Principles for Writing Literature Review

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What do you suppose to learn from this lecture?

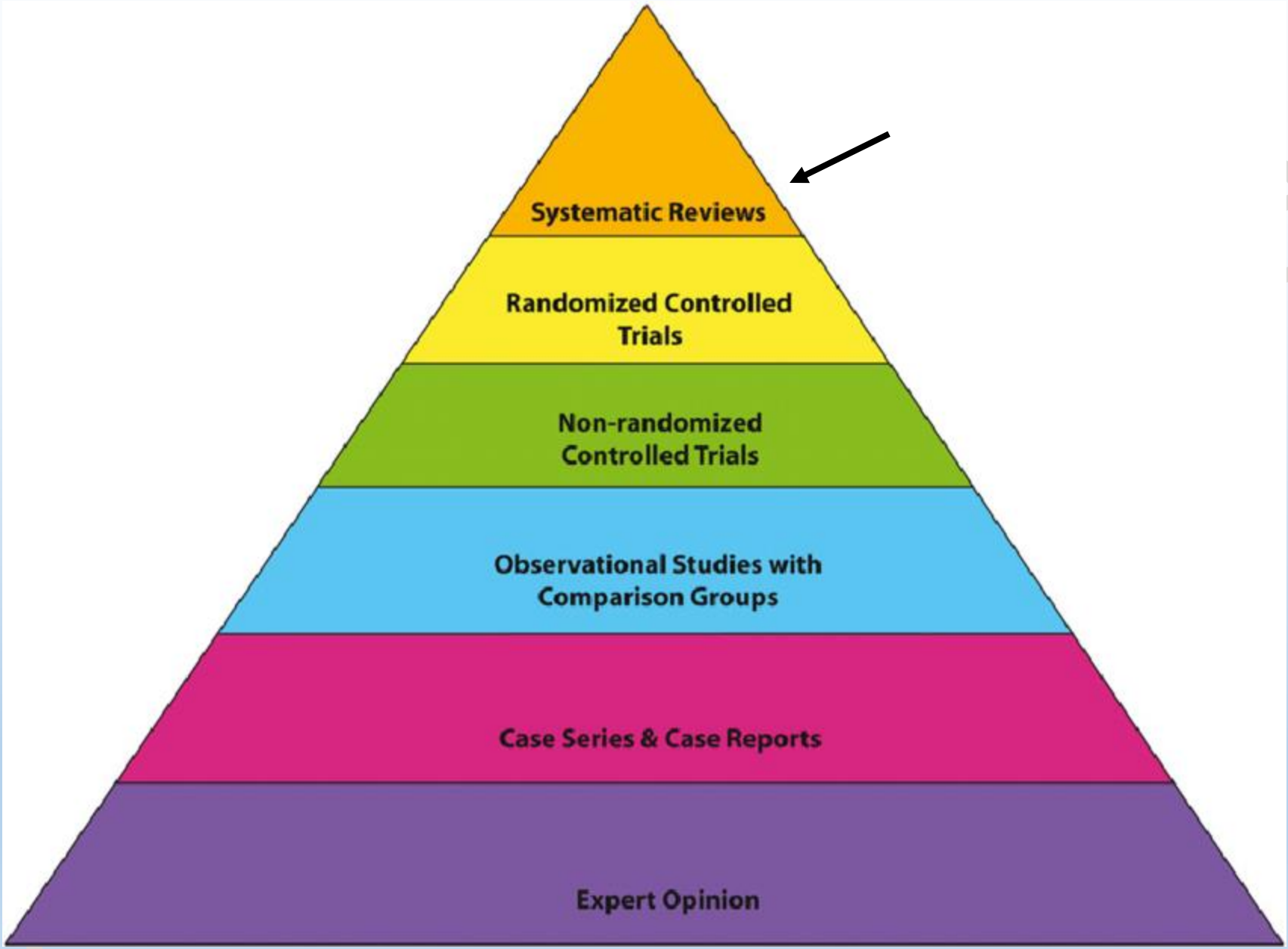
- Understand the meaning of literature review.
- Learn the electronic search and using keywords.
- Understand contents of literature review.
- Explore some examples of review papers.

What is the review paper, literature review or review of literature?

It is a type of article that critically analyses the already known data about a particular topic.

What are differences between review paper and experimental research?

- It only presents and assesses the already available information presented by other papers.
- Review paper has no new results.
- Whilst the experimental paper present results for a narrow specific topic, the review paper targets broader topics for more general audience.


