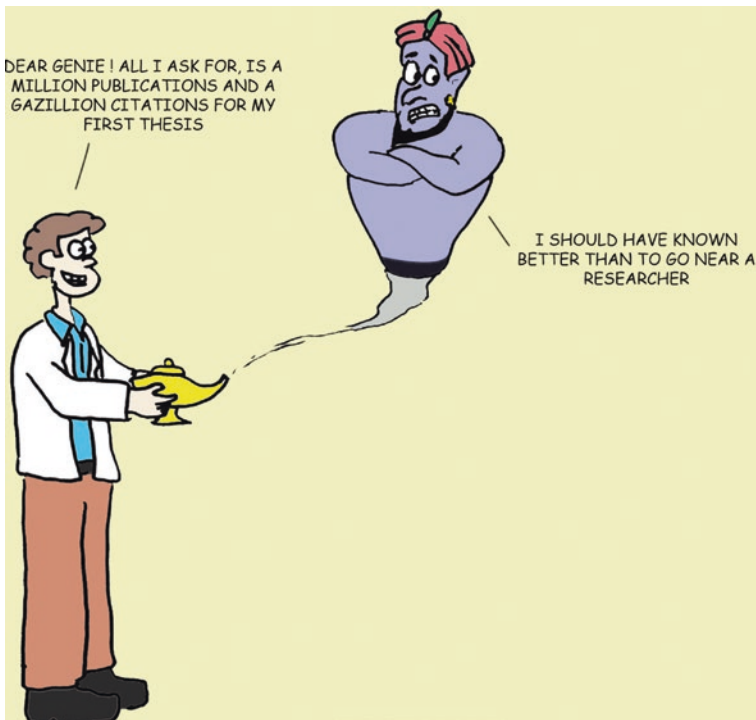


Citations and References with Citation and H-Index

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When you have a wit of your own, it's a pleasure to credit other people for theirs.—Criss Jami



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Key Points

- Referencing forms a critical part of the research and reflects the thoroughness of literature search.
- Important referencing systems include note system (e.g. Vancouver system) and parenthetical system (e.g. Harvard system).
- Many reference management software like EndNote, Zotero, Reference manager and Mendeley have been developed to help authors organize and change the order of references.
- Indexing agencies are online database systems that compile information on journal titles and authors. Common indexing agencies are Medline/PubMed, SCOPUS, EMBASE, DOAJ, Hinari and Index Copernicus.
- Quality of scientific output is measured by various scientific indices like impact factor, H index and citation index. These influence both the author impact and journal ranking.
- This chapter discusses the principles of referencing, referencing systems, indexing and various indices of measuring the quality of research such as impact factor, H index and citation index. Elements of citation for journals, books, conference proceedings, scientific reports, dissertation and patent are discussed in detail under the Vancouver system.

Introduction

Referencing plays an important role in academic writing. Referencing refers to giving acknowledgement to previous work that is carried out on the subject being currently studied [1]. A citation is defined as an in-text marker, which leads a reader to the list of references at the end of the article [2].

References form a critical part of the research and should not be taken lightly. They are primarily used in the introduction and discussion sections of an article, and can also be used in the tables and figure legends.

Prior to starting a new project or research, a student/researcher has to perform a thorough literature search to look for all relevant work that has been done on the concerned subject. The researcher must read the full texts of all the accumulated articles to get in-depth knowledge of methodology and relevance of previous studies, and thereafter organize the references [3]. Thus, organization of references should be done prior to writing the manuscript.

References play a key role in the final acceptance of the manuscript. Editors and reviewers first run through references even before reading the manuscript or abstract to see the thoroughness of the literature included and the authors' intentions. Hence utmost precision and time should be dedicated to reference writing. This chapter discusses in depth the art and science of reference writing, impact factor, various indices of measuring the quality of research such as H index and citation index and reference management systems.

Referencing

Referencing includes two elements:

1. An in-text marker, either in parentheses or as a sequential superscripted number, which informs the reader that the information is borrowed from previously, carried out work.
2. A list at the end of the article, which compiles all the citations used in the manuscript.

Referencing Systems

Referencing systems are of two types [4]:

- Note systems
- Parenthetical systems

Note Systems

Note systems include in-text citations in the form of sequential numbers, which then guide the reader to notes either at the end of the page (footnotes) or paper (endnotes).

Examples of note systems include the Vancouver system and the Chicago 16th A system.

Parenthetical Systems

In this form of referencing, the in-text marker is provided in parentheses and includes the author's name and year of publication. The complete reference list is then provided at the end of the text.

