

Publication of Postgraduate Thesis in Pathology: An Introspection

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ABSTRACT

Introduction: Thesis is an important aspect of postgraduate curriculum, mandatory to be submitted for obtaining Doctor of Medicine (MD)/Masters of Surgery (MS) degree in India. The quality of research in thesis and their publication rates in field of Pathology in India has never been commented upon.

Aim: To evaluate and analyse the research quality and publication rates of postgraduate thesis in speciality of General Pathology in India.

Materials and Methods: This cross-sectional study was done on 41 postgraduate theses (Pathology) submitted for review over a period of 7 years 6 months (January 2012-July 2019) from six different medical institutes from Northern India. Data were recorded and Google online search was done for each topic, author and guide. Publication status, details of publication and journals were recorded and analysed. A journal was considered national or international as declared by the journal itself on the homepage (online journals) and/or cover page (print journals) as well as by the affiliations of editorial board members. The research quality was assessed by the publication status and

article citation rates. Statistical analysis was done using SPSS version 18.0 software.

Results: Of all theses assessed, 26 (63.4%) were published in peer-reviewed indexed journals. Of these, 20 (76.9%) were published in a journal indexed with ≥ 2 indexing bodies. 25 (96.2%) of these were published in international and only 1 (3.8%) was published in a national journal. Most of these 15 (58%) were published within a year of completion of postgraduation. The principal investigator was the first author in 81% of published theses. The mean impact factors of national and international journals were 0.696 and 3.532 ± 1.828 , respectively. Of all the published articles, only one was cited with a citation rate of 0.5 per year. Mean citation rate was 0.02 per paper per year which was low.

Conclusion: The publication rate of postgraduate thesis in Pathology was 63.4% but a low citation rate questions the quality of research. Publication of thesis should be encouraged in order to disseminate the knowledge inferred and provide directions for the future researches.

Keywords: Doctor of medicine, General pathology, Northern India

INTRODUCTION

The aim of thesis is to develop "spirit of enquiry and research attitude" in a postgraduate student. Apart from being a mandatory part of postgraduate curriculum, thesis is an important scientific paper/document, which has been acquired by in depth study and analysis of the concerned topic. It should be published in an indexed peer reviewed journal in order to disseminate the knowledge drawn from the whole exercise and enrich existing medical literature. Academic and professional credibility of a researcher increases with publishing the research work [1]. Getting thesis published in a peer reviewed indexed journal is an indicator of quality of performed research. Studies from Turkey [1], Peru [2], China [3], Finland [4], France [5] and Tunisia [6] have revealed low publication rates of thesis. Single study from a premier institute in India has shown similar results in their experience with postgraduate thesis [7]. Studies have been published regarding publication rates of postgraduate thesis in specialities of general surgery [8], urology [9], public health [10], otorhinolaryngology [11], neurosurgery [12] and medical microbiology [13] from different parts of world. No single study pertaining specifically to publication rates in field of Pathology is available from India.

The objective of this study was to assess publication rates of postgraduate thesis in the speciality of pathology in India. In addition, this study will be first of its kind to assess research quality of postgraduate thesis in India. This will help in assessing the scientific productivity of the postgraduate thesis in field of Pathology and need for improving the research quality in thesis, which is rather considered as a formality by young postgraduates.

MATERIALS AND METHODS

This was a descriptive cross-sectional study done on secondary data obtained from 41 postgraduate theses (Pathology) over a period of 7 years and 6 months (January 2012-July 2019) from six different medical institutes located in Uttarakhand and Uttar Pradesh states of India. These theses were submitted for review and approval by these institutes. This study was conducted in accordance with the Declaration of Helsinki. Variables recorded were topics, name of research Candidate, guide and coguides, year of submission, type of study and the institute of each thesis. For the search of the publication status of thesis, online Google search of each topic and the research candidate's full name was done. In case of negative result, the name of guide and coguides were used instead of research candidate's name. The year of publication, number of publications, journal's name, indexing, Index Copernicus value (IC value) and impact factor (if available) along with article's citations, authorship of the research candidate and duplicate publications (if any) were recorded. In case of no publication, the research candidates were contacted telephonically for confirmation and were also interviewed about the reason for failure to do so. A journal was considered indexed, if it was indexed in any one of following databases- Pubmed, Index Copernicus, Scopus, Directory of Open Access Journals (DOAJ), Google Scholar, Indian Citation index and Science citation index. A journal was considered international if declared by the journal itself on the homepage (online journals) and/or cover page (print journals). In case this was not stated, a journal was considered international if its editorial board included members from outside India. The research quality was assessed by the publication status

and citation rates of the published article. Citation rate of an article was calculated as total number of times the article was cited divided by number of years since its publication excluding the year of publication.