Systematic Reviews
Randomized Controlled Trials
Non-randomized Controlled Trials
Observational Studies with Comparison Groups
Case Series & Case Reports
Expert Opinion

What are types of review article?

- ***Narrative or scholarly review:*** the author evaluates a selected number of papers in a particular topic.

- ***Systematic review:*** the author using a certain and correct method to critically identify, evaluate and synthesis all available studies in order to present a rigorous summary of the most relevant evidences regarding a sharp and particular question.

- ***Meta-analysis systematic review:*** uses defined methodology and statistical analysis to combined results from independent studies

How to prepare for a good review?

- ***Identifying a specific question to be answered by the review***
- ***Identifying the title of review***
- ***Establishing the aims of the review***
- ***Doing extensive search for relevant literatures***
- ***Study, analyse and criticise the obtained papers to choose the best for your work***
- ***Plan the structure of your review***
- ***Start writing***

- ***Identifying a specific question to be answered by the review***

This is also called **research statement**, **thesis statement** or **problem statement**.

A **research statement** is a summary of research achievements and a proposal for upcoming research. It often includes both current aims and findings, and future goals.

It is the statement to present the problem you try to contribute and the solution through your research. Or exactly what is your interest or curiosity which you are trying to satisfy.

It is the heart of any research project which helps in
1- Identifying the gap in the knowledge which direct the whole project
1- Determining the exact title of the research.
2- Identifying the purposes or aims of the research.

Review

Bioactivity of Bioceramic Materials Used in the Dentin-Pulp Complex Therapy: A Systematic Review

José Luis Sanz [1], Francisco Javier Rodríguez-Lozano [2,3], Carmen Llena [1], Salvatore Sauro [4,5] and Leopoldo Forner [1,*]

1. Introduction

Within the field of biomedical therapeutics, we can highlight the concept of tissue engineering to refer to the development of procedures and biomaterials that aim to devise new tissues to replace those damaged, following the principles of cellular and molecular biology and taking as a premise the search for "biological solutions for biological problems" [1]. ....

Usually the last paragraph

However, to the best of the authors' knowledge, there has been no effort to sort and summarize studies analyzing bioactivity of such materials into more homogenous subgroups that would allow for an easier analysis of the evidence.

The aim of this study is to present a systematic review of available literature investigating bioactivity of dentistry-applied bioceramic materials towards dental pulp stem cells; including a bibliometric analysis of such group of studies and a presentation of the parameters used to assess bioactivity, materials studied and summary of results.

Root and Root Canal Morphology: Study Methods and Classifications

Duaa M. Shihab [1], Anas F. Mahdee [2]

https://doi.org/10.26477/jbcd.v33i4.3014

INTRODUCTION

Tooth development is a complex biological process moderated by a series of epithelial-mesenchymal interactions (1). These biological factors can abnormalize the ultimate process of odontogenesis causing a developmental anomaly. "Anomaly is a Greek word, meaning irregular; or in other words, it is a deviation from what is regarded as normal" (1).

Depending on the stage of tooth development, various anomalies in root/canal number, size and/shape can occur (1). The most common root malformations in humans arise from either developmental disorder of the root alone, such as root dilaceration and Taurodontism or disorders of root development as a part of general tooth dysplasia, such as dentine dysplasia type 1 (2). There is a direct association of such developmental variations with pulp and peri-radicular diseases that may necessitate a multidisciplinary treatment approach (3-8).

Lack of knowledge about normal and abnormal root and root canal morphology is often associated with many failures to locate, instrument, irrigate and fill canals adequately (9, 10), therefore; identifying normal versus abnormal (aberrant) morphology of the human dentition is essential for effective root canal treatment procedures (9).

With the increased range of anatomical complexities being reported and the deficiencies of existing systems for categorizing morphological variations, a new system for classifying root and canal morphology has been proposed, which provides detailed information on tooth notation, roots number and configuration, in addition to accessory canals and tooth anomalies, in simple a practical manner which will be focused on in this review (11-14).

The presently available systems for describing the root and root canal morphology both under normal and abnormal conditions are plentiful and divergent with many interrelations in authors proposals, as they continue making their new additions depending on the preceding trials. The aim of this review is to do an electronic search and to collect most if not all of the reported methods for analyzing root canal morphology and classification systems, and summarizing them.

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How to prepare for a good review?