Examples of parenthetical systems include the Harvard system, American Psychologists' Association style (APA) system, and the Modern Language Association (MLA) systems.

In medical writing, the Vancouver and Harvard systems are the most commonly used referencing systems.

Vancouver System

In 1978, a group of general medicine journal editors held an unofficial meeting in Vancouver, Canada to devise strict guidelines for manuscripts submitted to their journals, hence giving birth to the Vancouver style of reference writing [5]. This is the most commonly used referencing style used in medical publications and is also referred to as the author-number system.

The Vancouver system utilizes a superscripted in-text consecutive Arabic numeral as the citation, which then directs the reader to the complete numerical list of references at the end of the paper.

Presenting References Using the Vancouver System [5]

1. *Standard journal article*

For up to six authors:

Sarkar TJ, Feldman M, Law E, Pitts YH. Hepatitis B reactivation associated with immune suppressive and biologic modifier therapies: current concepts, management strategies and future directions. *World J Gastroenterol* 2015; 115(1): 1000–1013.

For more than six authors:

Anistell MH, Taylor D, Pfeifer A, Kim R, Rostini T, Mcmayor M et al. Impact of preoperative serum creatinine on short-and long-term mortality after renal surgery: a case-control study. *Br J Anaesth* 2017; 100(3): 75–83.

Note

The use of issue number in parentheses is optional depending on the journal.

2. *Organization or group as an author*

Association of Anaesthetists of Great Britain and Ireland. Peri-operative management of the surgical patient with diabetes. *Anaesthesia* 2017;77:1630–1650.

3. *Volume with supplement*

Jackson T, Pollock C. The role of gut and skin microbiota in the development of atopic eczema. *Australas J Dermatol* 2015; 175;Suppl 3:19–24.

4. *Issue with supplement*

Depp J, Weng HG. Response patterns of recurrent glioblastomas treated with tumor-treating fields. *Semin Oncol* 2012; 95 (6 Suppl 4): S25–S35.

5. *Volume or issue with part*

Older versions of some journals had parts in place of issues; the parts were placed in parentheses e.g. Vol (Pt 6). Most journals have now replaced the parts with issues. In case of issue with parts, it is written as Vol (Issue Pt 6).

6. *Issue with no volume*

Deb DM, Kassir H, Nouri GS. Intraoperative frozen section analysis in revision total joint arthroplasty. *Clin Orthop Relat Res* 2010;(301): 440–448.

7. *Article with no volume, issue or authors*

Methamphetamine and HIV. *HRSA Careaction* 2005 July: 7–15.

8. *Type of article as required*

Ritchie G, Kashyap A. International approaches to the prescription of long-term oxygen therapy [letter]. *Eur Respir J*. 2009; 25(1): 541.

9. **Retracted article**

Sinna H, Rafael I, Rana A, Abdul-Aziz T. Intralesional immunotherapy of plantar warts: report of a new antigen combination. *Cutis*. 2012; 28 (1): 95–7. Retraction in *Cutis*. 2012; 29(5): 600.

10. **Article published in erratum**

Suzuki Y, Motoya S, Hanai S, Hibi T, Nakamura S, Lazar A et al. Four-year maintenance treatment with adalimumab in Japanese patients with moderately to severely active ulcerative colitis. *J Gastroenterol* 2017.

11. **Article published electronically ahead of print**

Abassi J. Can a diet that mimics fasting turn back the clock? *JAMA* 2017 Jun 28 doi: <https://doi.org/10.1001/jama.2017.6648>. [Epub ahead of print].

12. **Article in a language other than English**

For articles, which are not in English, NLM translates the title to English and encloses it in square parentheses. The original language of the publication is mentioned at the end of the reference.

Books and Other Monographs [5, 6]

The standard format for the citation of an entire book includes:

1. **Personal author(s)**

This refers to one or more individuals who are responsible for writing the book. The format of referencing is as follows.

Author(s) of book. Title of book. Edition. Place of publication: Publisher; Year of Publication

2. **Organization(s) as author**

Name of the organization. Title of the book. Place of publication: Publisher; Year of Publication.

3. **Chapter in a book**

When the author of the book writes the chapter:

Author(s) of book. Title of book. Edition. Place of publication: Publisher; Year of publication, chapter number, chapter title; page numbers.

When an author in an edited book writes the chapter:

Author(s) of chapter. Title of chapter. In: Name(s) of the editor(s). Ed(s). Title of book. Edition. Place of publication: Publisher; Year of publication, Page numbers.

4. **Chapter in an online book**

When a chapter is contributed by the original author of the e-book:

Author(s) of the book. Title of the book. [book on the internet]. Edition. Place of publication: Publisher; year of publication. Chapter number, chapter title [date of update/revision; date of citation];page numbers. Available from: URL or database name.

