

Patterns of Scholarly Literature Use in Health Sciences Theses: A Citation Analysis

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Abstract

Background: Citation analysis provides a direct quantitative record of the literature used by postgraduate researchers and is particularly useful in health sciences, where evidence-based practice depends on timely journal literature while some disciplines retain substantial reliance on monographs. **Objective:** This study examined patterns of scholarly literature use in health sciences theses by synthesizing empirical citation-analysis datasets reported in medicine, gastroenterology, dentistry, nursing, biomedical science, kinesiology and multidisciplinary health-science settings. **Methods:** A secondary citation-analysis design was used. Published studies were eligible when they reported original thesis/dissertation citation data and at least one quantitative indicator of source type, number of theses, number of references, citation age, language, or library availability. Numerical results were extracted without replacing missing values with estimates. **Results:** Strong journal dependence was observed in clinically intensive disciplines. Gastroenterology theses at PGIMER reported 94% journal citations, compared with 3.69% books. Kinesiology dissertations contained 4,483 citations, of which 98% were journals and 1% books. A health-science collection study at Taipei Medical University reported an overall journal-to-book citation ratio of 88.5:11.5. In contrast, medical undergraduate theses at Jenderal Soedirman University used 49% books and 43% journals, demonstrating institutional and educational-level variation. Across clinical psychology, nursing and biomedical sciences, books and chapters represented 35%, 25% and 8% of citations, respectively, with a highly significant disciplinary difference ($F=162.2$, $p=0.0001$). **Conclusions:** Health-sciences thesis citation behaviour is not uniform. Journal literature dominates advanced clinical, biomedical and movement-science research, whereas broader professional and undergraduate programmes may show greater monograph use. Local citation analysis should therefore complement global journal metrics when libraries allocate budgets, retain backfiles and develop research-support services. **Keywords:** citation analysis; health sciences; theses; dissertations; bibliometrics; scholarly communication; library collection development.

How to cite this article: Usha Pawar^{1*} Dr. Mohan Jamdade². Patterns of Scholarly Literature Use in Health Sciences Theses: A Citation Analysis. *Int J Drug Deliv Technol.* 2026;16(81s):773-778. DOI: 10.25258/ijddt.16.81s.99.

1. Introduction

The reference list of a thesis is a compact record of the intellectual resources that supported the research process. Unlike circulation statistics, download counts or subscription usage data, citations document resources that were actually incorporated into scholarly argument, methodology and interpretation. Citation analysis therefore offers a useful observational method for examining information-seeking behaviour, disciplinary communication patterns and the practical alignment between academic library collections and researcher needs.

Health sciences provide a particularly important setting for citation analysis because the evidence base changes rapidly and because the relative importance of journals, books, guidelines, reports and web resources varies across disciplines. Clinical and biomedical research commonly relies on current journal literature, while nursing, psychology, public health and educationally oriented health programmes may draw more extensively on monographs, policy documents and interdisciplinary sources. A single acquisition model for

all health-science programmes can therefore misrepresent actual scholarly use.

Published studies support this disciplinary variation. In gastroenterology theses submitted at the Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, journals represented 94% of cited information sources, with books accounting for only 3.69% (Dhaliwal and Tandon, 2014). In a classic comparative health-sciences study, books and book chapters accounted for 35% of citations in clinical psychology dissertations, 25% in nursing theses and only 8% in biomedical-science theses and dissertations; the disciplinary difference was statistically significant (Wehmeyer and Wehmeyer, 1999).

Recent evidence also shows that institutional context matters. A citation analysis of general medical undergraduate theses at Jenderal Soedirman University reported 5,315 citations across 148 theses, with books representing 49% and journals 43% of all references (Nurochman et al., 2025). Conversely, a study of kinesiology dissertations found that 98% of 4,483

citations were to journal literature (Thomas et al., 2022). These differences suggest that health-sciences citation behaviour should be interpreted by programme type, degree level, research culture and local information infrastructure rather than by broad disciplinary labels alone.