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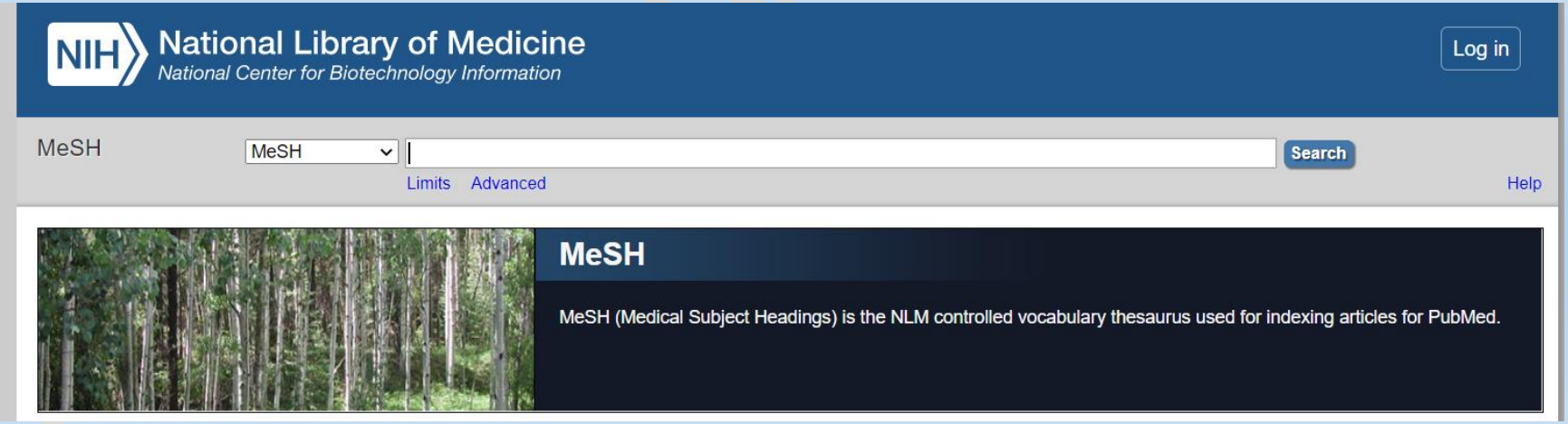
- *Start writing*

- ***Literature searching:***

1- Searching terms or keywords

- These terms define the limits and the nature of the literature search.
- They should be established in a comprehensive way in order to permit selection of all the related articles, and at the same time, eliminate those that are not relevant.
- Thesaurus systems such as the MeSH (Medical Subject Headings) terms of the National Library of Medicine, which are used to index articles for PubMed, may be referred to for selecting the appropriate keywords directly related to the topic of interest.



- Also keywords present within papers can be chosen to be your keywords.

Trigeminal sensory nerve patterns in dentine and their responses to attrition in rat molars

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ARTICLE INFO

Keywords:
Dental innervation
Odontoblasts
Pulp-dentine complex
Axonal transport
Plexus of Raschkow

ABSTRACT

Objective: Our goal was to define trigeminal nerve ending quantities and patterns in rat molar dentine, their responses to attrition (tooth wear), and their associated odontoblasts and connections with pulpal plexuses.
Design: Trigeminal ganglia were labeled for axonal transport of ^{3}H-proteins to dentinal nerve endings in male rats (3–13 months old). Autoradiography detected radio-labeled dentinal tubules as indicators of nerve ending locations. Quantitative morphometry was done (ANOVA, t-tests), and littermates were compared for attrition and innervation.
Results: There were six dentinal patterns, only two of which had an associated neural plexus of Raschkow and cell-free zone (Den-1, Den-2). Other nerves entered dentin from bush-like endings near elongated odontoblasts (Den-B), as single fibers (Den-X), as networks in predentine (PdN), or as single fibers in tertiary dentine at cusp tips (Den-S). There were at least 186,600 innervated dentinal tubules within the set of three right maxillary molars of the best-labeled rat, and similar densities were found in other rats. Attrition levels differed among cusps and in littermates (t-test $p < 0.02$-0.0001), but the matched right/left cusps per rat were similar. Innervations of tertiary and enamel-free dentine (Den-S, Den-X) were preserved in all rats. Den-B and Den-2 coronal patterns were unchanged unless displaced by dentinogenesis. Den-1 losses occurred in older cusps, while Den-2 patterns increased near cervical and intercuspal odontoblasts.
Conclusions: The extensive molar dentinal innervation had unique distributions per rat per cusp that depended on region (buccal, middle, palatal) and attrition, but only two of six patterns connected to a plexus of Raschkow.