When a chapter is written by a contributing author in an edited online book:

Contributing author(s). Title of the contribution. In: Name of Author(s)/Editor(s) of the book. Title of the book [book on the internet]. Edition. Place of publica-

tion: Publisher; year of publication [date of update/revision; date of citation]; pages. Available from: URL or database name.

5. **Conference papers and proceedings**

A conference paper is an individual paper presented at a conference whereas a conference proceeding refers to a collection of conference papers published in journal issues usually as abstracts in supplements.

(a) **Conference papers**

The format for referencing is as follows:

Author of paper. Title of paper. In: Name of Editors of proceedings, Title of proceedings book, Conference title, Conference date, place of conference, place of publication, publisher, date of publication. Pagination

(b) **Conference proceedings**

The format is as follows:

Editor(s). Title of the proceedings book. Title of the conference; Year Month Date Of the conference; Location of the conference. Place of publication: Publisher, Year of publication. Pages

6. **Dissertation**

The standard format for citing a dissertation is:

Author of the dissertation. Dissertation title [indicator]. [Place of publication]: Name of the University; year of publication. Total number of pages.

Lara B. Characterisation of alpha-thrombin-induced rapid phase of PI 3-kinase [dissertation]. St. Louis (MO): Saint Louis University; 2004. 141p.

7. **Scientific or technical report**

A scientific report is a document elaborating the details of scientific research. The format of referencing a scientific report is as follows:

Authors. Title of report. Place of publication: publisher; date of publication in the year month format. Total number of pages. Report number.

Cannes A, Finn S. Health hazard evaluation report. Cincinnati (OH): National Institute of Occupational Safety and Health (US); 2001 Feb.24p.Report NO.: HETA2000-0139-2824.

8. **Patent**

A patent is identified with two types of authors, the inventor(s) per se and the assignee, which refers to the organization or individual with the legal right to the patent. The referencing format is as follows:

Inventor(s); Assignee. Title of patent. Country document type Country code patent number Date issued.

Myers K, Nguyen C, Inventors; 3F Therapeutics, Inc., assignee. Prosthetic heart valve. United States patent US 6,911,043.2005 Jun 28.

The Harvard System of Referencing

The title of the system is a misnomer, as there is no official connection with the Harvard University. Some Harvard faculty were amongst the first users of this system in the late nineteenth century and hence the name prevailed [7].

In this system, author and date are cited within parentheses in the manuscript e.g. (Cheung J, 2001) [8]. A list of citations is then provided in alphabetical order at the end under the section designated as “References.” If the work has up to three authors, all are included in the citation. If the work has four or more authors, the abbreviation ‘et al.’ is used after the first author’s name. If any author has two publications in a given year and both are being cited, a lower case letter after the date is used to differentiate between the works, e.g. (Thappa, 2008a; Thappa, 2008b) [7, 8].

Advantages of Harvard system:

- A reader familiar with a field is likely to recognize a citation without having to check in the references section.
- It helps the reader easily identify sources that are outdated.
- If the same source is cited more than once, it quickly becomes obvious if the publication is relying heavily on a single publication.
- There is no renumbering hassle when the order of in-text citations is changed.

Disadvantages of Harvard system:

- Parenthetical references take up space in the main body of the text and are distracting to a reader, especially when many works are cited in a single place.
- Rules can be complicated for non-academic references, particularly those where the personal author is unknown, such as government-issued documents and organization guidelines.
- The use of the author–date methods can be confusing when the cited authors are very prolific in their publications in any field.

Principles of Referencing [3, 5]

- References should be accurately written ensuring correct spelling and order of authors as well as correct citation in the manuscript.
- Adhere to the referencing style accepted by the journal that the article is being submitted to.
- Citing abstracts as references and personal communications should be avoided.
- When citing papers accepted but not yet published, the authors should designate the article as ‘in press’ and verify that the article has been accepted.
- Secondary referencing should be avoided.

Figure 1 depicts the various steps in referencing.