STATISTICAL ANALYSIS

Statistical analysis was done using SPSS version 18.0 software. Chi-square test was applied and p-value <0.05 was considered significant.

RESULTS

A total of 41 theses from 6 different Medical colleges located in the states of Uttar Pradesh (20; 48.8%) and Uttarakhand (21; 51.2%), India, were analysed. Of 41 theses, 26 (63.4%) were published in peer reviewed indexed journals whereas 15 (36.6%) theses remained unpublished. Of the remaining 15 unpublished theses, confirmation by the thesis authors was possible in 11 theses. In view of failure to contact the authors of remaining 4 theses, a repeat Google search was done after one month of the first or primary search, which did not yield any result and hence, it was considered that these 4 theses were not published. 20 (76.9%) of 26 theses derived articles were published in journals indexed with ≥ 2 indexing/abstracting bodies evaluated. Only 2 (7.7%) of the thesis derived articles were published in Pubmed indexed journals [Table/Fig-1].

Indexing/Abstract bodies of the publishing journals	Number of articles published {n(%)} N=26
Index copernicus	18 (69.2%)
Google scholar	22 (84.6%)
Scopus	4 (15.4%)
Pubmed	2 (7.7 %)
Directory of open access journals	5 (19.2%)
Indian citation index	6 (23.1%)
Science citation index	1 (3.8%)
Indexed with one indexing body considered	6 (23.1%)
Indexed with two indexing bodies considered	12 (46.1%)
Indexed with three indexing bodies considered	6 (23.1%)
Indexed with ≥ 4 indexing bodies	2 (7.7%)

[Table/Fig-1]: Indexing of the publishing journals.

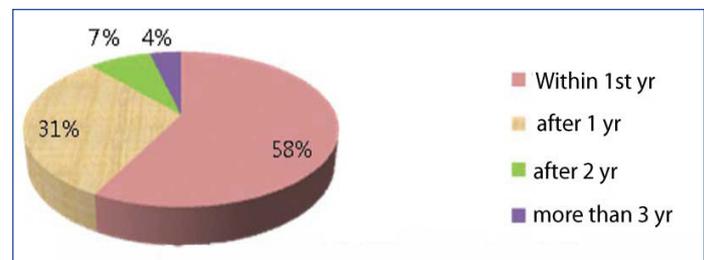
A 25 (96.2%) of 26 theses were published in International journals while remaining 1 (3.8%) was published in national journal. These journals were peer reviewed as well as available in print and online formats. There were 8 male and 33 female thesis authors. The publication rate was 75% (6/8) amongst males and 60.6% (20/33) amongst females. Of all 26 published theses, in 21 (81%) had principal investigator (i.e., the postgraduate student) as the first author [Table/Fig-2]. In remaining 5 theses (19%), the guides (usually, professors) and coguides were the first author.

Authorship of the principal investigator	Number of thesis=N (percentage) n=26
1 st	21 (80.8%)
2 nd	1 (3.8%)
3 rd	1 (3.8%)
4 th	1 (3.8%)
5 th	2 (7.7%)

[Table/Fig-2]: Authorship of thesis author (Principal investigator) in the published article.

Theses were published in varying time period ranging from 8 months to maximum of 3 years of completion of postgraduation. 15 (58%) theses got published in the same year of completion of post graduation, while 8 (31%) thesis were published after one year but before two years of completion of postgraduation.

Only one of the thesis derived article was published after 3 years of postgraduation [Table/Fig-3]. Moreover, there were variable publication rates over the period of study ranging from nil (2012) to 100% (2015); average being 58.7% [Table/Fig-4]. The different journals along with their indexing (Index Copernicus, Pubmed, Google Scholar, DOAJ, Scopus, Indian Citation index and Science citation index), IC value, number of citations and impact factor are given in [Table/Fig-5]. The mean impact factors of national and international journals were 0.696 and 3.532 \pm 1.828, respectively.



[Table/Fig-3]: Time taken to publish article after completion of postgraduation (n=26).

Year of completion of postgraduation	Number of thesis evaluated	Number of published thesis n (%) N=26
2012	1	0 (0%)
2013	-	-
2014	1	1 (100%)
2015	5	4 (80%)
2016	7	5 (71.4%)
2017	9	7 (77.8%)
2018	13	8 (61.5%)
2019	5	1 (20%)

[Table/Fig-4]: Publication trend of theses with time.

Duplicate publication was seen in one thesis (3.8% of all published theses). Similar article with same authors, title and contents were published in two different journals. It was possible to survey 11 of the 15 authors of unpublished theses telephonically. The most common reason for thesis not being published was lack of interest in academic career (5/8; 62.5%). Thus, 5/41 i.e., 12.2% theses were wastage of all time, efforts, resources and knowledge. Another reason was that the thesis derived article was in the process of publication (3/8; 37.5%). Three thesis authors mentioned that their article was rejected by multiple journals considered with remarks being nothing new or poorly written. It was found that sample size and study design had no impact on the publication rates (p-value- 0.993 and 0.579, respectively) [Table/Fig-6,7].