- You can combine or joining different keywords together by using what are called **Boolean Operators**

These are simple words (AND, OR, or NOT) used as conjunctions to combine or exclude keywords in a search, resulting in more focused and productive results. This should save time and effort by eliminating inappropriate hits that must be scanned before discarding.

AND—requires both terms to be in each search item. If one term is contained in the document and the other is not, the item is not included in the resulting list. (Narrows the search)

Ex. (dentin AND remineralization)

OR—either term (or both) will be in the returned document. (Broadens the search)

Ex. (bioactivity OR remineralization)

NOT—first term is searched, then any records containing the term after the operators are subtracted from the results. (Be careful with use as the attempt to narrow the search may be too exclusive and eliminate good records).

Ex. (dentin NOT remineralization)

Using Parentheses—Using the ( ) to enclose search strategies will customize your results to more accurately reflect your topic. Search engines deal with search statements within the parentheses first, then apply any statements that are not enclosed.

Ex. (dentin OR enamel) NOT remineralization

Using Quotation marks—Using the " " if you want to search for a phrase of 2 or more words in one form or if you want to search for a word in its single spelling if there is more than one spelling form.

Ex. "dentine demineralisation"
"dentin" OR "dentine"

- **You should define the keywords used in your search, write that in the method section and do not use more or less than them.**

Review

Bioactivity of Bioceramic Materials Used in the Dentin-Pulp Complex Therapy: A Systematic Review

José Luis Sanz [1], Francisco Javier Rodríguez-Lozano [2,3], Carmen Llena [1], Salvatore Sauro [4,5] and Leopoldo Forner [1,*]