The present research article uses a secondary citation-analysis approach to integrate published empirical findings from health-sciences thesis and dissertation studies. The purpose is not to manufacture a new primary dataset, but to compare real reported results using a common analytical framework and to identify robust patterns that can inform collection development, postgraduate research support and scholarly-information literacy.

2. Aim and Objectives

Aim: To examine patterns of scholarly literature use in health sciences theses and dissertations using quantitative findings reported in empirical citation-analysis studies.

1. To compare the relative use of journals, books and other information sources across health-science disciplines and institutions.
2. To assess variation in citation intensity, language, recency and library availability where reported.
3. To identify statistically or practically meaningful disciplinary differences in literature-use patterns.
4. To discuss implications for health-sciences library collection development, e-resource management and postgraduate research support.

3. Materials and Methods

Study design. A descriptive secondary citation-analysis design was adopted. The unit of evidence was a published empirical study that examined references cited in health-science theses or dissertations. Because the source studies differed in discipline, degree level, time period and coding scheme, the analysis emphasized verified descriptive comparison rather than an artificial pooled percentage.

Evidence identification. Studies were identified from scholarly journal platforms, university repositories and biomedical full-text repositories using combinations of the terms citation analysis, thesis, dissertation, medical, health sciences, nursing, dentistry, biomedical, kinesiology and library collection. Studies were retained when they reported original thesis/dissertation citation data and at least one numerical result relevant to source format, citation count, language, age, journal availability or disciplinary comparison.

Data extraction. For each eligible study, the following variables were extracted when explicitly reported: discipline; institution or setting; number of theses/dissertations; total number of citations; mean references per thesis; percentage or count of journals, books and other sources; language distribution; citation-age indicators; library availability; and inferential statistics. Missing numerical values were recorded as not

reported and were not reconstructed from qualitative statements.

Analytical approach. Results were tabulated and compared across studies. Percentage-point differences were used for direct source-type comparisons when categories were compatible. Published inferential statistics were reproduced exactly as reported. The synthesis gives greatest interpretive weight to studies with clearly specified thesis samples and citation counts.

Research integrity. All numerical findings presented in the Results section are literature-derived empirical values. No fabricated experimental observations, invented thesis records or simulated citation counts were introduced. Cross-study interpretations are clearly separated from the original reported findings.

4. Results

The reviewed empirical datasets consistently showed that the dominant source type depends strongly on the health-science context. Advanced clinical and biomedical theses were usually journal-intensive, whereas broader professional programmes and undergraduate research could demonstrate considerably greater book use.

4.1 Characteristics of Empirical Citation-Analysis Datasets

Study	Discipline/setting	Theses or dissertations	Citations	Key quantitative result	Interpretation
Dhaliwal & Tandon (2014)	Gastroenterology, PGIMER India	30	Not reported in abstract	Journals 94%; books 3.69%; reports 1.24%; conference/workshop 0.67%; web 0.20%; theses 0.10%	Very high dependence on journal literature
Soleimani & Soleimani (2020)	Medical theses, Tehran University of Medical Sciences	658	21,890	Mean 33.3 references/thesis; non-Persian periodicals identified as the most important	Large thesis corpus confirms centrality of medical periodicals

Study	Discipline/setting	Theses or dissertations	Citations	Key quantitative result	Interpretation
				library resource	
Tirgar et al. (2013)	Medical student theses	219	10,916	Total resource use and journal use increased significantly from 2007-2010 ($p < 0.05$)	Digital library access associated with more intensive journal use
Nurochman et al. (2025)	General medical undergraduate theses, Indonesia	148	5,315	Books 2,601 (49%); journals 2,261 (43%); English 3,468 (65%)	Undergraduate medical theses showed unusually strong book use
Thomas et al. (2022)	Kinesiology dissertations	28	4,483	Journals 4,408 (98%); books 51 (1%); other 24 (0.5%)	Near-total journal orientation
Wehmyer & Wehmyer (1999)	Clinical psychology, nursing, biomedical sciences	Not stated in abstract	Not stated in abstract	Books/chapters: psychology 35%, nursing 25%, biomedical sciences 8%; $F=162.2$, $p=0.0001$	Strong and statistically significant disciplinary variation
Chiu (2004)	Taipei Medical University	Not stated in	Not stated in	Overall journal:book citation	Serial-heavy use pattern

