

Publication of pediatric theses defended at the Tunis faculty of medicine: A 15 year study

Publication des thèses de pédiatrie soutenues à la faculté de médecine de Tunis: Une étude sur 15 ans

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ABSTRACT

Introduction: The valorisation of thesis through its publication is necessary to enhance its visibility. Few data exist concerning the characteristics of theses defended at the Tunis faculty of medicine.

Aim: Examine the publication rate of pediatric theses and identify factors associated with an increased publication rate.

Methods: We conducted a cross-sectional descriptive bibliometric study of pediatric theses defended at the faculty of medicine of Tunis over a 15-year period, from 2006 to 2020. Theses were retrieved from the catalog of the faculty library. Publications had been searched in databases "Pub Med", and "Google Scholar" until December 2021.

Results: The study involved 235 pediatric theses. Sixty-eight theses were published, representing 29% of the total. The main topics of published theses were neonatology (16%) and hematology (15%). The language of publication was French and English in 55% and 45% of cases, respectively. All publications in Q1 and Q2 journals were written in English. The only independent factor predicting publication of theses was the very honourable mention with congratulations of the jury and proposal for the thesis prize ($p=0,007$).

Conclusion: Additional assessments will be necessary to identify the obstacles to the publication of theses.

Key words: Pediatrics, thesis, medical faculty, publication, scientific journal.

RÉSUMÉ

Introduction: La valorisation de la thèse par sa publication est nécessaire afin de rendre le travail visible. Peu de données existent concernant les caractéristiques des thèses soutenues à la faculté de médecine de Tunis.

Objectif: Etudier le taux de publication des thèses de pédiatrie et identifier les facteurs associés à une augmentation du taux de publication.

Méthodes: Nous avons réalisé une étude bibliométrique descriptive transversale des thèses de pédiatrie soutenues à la faculté de médecine de Tunis sur une période de 15 ans, de 2006 à 2020. Les thèses étaient extraites du catalogue de la bibliothèque de la faculté. Les publications ont été recherchées dans les bases de données "PubMed" et "Google Scholar" jusqu'au décembre 2021.

Résultats: l'étude a porté sur 235 thèses de pédiatrie. Soixante-huit thèses ont été publiées, soit 29% du total. Les principaux thèmes des thèses publiées étaient la néonatalogie (16%) et l'hématologie (15%). La langue de publication était le français et l'anglais dans 55% et 45% des cas, respectivement. Toutes les publications dans les revues Q1 et Q2 ont été rédigées en anglais. Le seul facteur indépendant prédisant la publication de la thèse était la mention très honorable avec félicitations du jury et la proposition pour le prix de thèse ($p=0,007$).

Conclusion: Des évaluations complémentaires seront nécessaires pour identifier les obstacles à la publication des thèses.

Mots clés: Pédiatrie, thèse, faculté de médecine, publication, journal scientifique.

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INTRODUCTION

The medical doctoral thesis is a research project that aims to teach the doctoral student how to implement a scientific approach. In Tunisia, as well as many other countries, completing a thesis is a mandatory requirement for medical training programs. It often represents the doctoral candidate's first experience with the research world [1]. Publication of the thesis in an indexed journal enhances its visibility within the national and international scientific community.

Two bibliometric studies were conducted on doctoral theses defended at the Faculty of Medicine of Tunis (FMT) for the years 2004 to 2005 [2] and the years 2008 to 2010 [3]. Regarding the specialty of "Pediatrics", both studies revealed a publication rate that varied from 20 to 21.7%. However, no bibliometric study has exclusively focused on the theses within this specialty.

The objectives of this study were to examine the publication rate of pediatric theses defended at the FMT and to identify potential factors associated with an increased publication rate.

METHODS

Study type

This was a cross-sectional descriptive bibliometric study conducted on pediatric theses defended at the FMT over a 15-year period, from 2006 to 2020.

Study population

We included all pediatric theses, listed in the catalog of the library of the FMT, and defended between January 2, 2006, and December 31, 2020. Theses dealing with a pediatric topic but directed by a teacher belonging to a specialty other than pediatrics were excluded.

Data collection

The identification of publications arising from the theses was conducted through a literature search in the "PubMed" database and the scientific search engine "Google Scholar" by entering the name of the doctoral student and/or the name of the director of each thesis. The search for publications was extended until December 31, 2021. For each publication, the resident's characteristics, the director's qualifications, the thesis features and bibliometric informations were retrieved.

Applied definitions

Bibliometrics

Bibliometrics is the quantitative evaluation of the scientific output of a researcher, a group of individuals, or a journal by counting scholarly publications and the impact of this activity on the community through received citations [4].

Impact Factor Quartile (IFQ)

Used to rank journals according to their impact factor from highest to lowest. For a given field, journals considered to have a high impact factor are in the first quartile (Q1), those with a lower impact factor are in the second quartile (Q2), followed by (Q3) and (Q4) [5]. During our study, the journal quartiles were determined according to the Scimago institutions ranking [6].