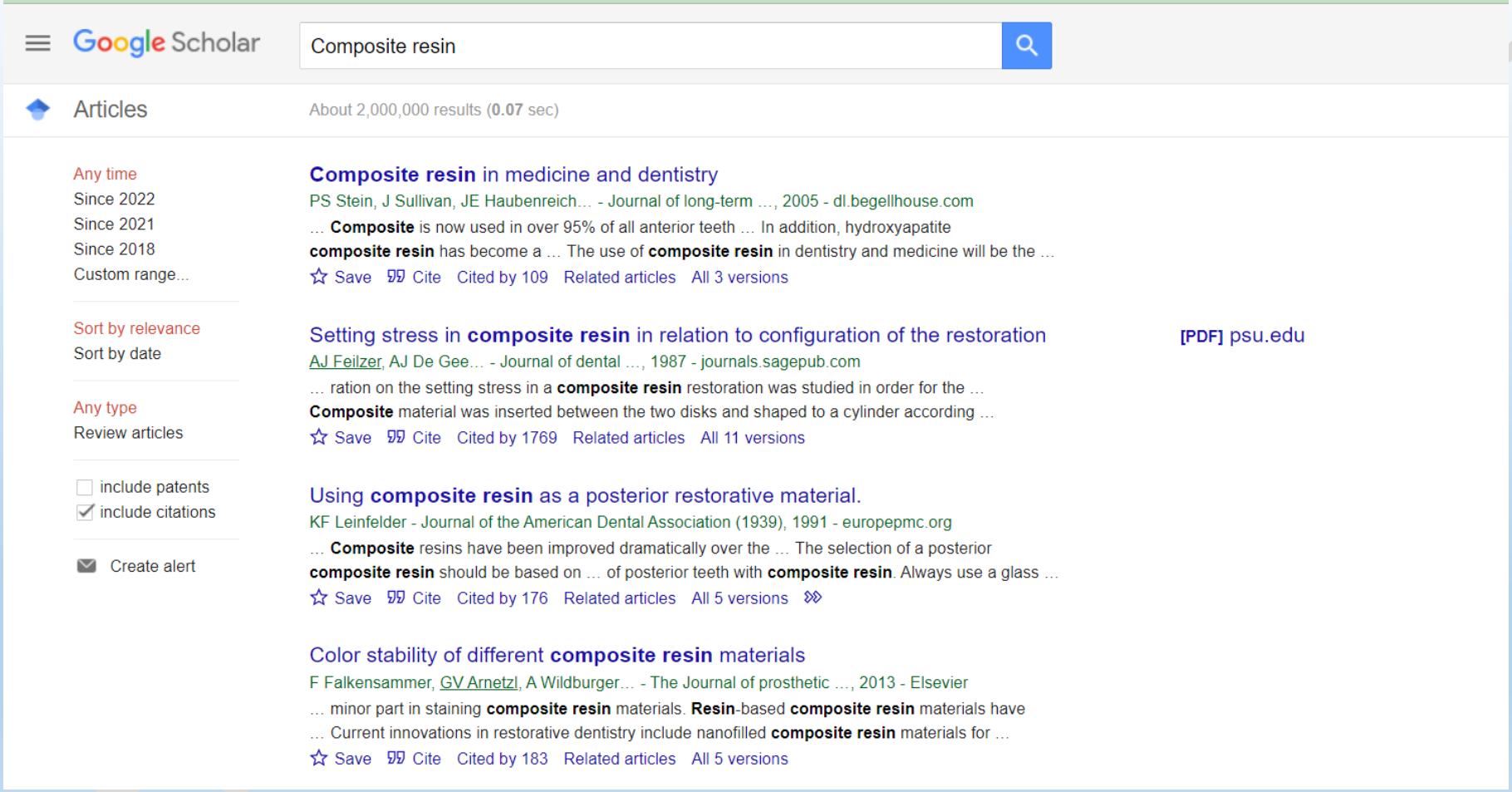
2.2.2. Search Terms

The search strategy included 6 Mesh (Medical Subject Heading) terms: "Silicate", "Calcium Silicate", "Calcium phosphate", "Calcium aluminosilicate", "Hydroxyapatite" and "Gene Expression"; and 13 uncontrolled descriptors: "Bioceramic", "Bioceramics", "Bioactivity", "Bioactive", "Mineralisation", "Mineralization", "Differentiation", "Proliferation", "Odontogenic", "Osteogenic", "Dentinogenic", "Cementogenic" and "Dental Stem Cells". Boolean operators ("OR" and "AND") were used to join search terms related to the search question (Figure 1).

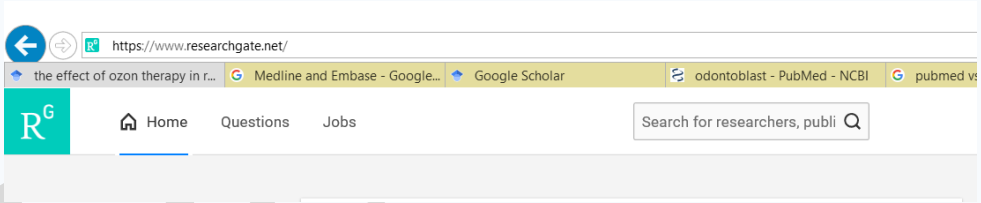
Search field 1	("Bioceramic" OR "Bioceramics" OR "Silicate" OR "Calcium Silicate" OR "Calcium Phosphate" OR "Calcium Aluminosilicate" OR "Hydroxiapatite")
	AND
Search field 2	("Bioactivity" OR "Bioactive" OR "Mineralisation" OR "Mineralization" OR "Differentiation" OR "Proliferation" OR "Gene Expression" OR "Odontogenic" OR "Osteogenic" OR "Dentinogenic" OR "Cementogenic")
	AND
Search field 3	("Dental Stem Cells")

2- **Searching Engines:**

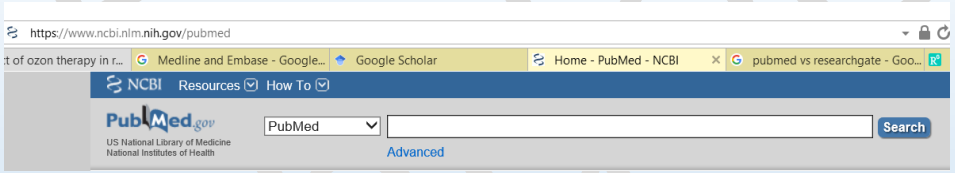
Google Scholar
https://scholar.google.co.uk/



Researchgate
https://www.researchgate.net/



The most professional search is through Midline through Pubmed.
https://www.ncbi.nlm.nih.gov/pubmed



Midline includes 10 million references to journal articles mostly published in USA since 1966. The Pubmid is a free search drive.

Another professional search database is EMBASE
https://www.embase.com/
EMBASE provide better coverage for European journals but it is not free and required subscription.