Reference Management Systems

Reference management refers to the organization of the list of references in a systematic manner in the order of appearance in the manuscript [9]. Several software have been developed to aid in the management of references, both web-based and

Fig. 1 Algorithm showing the steps in referencing

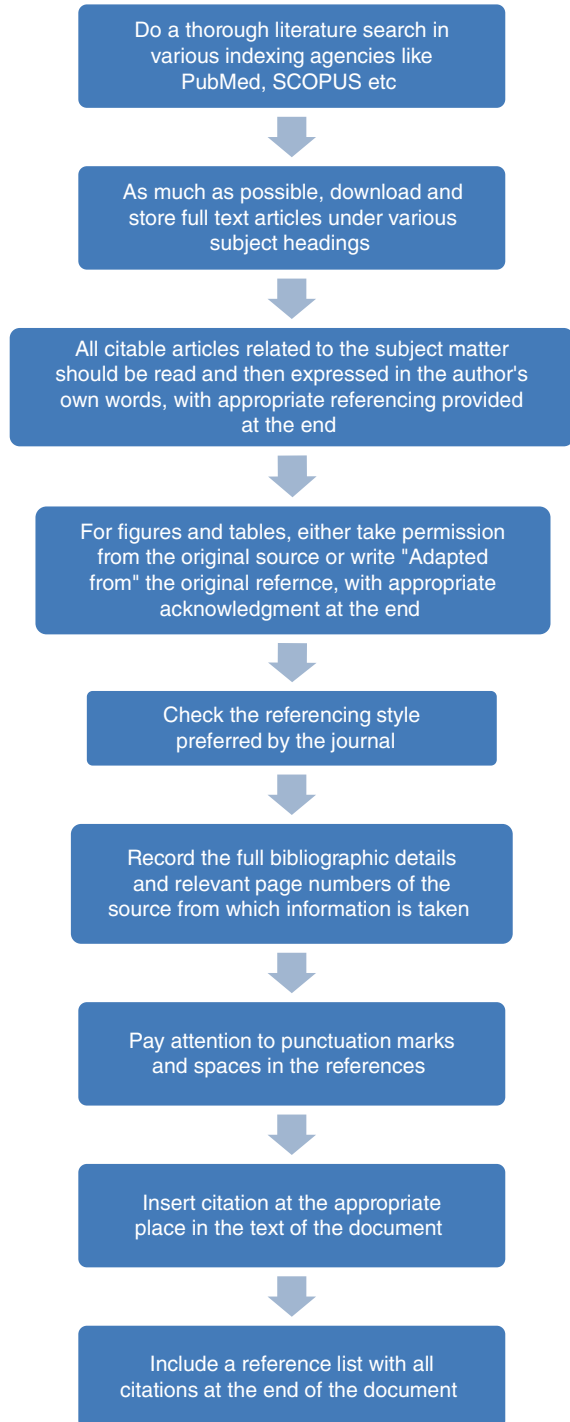


Table 1 Details of various referencing software

	Zotero	EndNote	Mendeley	Reference manager
Developer	Roy Rosenzweig Center for History and New Media	Thomson Reuters	Elsevier	Thomson Reuters
Availability	Free	Commercial	Free	Commercial
Supported operating systems	Windows, Mac, Linux	Windows, Mac, IOS	Windows, IOS, Mac, Linux	Windows
Organization	Installable PC software	Installable PC software	Installable PC software	Installable PC software
Connectivity to PubMed	Yes	Yes	Yes	Yes
Word processor integration	Yes	Yes	Yes	Yes
File attachment, tags/keywords, notes	Yes	Yes	Yes	Yes
Online storage	Yes	None	Yes	None

non-web-based. Students and researchers utilize these and to avoid mistakes while referencing and simplify the painstaking process of organizing references.

The commonly used reference management systems include EndNote, Zotero, Reference manager and Mendeley. Table 1 below summarizes the various reference management systems and their features.

Indexing

When any researcher wants to find information about a topic from a published journal, they usually check for that information on a website on the internet that compiles data about authors, titles, journals, and subjects. This specific online bibliographic database system is known as an index.

Indexing of a journal within a database is very important as it often reflects the quality of a journal, with indexed journals considered to be of higher scientific value as compared to non-indexed journals. With the progressively increasing emphasis on publications by academic institutions, authors prefer to publish in indexed journals [10, 11]. All indexing agencies adopt stringent criteria for journal indexing [12].

Indexing Agencies

Some commonly known and used bibliographic databases or indexing agencies are:

1. MEDLINE/PubMed (see below).
2. SCOPUS (Elsevier).

3. EBSCO Publishing Databases.
4. EMBASE database (Elsevier).
5. DOAJ (Directory of Open Access Journals).
6. Hinari-set up by the [World Health Organization](#) and major publishers to enable developing countries to access biomedical and health literature free or at low cost.
7. Index Copernicus.

Performing simultaneous searches through more than one database overcome the inherent limitations of each one and add to the quality of writing, reviewing and editing [11, 13].