Research quality: Besides publication status, citation rate was taken as other indicators of research quality. Only one of all published articles had 2 citations. The citation rate of this article was 0.5 per year. Remaining 25 articles were never cited till date. Mean citation rate of the articles derived from thesis was 0.02 per year.

DISCUSSION

Thesis, a mandatory exercise during postgraduation (MD/MS), can be considered as being published as a copy of it is usually maintained in the institutional libraries. However, this does not make the inferred information accessible to the scientific community worldwide for its utilisation. Publication of MD/MS postgraduate thesis in a peer reviewed indexed journal brings recognition of the research work done and this rate itself speaks of the research quality. The publication rate of Master's thesis in a single study conducted in India was found to be 30% [7]. However, the publication rates of theses in different specialities

Sl. No.	Name of Journal	National/ International ¹	Indexing*	Index copernicus value (2018)	Impact factor
1.	Scholars Journal of Applied Medical Sciences	International	GS**, Indian citation Index	NA	1.62 (?)
2.	International Journal of Scientific Study	International	GS	NA	2.605
3.	Annals of Pathology and Laboratory Medicine	International	IC ³	96.77	NA
4.	Journal of Evolution of Medical and Dental Sciences	International	GS, IC	96.22	NA
5.	Journal of Clinical and Diagnostic Research	International	GS, IC, DOAJ ⁴	131.08	NA
6.	Indian Journal of Pathology and Oncology	International	GS, IC	86.92	4.852
7.	National Journal of Laboratory Medicine	International	GS, IC, DOAJ	95.23	NA
8.	Annals of International Medical and Dental Research	International	GS, IC	89.35	NA
9.	Indian Journal of Public Health Research and Development	International	GS, Scopus, Indian Citation Index	NA	6.405
10.	International Journal of Medical Science and Clinical Inventions	International	Pubmed, GS, IC, DOAJ, Indian Citation Index	NA	NA
11.	Journal of Cytology	National	Scopus, GS, Pubmed, DOAJ, Science Citation Index	NA	0.696
12.	IOSR-Journal of Dental and Medical Sciences ⁵	International	GS, IC	NA	5.164
13.	Journal of Medical Science and Clinical Research	International	GS, IC, DOAJ	NA	0.546
14.	International Journal of Medical Science and Public Health	International	GS, IC	86.0	NA

[Table/Fig-5]: Journals in which the articles were published with their indexing and impact factor.

¹As declared by the journal on its homepage (online) or coverpage (print version) and the affiliations of the editorial board members

*Indexing verified last on 1 March 2020; (?) source not available

**GS: Google scholar, ³IC-Index copernicus, ⁴DOAJ-Directory of open access journals

⁵Predatory alert (<https://journals.indexcopernicus.com/search/form>)

Sample size	Number of theses	Published	Not published	Publication %
<50	5	3	2	60%
51-100	15	10	5	66.7%
101-200	7	4	3	57%
201-500	9	6	3	66.7%
501-1000	2	2	0	100%
>1000	3	1	2	33.4%

[Table/Fig-6]: Sample size versus publication rates.

Yates Chi-square-0.465, df=5, p-value-0.993

Study design	Number of theses	Thesis published	Thesis not published	Publication %
Retrospective	9	5	4	55.6%
Prospective	32	21	11	65.6%

[Table/Fig-7]: Study design versus publication rates.

Chi-square:-0.307; df=1; p-value-0.579

across the world varied from 3.5% to 49.7% [2,7-10,14,15]. Ozgen U et al., (Turkey) and Elloumi H (Tunisia) in their studies covering multiple specialities mentioned about the publication rate of thesis in Pathology to be 5.5% and 16.2%, respectively [1,6]. In the present study, a higher rate of publication of theses in field of Pathology was noted (63.4%). Although the main regulating body for medical education standards in India i.e., Medical Council of India, has not mandated publication of thesis for postgraduates, but certain individual universities have [16]. Recent amendments in the MCI guidelines for the promotion of faculty mentions 1-3 publication in indexed print and online available journals as a criteria for eligibility for promotion to associate professor and professor [17,18]. If a postgraduate student wishes to pursue academic career (which is recently being more favoured in infrastructure requiring speciality like Pathology), publication(s) really counts. Recent increase in interest amongst young pathologists for academics and MCI guidelines for eligibility of teachers has possibly led to higher publication rates in Pathology postdoctoral thesis in India.

Previous studies reported the publication rates to be higher amongst female than male thesis authors [17,19]. In the present study, M:F ratio for published and unpublished theses were 1:3.3 and 1: 4.1, respectively.