2- After identifying papers from electronic database, the reference lists for these articles (bibliography) should be viewed to identify additional relevant papers. This step can be repeated for any obtained new papers.

3- The bibliography for review papers in the field also should be searched.

4- Hand searching of more data such as theses, government reports, patient records, unpublished or ongoing studies, or any information source that could help.

5- The included method of data searching should be clearly illustrated in your method part of your literature review.

6- All obtained data must be entered through computer-based reference managing system such as **EndNote**. This system helps to make a library in your computer which helps you to easily search for a particular reference, remove any duplicated references, and citing of these references in your literature document at any chosen reference style. The style is recommended by the publication journal that you are writing your paper to be published in. The recommended reference style by University of Baghdad College of Dentistry is the **Vancouver**.

7- The data should be extracted and synthesised to answer your research question.

- ***Plan the structure of your review:***

Define the general headings and subheadings help to identify the scope of the review, arranging the headings in a logical order, and avoid gaps and redundancies in covering the subject.

The role of pulp inflammation and repair in tooth hypersensitivity

1. Abstract
2. Introduction
   - Research statement
   - Aim of the study
3. Method
4. Odontoblast cells and dentinogenesis
5. Dentine structure
6. Pulp innervation
7. Response of pulp to different injuries
   - 7.1. Physiological injuries (attrition, abrasion, erosion)
   - 7.2. Caries
   - 7.3. Fracture
   - 7.4. Dental work
8. Pulp regeneration and repair mechanism
9. Conclusions

Contents of review paper

- ***Title of the review:***

It should be clear, descriptive and highlight the covering aspect of the topic.

For example: the title “Tooth hypersensitivity” is a general title.

Whereas “The role of the pulp inflammation and repair process in tooth hypersensitivity”.

Or “Challenges in the management of tooth hypersensitivity”

would be more descriptive.

- ***Abstract***

It is the part which should be written at the end of your work but it is the first to be read in your.

The abstract should stand on its on and includes:

-The research question and the reason for doing review,

-Method of searching and analysis,

-Results or what you find in your work

-Conclusions about the topic or field directed toward answering your problem.

Inflammation–regeneration interplay in the dentine–pulp complex

Paul R. Cooper [a,*], *Yusuke Takahashi* [a,b], *Lee W. Graham* [a], *Stephane Simon* [a,c], *Satoshi Imazato* [b], *Anthony J. Smith* [a]

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Stem cell
Dentine–pulp repair
Immune

ABSTRACT

Objectives: Dental tissue disease and trauma provides an excellent model for the interaction between tissue defence and regenerative processes and has application to many of the body's other tissues. Following dental tissue infection, characterised by caries, the molecular and cellular mediators of the immune/inflammatory processes clearly impact on the dental tissues' natural regenerative responses. This review of the literature was performed to better understand how these two processes interact and identify whether cross-talk may provide novel areas for future research and subsequent translation into clinical application.

Data and sources: A review of the literature was performed using the PubMed database resource and this was followed by extensive hand searching using reference lists from relevant articles.

Conclusions: Frequently, the dental tissue inflammatory and regenerative processes are seen as both distinct and antagonistic and subsequently have often been studied in isolation; however, both direct and indirect data are now emerging which indicate significant interrelationship. Whilst the ensuing inflammatory process will result in dental tissue breakdown and molecular signalling which may impede regeneration, low grade inflammation, potentially induced by mechanical trauma and tissue necrosis, may promote regenerative mechanisms, including angiogenic and stem cell processes. Notably, the locally derived growth factors, neuropeptides, cytokines and chemokines, released from the host dentine matrix and by resident pulpal cells, immune cells, neurons and/or dying cells, will modulate defence and repair processes within the tissue.

JOURNAL OF DENTISTRY 38 (2010) 687–697

- ***Introduction:***

It should include:
Overviewing of the available publications about the topic,

Research question,

The purpose or aims of the review,

The importance or rational of reviewing the field or topic at the study time.

INTERNATIONAL
ENDODONTIC JOURNAL

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REVIEW

A new system for classifying tooth, root and canal anomalies

H. M. A. Ahmed[1] & P. M. H. Dummer[2]

International Endodontic Journal, **51**, 389–404, 2018

The present systems for classifying root and canal anomalies focus on describing details of the anomaly and categorizing them into types based on severity or specific morphological characteristics (Oehlers 1957, Fan *et al.* 2007, Song *et al.* 2010a, Gu 2011, Ahmed & Abbott 2012, Zhang *et al.* 2014). However, a practical classification addressing root/canal anomalies together with the morphology of the root, main canal system and accessory canals has not been developed.