Statistical analyses

The data were analysed using the SPSS (Statistical Package for Social Science) version 25. Percentages were compared using Pearson's chi-square test or Fisher's exact test if the validity conditions were not met. To quantify the association between the publication of a scientific article based on a pediatric thesis and different predictive factors, we calculated the odds ratio (OR) presented with its 95% confidence interval. The explanatory variables with a significance level below 20% in univariate analysis were introduced into the final model and analyzed using binary logistic regression. The strength of the association between the explanatory variables and the explained variable, adjusted for various confounding factors, was quantified using an adjusted odds ratio (ORa) presented with its 95% confidence interval.

RESULTS

Our study focused on 235 pediatric theses (5% of all theses defended at FMT between 2006 and 2020). Sixty-eight of them were published, accounting for 29% of the total. Among the 68 published theses, 66 resulted in a single publication, one thesis had two publications, and another had three publications, totaling 71 publications. The time interval between the theses defense date and their publication ranged from one month to eight years, with an average of two years and two months. Three theses were published before the defense date. Publications of the theses were in the form of original articles in 80% of cases and published abstracts in 19% of cases. One thesis was published as a case report. Twenty-five medical journals provided the support for the 71 publications from the theses. Among these journals, nine were related to the specialty and accounted for 22.5% of the publications (Table 1).

Eleven medical journals were from other specialties (Table 2) and five were generalist journals that published 53.5% of the publications resulting from the theses (Table 3).

Table 1. Distribution of theses published in pediatric journals

Journal	Quartile IF of the journal	Number of publications from theses
Archives de pédiatrie	Q3	4
Journal of pediatric endocrinology and metabolism	Q2	3
Revue maghrébine de pédiatrie	-	3
International journal of paediatrics and adolescent	Q3	1
Journal de pédiatrie et de puériculture	Q4	1
Journal of child neurology	Q2	1
Neuropediatrics	Q2	1
Pediatrics and neonatology	Q3	1
Périnatalité	Q4	1
Total		16

IF : Impact Factor

Table 2. Distribution of theses published in a non-pediatric speciality journal

Journal	Quartile IF of the journal	Number of publications from theses
Néphrologie et thérapeutique	Q3	4
Revue française d'allergologie	Q4	4
European journal of gastro-enterology	Q3	1
International journal of obstetrics and gynaecology	Q1	1
Journal de la société française de radiothérapie oncologique	Q3	1
Journal of allergy and clinical immunology	Q1	1
Journal of diabetes and metabolism	Q4	1
Journal of infection in developing countries	Q3	1
Mediterranean journal of hematology	Q3	1
Blood cells molecules and diseases	Q2	1
Annals of hematology	Q2	1
Total		17

IF : Impact factor

Table 3. Distribution of theses published in a general medical journal

Journal	Quartile IF of the journal	Number of publications from theses
La Tunisie médicale	Q3/Q4	31
British medical journal	Q1	3
Africain health sciences	Q3	2
Panafricain medical journal	Q3	1
Tunisian journal of military health	-	1
Total		38

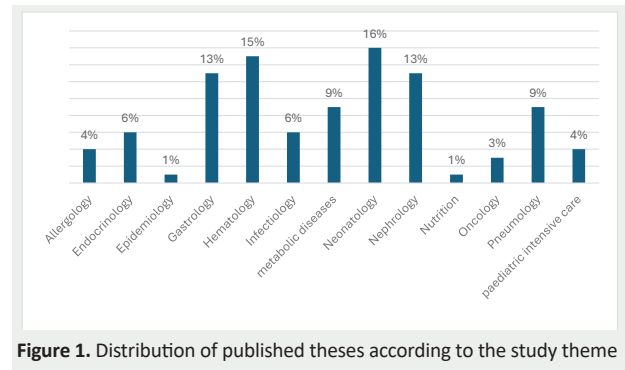
IF : Impact factor

La Tunisie médicale, a general medical journal, published 31 (44%) of the research derived from the theses.

Regarding high-impact scientific journals in the first quartile, three out of the 235 theses studied were published as original articles in Q1 journals. These journals were The European Journal of Gastro-Enterology and Pathology, The Journal of Allergy and Clinical Immunology, and The International Journal of Obstetrics

and Gynecology. Three other theses were published as abstracts in the British Medical Journal.

The main topics of published pediatric theses were neonatology (16%, 11 theses), hematology (15%, 10 theses), and nephrology and gastrology (13%, 8 theses for both) (Figure1).

**Figure 1.** Distribution of published theses according to the study theme

The language of publication was French and English in 55% and 45% of cases, respectively.

All publications in Q1 and Q2 journals were written in English.

The median number of citations was 6.4 for publications in French and seven for publications in English.

The name of the director was present in all publications. It was cited first in 75% of cases. The name of the doctoral student was mentioned in 52/71 publications, accounting for 73% of cases, and was placed in the second position in 40% of cases.

The affiliation of the authors with the FMT or the University of Tunis El Manar (UTM) was mentioned in 40 publications, constituting 60% of the total. For publications in Q1 and Q2 journals, the affiliation with the FMT or the UTM was mentioned in 66% of cases.