MEDLINE/PubMed

One of the most popular, rapidly updated, free and easy-to-use databases is MEDLINE® (Medical Literature Analysis and Retrieval System Online). PubMed content is broader and in addition to MEDLINE citations, includes: citations from old MEDLINE files (from 1950 to 1965), articles of journals that are not included in MEDLINE etc [10, 14].

The process of applying for indexing in MEDLINE is often handled through the journal publishing company. One of the main advantages of MEDLINE is its reliance on the Medical Subject Headings (MeSH) thesaurus, which facilitates retrieval of articles through keywords.

Thomson Reuters Scientific

Thomson Reuters Scientific is a division of Thomson Reuters, and used to be called Thomson ISI (Institute of Scientific Information). One of Thomson's products is the ISI Web of Knowledge, a database that covers over 9000 publications in every area of the sciences, arts and humanities. Once a journal is indexed in ISI Web of Knowledge, it can be assigned an "impact factor" by Thomson [14].

Impact Factor

The Impact Factor (IF) is a tool to identify the journals most cited by researchers and was created by Eugene Garfield, the founder of the Institute for Scientific Information. It is a ratio of the number of citations received in a given year by all articles published in the two previous years (in the numerator) and the number of articles published in the same years (in the denominator). Impact factor of most of the journals can be checked at the journal webpage itself. It is published annually in *Journal Citation Reports* (JCR), by Thomson/ISI publication [10].

Only research articles, technical notes and reviews are "citable" items. Editorials, letters, news items, and meeting abstracts are "non-citable items" for the purpose

of calculating the denominator, but can be counted in the numerator [15]. In addition, IF cannot be computed for journals that are less than 2 years old [16]. It is currently used as an indicator for quality of the scientific output. It plays a role in hiring, academic promotions and research grant policy. Hence, authors are forced to publish their research in journals of high IF at the cost of a specialist or national journal that might actually be more appropriate. Increasingly, journals are being designed in such a way so as to make them citable than readable, putting forth the needs of researchers before the needs of ordinary doctors who far outnumber researchers as readers, which might result in a rise in IF but with a decline in the readership [17].

Hence, the usage of IF as a solitary method to assess the quality of the journal is not recommended. Limitations of using the IF are:

1. The predominant type of article published in a given journal, e.g. reviews and original articles (cited more) vs. case reports (less cited);
2. Many journals limit the number of citations and, therefore, it is not possible to cite all that has been read;
3. Authors from developed countries tend to cite articles published in their countries but in developing countries, authors mostly cite journals published in developed countries;
4. Journal with high IFs may not be more useful in daily practice of doctors;
5. Citation behaviours can be influenced by online availability, publication lag, and self-citation by journals [11].
6. A two-year period can inflate a journal's overall impact if only a small number of articles in rapidly changing areas of research account for the vast majority of citations. (e.g. stem cell biology, genomics etc. [18]) Also, a longer period provides a better picture of journal stature than a short period of 2 years.
7. Generally, the basic sciences and broader speciality journals have a higher IF than the clinical sciences or narrower speciality journals.

H-Index

The *h*-index is an index to quantify a body of scientific research output and was suggested by Jorge E. Hirsch, a physicist at University of California. The *h*-index is also called the Hirsch index or Hirsch number. It is an index that attempts to measure the apparent scientific impact of a scientist. An author with an index of "h" indicates that the author has h publications, which has been cited h times. It takes into account factors like the number of co-authors in an article; the average number of citations received by a scientist, and is based on the set of the most cited papers. The *h*-index can be calculated for any group of scientific papers. Most frequently the *h*-index is used to measure the scientific output of an author, but the *h*-index can also be calculated for an institution, country or journal. It has been recommended that the *h*-index should be used to complement or correct the traditional impact factor [19].

Citation Index

A citation index is a bibliographic database, an index of citations between publications, allowing the user to easily establish which later documents cite which earlier documents. The first citation index was introduced in 1960 by the ISI - the Science Citation Index (SCI). Later, it was expanded to produce the Social Sciences Citation Index (SSCI) and the Arts and Humanities Citation Index (AHCI). The other citation databases include Elsevier (Scopus), CiteSeer, Google Scholar, Ebscohost and Compendex. Citation indexes help understand the author impact in a subject and also journal ranking by giving information about what articles and topics are being published, cited, or ignored [20].

Case Scenario

1. You are required to rate two authors by calculating the H index of their publications.

Author A has 25 publications to his credit; three of his publications have each been cited once and one of his publication has been cited twice. Other publications are not cited.

Author B has 15 publications to her credit; two of her publications have each been cited twice and two of her other publications have each been cited once. Other publications are not cited.

- (a) What is the H index of author A?
- (b) Which of the two authors above has a higher H index and why?

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