- ***Aims and Hypothesis:***

In the narrative reviews, the aims sometimes included within the research question, however the aims can be varied depending on that question and may include:

1- Summarizing a large amount of literature.

2- Clarifying the relative strengths and weaknesses of the literature on the question.

3- Resolving literature conflicts.

4- Comparing between different methods or techniques of researches.

5- Increasing the statistical power of smaller important studies.

6- Improving the generalizability of treatment outcomes.

Writing narrative style literature reviews

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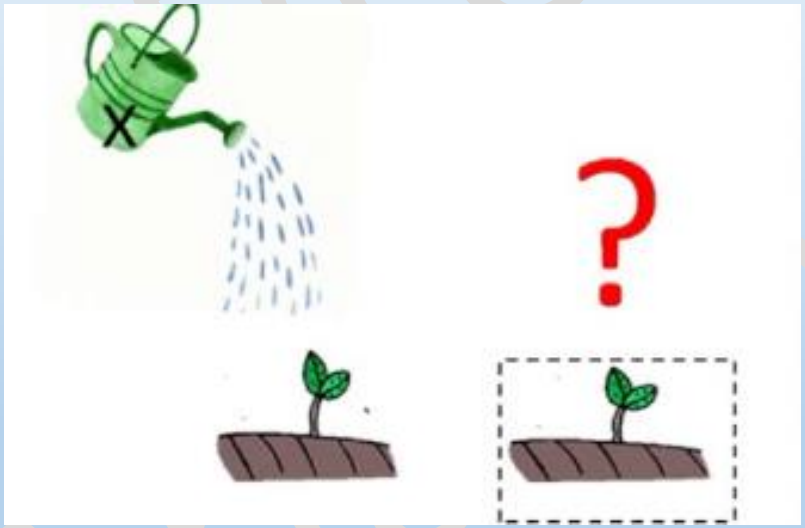
Milan, Italy

Medical Writing 2015 VOL. 24 NO. 4

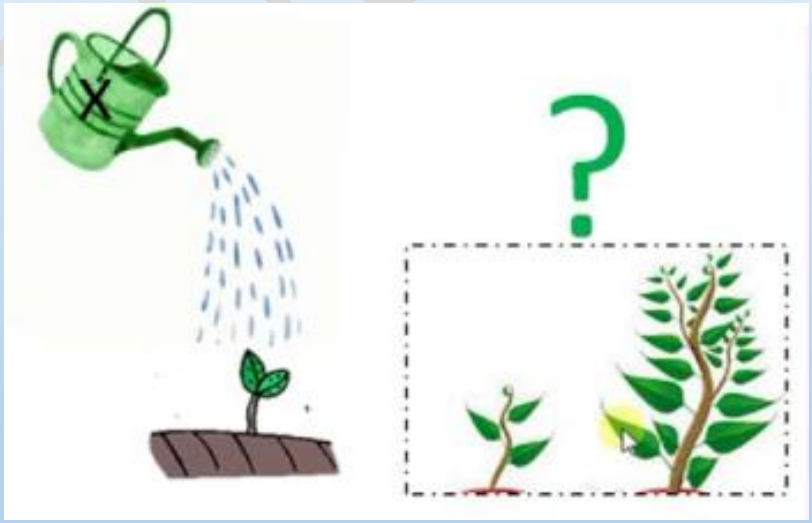
summarizing what has been previously published, avoiding duplications, and seeking new study areas not yet addressed.[3,5,6] While PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) provides reporting guidelines for SRs, no acknowledged guidelines are available for NR writing. The task of review writing is frequently assigned to medical writers, for example, on new or completed research projects, synthesis for editorial projects. However, training opportunities on writing literature reviews in the biomedical field are few. The objective of the present study is to identify practice guidelines to improve NR writing on topics related to clinical research.

Some of narrative reviews required a hypothesis to be proven.

Null Hypothesis H_0
Disprove or nullifying the research question



Alternative Hypothesis H_a
Proving the research question



Benchmarking of reported search and selection methods of systematic reviews by dental speciality

Michael P. Major,[1,2] Paul W. Major[2,3] and Carlos Flores-Mir[2,3]

[1]Goldman School of Dental Medicine, Boston University, Boston, USA, [2]Craniofacial and Oral-health Evidence-based Practice Group and [3]Orthodontic Graduate Program, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Canada

Article *in* Evidence-Based Dentistry · February 2007

DOI: 10.1038/sj.ebd.6400504 · Source: PubMed

It is the purpose of this study to investigate and compare the reported literature-search and selection methods according to dental speciality. The null hypothesis to be tested is that there is no difference in the reported SR literature-search and selection methods between the dental specialities.

