. ÓG will address missing/unclear data by contacting authors for studies published within the last ten years. Studies will be excluded in the case of no response following two contact attempts if critical information pertaining to prevalence is missing.

Risk of bias (quality) assessment

The methodological quality of identified eligible studies will be evaluated independently by ÓG and MW using an amended version of the Joanna Briggs Institute's (JBI) Critical Appraisal Checklist for Reporting Prevalence Data (Joanna Briggs Institute, 2014). This tool was revised via amalgamation of key facets of Boyle's (Boyle, 1998) method of evaluating prevalence studies with criteria from the JBI tool. Affirmative answers will be scored as "1", whereas answers of "no" or "unclear" will be awarded a score of "0". The Down's and Black method for assessing the methodological quality of research (Downs & Black, 1998) will also be utilized. This tool will be modified to omit criteria pertaining to aspects of intervention, adverse events, blinding and randomization as these will not be relevant to data extraction or meta-analysis. This decision was taken in order to avoid downgrading of non-randomised, observational studies.

Strategy for data synthesis

The characteristics of included studies will be presented in a descriptive manner in order to discuss their methodological designs and the participants recruited. The unit of analysis within this study will be the individual patients within the primary studies. The eligible subjects from included studies will be pooled and subsequently statistically analysed. Meta-analysis of prevalence estimates via calculation of risk ratio and 95% confidence intervals will be conducted by ÓG and LZ using electronic statistical packages if sufficient homogeneity (as indicated via Chi-squared test of homogeneity) is present. Authors plan to utilize forest plots to display overall prevalence estimates.

Analysis of subgroups or subsets

If sufficient numbers of articles are identified, authors intend to conduct subgroup analyses considering the age, and gender of participants, alongside the disease duration of RA, and the severity of RA, as measured via number of joints affected at the time of assessment. Stratification by methodological quality will be conducted, if appropriate.

Dissemination plans

Authors intend to submit this review, in its completed form, for publication in appropriate peer-reviewed international journals in order to increase accessibility of the research and to augment its visibility within the research environment. Also, with reference to international dissemination of research findings, the primary author intends to present results at the annual congress of European Society for Swallowing Disorders. Similarly, the primary author will locally disseminate results across the study period via engagement with intra- and inter-departmental research seminars.

Contact details for further information

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Conflicts of interest

None known

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English

Country

Ireland

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Adult; Arthritis, Rheumatoid; Deglutition Disorders; Humans; Prevalence; Temporomandibular Joint Disorders

Any other information

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Stage of review

Ongoing

Date of registration in PROSPERO

09 February 2016

Date of publication of this revision

12 February 2016

Stage of review at time of this submission

Preliminary searches

Started

Completed

Yes

No

Piloting of the study selection process

No

No

Formal screening of search results against eligibility criteria

No

No

Data extraction

No

No

Risk of bias (quality) assessment

No

No

Data analysis

No

No

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