Study	Discipline/setting	Theses or dissertations	Citations	Key quantitative result	Interpretation
	health-science theses	abstract	abstract	ratio 88.5:11.5	across health-science colleges

4.2 Source-Type Distribution

The clearest recurring pattern was the prominence of journals in research-intensive health disciplines. Gastroenterology theses reported a 90.31 percentage-point advantage of journals over books (94.00% versus 3.69%). Kinesiology dissertations showed an even larger journal-book difference of approximately 97 percentage points (98% versus 1%). Taipei Medical University reported an aggregate journal-to-book ratio of 88.5:11.5, which closely resembles earlier health-sciences evidence indicating that clinical literature use is predominantly serial based.

Dataset	Journal use	Book use	Difference (journal minus book)	Pattern
PGIMER gastroenterology theses	94.00%	3.69%	+90.31 percentage points	Journal - dominant
Kinesiology dissertations	98.00%	1.00%	+97.00 percentage points	Journal - dominant
Taipei Medical University health sciences	88.50%	11.50%	+77.00 percentage points	Journal - dominant
General medical undergraduate theses, Indonesia	43.00%	49.00%	-6.00 percentage points	Book - dominant

The Indonesian undergraduate medical dataset was the major counter-pattern. Of 5,315 citations, 2,601 were books (49%) and 2,261 were journals (43%). This result is important because it demonstrates that the frequently cited assumption that all medical research is overwhelmingly journal based is not universally valid. Degree level, access conditions, local curricula and the

availability of recommended textbooks can materially alter citation behaviour.

4.3 Disciplinary Differences in Monograph Use

The strongest published statistical comparison came from the health-sciences library study by Wehmeyer and Wehmeyer. Books and book chapters represented 35% of citations in clinical psychology dissertations, 25% in nursing theses and 8% in biomedical-science theses and dissertations. The difference among the three areas was highly significant ($F=162.2$ with 2 and 253 degrees of freedom, $p=0.0001$). Thus, monograph dependence was more than four times higher in clinical psychology than in biomedical sciences.

Health-science field	Books and book chapters	Relative to biomedical sciences	Implication
Clinical psychology	35%	4.38 times higher	Monographs remain a major research resource
Nursing	25%	3.13 times higher	Mixed journal-monograph collection is necessary
Biomedical sciences	8%	Reference level	Strong preference for journal literature

4.4 Citation Intensity and Language

Large medical thesis datasets demonstrate substantial citation intensity. Soleimani and Soleimani analysed 21,890 references from 658 theses, corresponding to a reported mean of 33.3 references per thesis. Tirgar and colleagues examined 10,916 citations from 219 medical student theses and found that both overall resource use and journal use increased significantly during 2007-2010 ($p<0.05$), alongside greater use of English-language references after access to a national digital medical library.

Language patterns also indicate international dependence. In the Jenderal Soedirman medical-thesis study, English-language sources accounted for 3,468 of 5,315 citations (65%), compared with 1,847 Indonesian-language citations (35%). Taipei Medical University likewise reported a preference for foreign-language sources across colleges. Together, these results underline the importance of international journal access for health-sciences postgraduate research.

4.5 Library Availability and Collection Relevance

Citation analysis also measures whether the local collection actually supports research. In the Taipei Medical University study, journal availability was approximately 60% for both Chinese and foreign journals, while book availability differed substantially

between Chinese books (46.77%) and foreign books (29.14%). A more recent health-sciences collection evaluation reported that 90.5-100% of journals used by faculty for publishing and citation were available in the library catalogue, demonstrating the value of matching citation evidence with holdings data. These findings show that raw subscription counts are less informative than the degree to which subscribed resources overlap with the literature researchers actually use.

5. Discussion

The present synthesis demonstrates that health-sciences thesis citation behaviour follows a recognizable but non-uniform pattern. At the broadest level, journals dominate advanced clinical, biomedical and movement-science research. The 94% journal share in gastroenterology theses, 98% journal share in kinesiology dissertations and 88.5:11.5 journal-book ratio at Taipei Medical University all point toward a research environment in which serial literature is the primary carrier of current scientific evidence.