As in the current study, some earlier studies have also shown that a higher proportion of postgraduate thesis was published in international journals as compared to national journals [7,9].

The research candidate was given the privilege of being the first author in 24.5% to 83.5% of the published articles in studies from different parts of world [2,4,6,8]. In a study from India, thesis author was the first author in 54% of master's thesis derived article [7]. Comparable rate was observed in the present study. It is noticeable that still there is a significant percentage of thesis articles, where the guides or coguides have first authorship. Authorship is determined by multiple factors like conception of idea, literature search, contribution to the research, preparation of manuscript, final approval of the draft etc. This may justify the first authorship of guide or a coguide.

Mayir B et al., (Turkey), reported that time taken for a thesis to be published may vary from 1-7 years [8]. Sipahi H et al., mentioned in their study from Turkey that it takes about 6 months for a thesis to be published [10]. It was observed in current study that majority theses were published within a year of thesis submission. This is in concordance with the findings of Dhaliwal U et al., as they have reported this time to vary from 8-74 months (33.7±17.33 months [7]. Another study from Brazil states that publication starts two years after completion of postgraduation [20]. These variations in opinions can be explained by lack of time during the post graduation course. Also, the process of publication of an article itself takes time.

Duplicate publication i.e., same research results published in more than 1 article(s), should be regarded as misconduct [21]. Duplicate publications have been brought into light by certain articles [22,23]. In present study, the present authors found one such thesis; same manuscript with same contents and authors derived from this thesis was published by two journals at a gap of two months.

Mayir B et al., used citation rates of general surgery thesis in Turkey as a determinant of thesis quality [8]. In India, this is the first study to assess quality of postgraduate thesis by citation rate of published article. Citation rate of thesis derived articles has been reported to vary from 0-14.7 per year in Finland [4]. Median citation rate varied from 0.3 to 5 per paper per year in a study from Turkey [1]. In the present study, the citation rate was low. Majority of articles have never been cited. This difference may be attributed to thesis being not so much scientifically productive as well as lesser time between the publication of theses and the current study. Overtime, the citation rate may increase. It is speculated that immunohistochemical, flow cytometry, molecular biology studies and studies of recent and future interest may be cited more frequently [9].

Willis DL et al., reported that citation rates of an article are affected by study design, sample size and study topic [24]. Study design and sample size did not affect publication rates in present study. Dhaliwal U et al., also reported that publication rates did not vary with study design and sample size [7].

Nieminen P et al., reported in their article that publication rates increased with time from 1990s to 23.8% in 2001-2003 when compared with another European country [4,25]. In present study, there was a rather a declining trend of publication rates over the study duration (2014 onwards). The reason could be that the process of publication takes time. But still, publication of postgraduate thesis should be encouraged and also newer topics of relevant recent interest should be taken up for thesis for possible future publication prospects. As 37.5% of unpublished thesis in present study was rejected by multiple journals, it may be inferred that certain percentage of thesis are either substandard or fail to add anything significant to medical literature. The candidates should be guided for writing a nicely organised and presentable article.

During the study, authors observed that certain journals were preferred for publication over others in certain institutions. This domestic pattern of theses publication was observed in their study by Ozgen U et al., and Quiroz IA et al., also [1,2]. The young research candidates don't have the idea of which journal to consider and which to condemn. Their seniors or the guides/coguides often provide the guidance in this regard. This explains the affinity for certain journals. The authors would recommend the young research candidates to first search for a reputed, peer reviewed, indexed and preferably international journal which is available online and in print version also. Indexing with recognised databases like Medline, PubMed Central, Science Citation Index, Embase/Excerpta Medica, Scopus and IndMed should be preferred [26]. "Impact factor" is another tool to assess prestige of a journal. Index Copernicus portal has identified 48% of the journals from India as Predatory journal practices [27]. One should also be aware of the predatory journals, prefer journal metrics like Journal citation rate by Clarivate analytics for assessment of a journal and avoid falling in trap of fake metrics [28,29].

Limitation(s)

This study may have failed to access certain articles in case there was a change in surname postmaritally. The four thesis authors could not be contacted for confirming their thesis being unpublished.

CONCLUSION(S)

Although the publication rates of thesis in field of Pathology are respectable, the quality of research is questioned by number of unpublished thesis, low citation rate, rejection of thesis derived articles and more of a declining trend in thesis publication. The postgraduate education standards in Pathology need to be updated so that the young postgraduates can survive and sustain in the era of molecular investigations. It is also recommended that the regulating body for medical education (MCI in India) should promote publication of theses because of obvious reasons, with clearly defining the standards of the journal for publication. Also, the young postgraduates should not jump upon certain traditional journals of their institute just for the sake of rapid and easy publication, but should evaluate the journal first, before surrendering their valuable research work.

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