- ***Method:***

Whether a narrative or systematic review, the description of methods used in collecting the published data are required.

The methods could include:

1- The key terms used in searching.

2- The time period for the researches to be included.

3- The language(s) of articles searched.

4- The sources of references (computerised data base, prior paper data base, government reports, dissertations).

For example:

The MEDLINE electronic database for English-language articles reported between Jan 2012 and Oct 2024 were searched, by using the key phrase (“tooth” OR “teeth” OR “dental” OR “dentistry”) AND (“hypersensitivity” OR “sensitivity” OR “hyperaemia”). The reference lists of the relevant articles were scanned for additional studies.

4- Describe the inclusion and exclusion criteria for citing studies and how these criteria were established. Eg:

The studies were selected according to the following criteria: 1) reporting of clinical studies of tooth hypersensitivity (excluding animal studies), 2) reporting of original data (no reviews or editorial notes), 3) No social-media source were included.

- ***Presenting the heart of the review:***

This part could be called results and discussion or results and commentary, which include presenting the main results or information gathered as part of doing the review plus the commentary and discussion that pulls these information together to help to draw conclusions about the state of the field.

Endodontic Topics

Endodontic Topics 2012, 20, 3–29

ENDODONTIC TOPICS 2012
1601-1538

Dentin basic structure and composition—an overview

LEO TJÄDERHANE, MARCELA R. CARRILHO, LORENZO BRESCHI, FRANKLIN R. TAY & DAVID H. PASHLEY

Dentin–enamel junction

Even after dentin and enamel formation and mineralization are well underway, specific biological events may still occur at the DEJ, suggesting that the cross-talk between enamel and dentin continues throughout the formation of prismatic enamel and circumpulpal dentin. The presence of enzymes (16,17) and growth factors such as fibroblast growth factor-2 (FGF-2) (16) suggests that the DEJ region represents an area of biological activity. It may liberate and activate the stored growth factors and other potentially bioactive components that may exert their effects at a location distant from the DEJ (16). Based on phylogenetic, developmental, structural, and biological characteristics, it has been suggested that instead of the dentin–enamel junction, this structure should be termed the dentin–enamel junctional complex (16).

The DEJ in human teeth is not smooth, but wavy or scalloped (18–22) (Fig. 2). This kind of an interface is believed to improve the mechanical interlocking between dentin and enamel. The size of the scallops ranges between 25 and 50 µm, and they are deeper and larger at the dentin cusps and incisal edges, leveling down toward the cervical region (18,21,23). This is in accordance with finite-element studies demonstrating that the mechanical interlocking between enamel and dentin is weaker in the cervical region (24). In addition, smaller (0.25 to 2 µm) "secondary scallops" within the "primary" scallops have been demonstrated (21,23), and upon close inspection the intermingling ridges of dentin and enamel, less than 1 µm wide, are clearly visible. It is generally thought that the scalloping structure of the DEJ can be explained as required for the tooth to withstand functional stress (7). This assumption has been questioned, though, as humans are among very few species in which the scalloped form of the DEJ has been demonstrated (23,25).

- Make sure to organize the writing body in an order which could be; chronological order, general to particular, or most frequent to rarest.

- Any included figures and tables should meet the same standards as for research papers and should be well cited (if they belong to a published article) and need a copyright if a publication is considered.

- Assess the issues surrounding the topic, the quality of the information available about the topic, problems that were not addressed, and areas of consensus or controversy.

- For each study, critically evaluate the following information:

(a)The key findings,

(b) The limitations and/or shortfalls, if any,

(c) Whether the methods are sound for evaluating the hypothesis,

(d) Whether the results can be obtained with those methods and are justified,

(e) Whether the interpretation of the results and the conclusions drawn are sound,

(f) The relative contribution of the work to the field or topic being reviewed.

- ***Conclusions***

Conclusions are focused on answering your research question in three main key points:

1- Conclusions drawn from the collected paper.

2- The limitations in the knowledge for the reviewed discipline.

3- Recommendations for further research.

4- Message to take home.

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