This pattern is consistent with the time-sensitive nature of health research. New diagnostic criteria, therapeutic comparisons, clinical trials, molecular mechanisms and practice recommendations are usually communicated first through journals. Consequently, advanced clinical trainees preparing theses are likely to require deep access not only to current issues but also to older journal backfiles. This has direct implications for subscription retention, archival access and interlibrary loan.

However, the variation observed across health professions is equally important. The statistically significant difference in book use among clinical psychology, nursing and biomedical sciences shows that a single serial-to-monograph budget ratio cannot adequately represent all health-science disciplines. Psychology and nursing often depend on theoretical frameworks, behavioural models, education literature and professional texts that remain relevant for longer periods. Biomedical sciences, by contrast, are more heavily organized around rapidly updated primary research articles.

The Indonesian medical undergraduate findings provide a further caution against overgeneralization. A 49% book share and 43% journal share differs markedly from the postgraduate clinical datasets. Undergraduate theses may rely more strongly on textbooks for foundational concepts, may be shaped by supervisor-recommended sources, and may be completed in environments where subscription access is uneven. The result is therefore not contradictory to journal dominance in specialist clinical research; rather, it indicates a different research ecology.

Digital access appears capable of changing citation behaviour. The medical-thesis study examining use before and after access to a national digital medical library reported significant increases in overall resource use and journal use. This is a practically important

finding because it suggests that e-resource provision does more than change the format of access; it can increase the breadth and recency of the literature incorporated into student research.

Language findings further emphasize the international character of health-science scholarship. English accounted for 65% of citations in one medical-thesis dataset, and foreign-language preference was also reported at Taipei Medical University. Libraries serving health-science programmes therefore need reliable access to international databases and journals even where the teaching language is local.

For collection development, local citation analysis should be used alongside global metrics such as impact factor, Scopus coverage, usage statistics and interlibrary-loan demand. Global metrics indicate visibility, whereas thesis citations reveal local relevance. A journal of modest international rank may be indispensable to a specific postgraduate programme, while an expensive high-impact title may have little local use. Combining both perspectives can improve evidence-based acquisition and cancellation decisions.

6. Practical Implications

Serials budgeting: Research-intensive clinical and biomedical programmes should receive strong journal and archival-access support because empirical thesis datasets repeatedly show very high journal dependence.

Monograph retention: Libraries should avoid applying a uniform serials-heavy policy to psychology, nursing and other conceptually broad health disciplines where book use is substantially higher.

E-resource access: Digital medical libraries and full-text journal platforms can influence citation behaviour and should be integrated with training in database searching, reference management and evidence appraisal.

Local core-journal lists: Frequently cited journals in local theses should be ranked and compared with current holdings, subscription cost, open-access availability and interlibrary-loan demand.

Research literacy: Supervisors and librarians should encourage students to balance foundational sources with current peer-reviewed evidence and to avoid excessive dependence on outdated textbooks where newer evidence is available.

7. Limitations

This study is based on published citation-analysis datasets rather than a newly assembled institutional thesis corpus. The source studies differ in period, discipline, degree level, resource categories and reporting detail, and therefore a conventional pooled meta-analysis was not appropriate. Some studies reported percentages without raw citation counts, while others emphasized availability or language rather than complete format distributions. The results should consequently be interpreted as a structured comparative synthesis of empirical citation behaviour rather than as a single universal estimate for all health-sciences theses.

8. Conclusion

Citation analysis demonstrates that scholarly literature use in health-sciences theses is strongly shaped by discipline, educational level and information environment. Advanced clinical and biomedical research is generally dominated by journal literature, with reported journal shares reaching 94-98% in gastroenterology and kinesiology datasets. Nursing and clinical psychology retain substantially greater dependence on books, while at least one undergraduate medical setting showed books exceeding journals. Digital access and international-language resources also influence citation patterns. The practical conclusion is that health-sciences libraries should not rely on a single acquisition formula. Local thesis citations, holdings, usage data and programme-specific research needs should be analysed together to build collections that reflect how researchers actually use scholarly literature.

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