The factors associated with the publication of pediatric theses, in the univariate analysis, were conducting the study in a specialized pediatric service, a bi- or multicentric study, and the grade awarded by the jury, with crude OR and 95% CI of 2.96 [1.3-6.4], $p=0.01$; 2.71 [1.2-5.7], $p=0.012$; 2.73 [1.3-5.4], $p=0.005$, respectively. The multivariate analysis identified the mention "Très honorable avec les félicitations du jury et proposition au prix de thèse" (Very Honorable with Congratulations from the Jury and Proposal for Thesis Prize) awarded to the thesis after the defense as an independent predictive factor for the publication of theses, with an adjusted odds ratio (OR) of 2.65 [1.31 - 5.26] ($p=0.007$).

DISCUSSION

The publication rate of pediatric theses defended at the FMT over a period of 15 years was 29%, with 71 publications from the 235 studied theses. Almost half of the publications were found in Tunisie Médicale, a general medical journal. The main predictive factor for publication was the mention awarded to the thesis after the defense. To our knowledge, this was the first study to investigate the publication outcome of pediatric theses defended at the FMT.

At the national level, the publication rate was significantly higher than that reported in a bibliometric study of theses defended at the Faculty of Medicine of Monastir (FMM) between 2001 and 2005, which was 9.6% for pediatrics [7]. This rate was also slightly higher than that found in a bibliometric study of theses defended at the FMT between 2008 and 2010 [3], where the publication rate for pediatric theses was 21.7%.

In other studies, the publication rate of works derived from theses was 17.5% for anatomical and pathological cytology [1] and 6% for medical resuscitation [8].

At the international level, the publication rate of pediatric theses for interns in the 2003 cohort in France was 27.9% [9]. In Brest, 13.2% of the theses defended between 2001 and 2005 were published, with 37.5% in pediatrics [10].

The language of publication for all of theses published in Q1 and Q2 journals was English. This indicator deserves consideration to enhance scientific writing in English. This is the contemporary scientific communication language that ensures the widest dissemination of scientific information and increases the chances and quality of publication [11]. Its adoption in thesis writing could be valued in the competition evaluation criteria, rather than remaining optional as stated in the FMT thesis procedures [12]. This would also allow the candidate to save time lost in translating articles from English to French during the thesis writing process.

The doctoral student's name was mentioned in 52/71 publications, representing 73% of cases. At the FMT, there is no consensus on authorship and the order of author names in a research article based on a doctoral thesis. A reflection on the order of author positioning in publications resulting from theses is necessary and could be oriented towards sensitizing supervisors to include doctoral students as authors in publications thereby encouraging them to publish studies more actively.

In our study, the affiliation of authors with FMT or UTM, as mentioned in the procedures for theses [12], was cited in 40 publications (60% of cases). Affiliation with FMT and UTM was not mentioned in 33% of publications in Q1 and Q2 journals. However, the years of publication were after 2013, which marks the date of the update of the procedures for theses.

In a bibliometric study on the evolution and impact of FMT publications over 55 years (1964 to 2019), the average rate of affiliation with FMT was 28%, ranging from 4% (1990-2010) to 44% (2011-2019) [13]. The improvement in the rate of mention of affiliation with FMT and UTM can be explained by the great efforts made in recent years by the UTM rectorate, the deanery, and some committees of the FMT (Theses and Dissertations Committee and Publication support Committee) in order to encourage teachers to reference FMT and UTM in their publications in order to increase the visibility of these two institutions.

Theses with "Very Honorable Mention with Congratulations from the Jury and Proposal for Thesis Prize" were the most prolific in terms of publications compared to theses with other mentions. This same result was reported by the bibliometric study of gastroenterology theses supported at FMT [14]. At FMT, the criteria for awarding

mentions are codified based on an evaluation grid of the thesis by the members of the jury. This grid was developed by the Theses and Dissertations Committee of the faculty. It is a quantitative, detailed grid that includes both editorial and methodological parameters. It allows a precise and objective evaluation of thesis on both form and content [15]. Thus, the mention is awarded based on the score obtained: the very honorable mention with congratulations from the jury and proposal for thesis prize is awarded to theses with a score of 18/20 or higher. The awarded mention is therefore a good indicator of the writing quality of the thesis, which explains its statistically significant association with the publication rate. On the other hand, in the bibliometric study of theses supported at FMM, 78 theses proposed for thesis prize had a low publication rate (10.3%) [7]. This difference could be explained in particular by the different evaluation criteria of one medical faculty compared to another.

Based on this study, recommendations could be formulated to enhance the publication rate of pediatric theses, including:

- Organizing workshops on article writing based on defended theses, where each participant will develop, discuss, and finalize his/her publication in collaboration between the Theses and Dissertations Committee and experienced authors.
- Conducting bibliometric studies of theses in other specialties to evaluate the quality of supervision by hospital-university teachers, identify obstacles to publication, and predictive factors.
- Establishing a budget within the Faculty of Medicine to fund the publication of work in paid journals.
- Emphasizing research methodology: Ensure that students receive comprehensive training in research methodology and study design. A strong foundation in research methods will enhance the quality of their studies and increase the likelihood of acceptance by reputable journals.
- Selecting research topics strategically: Encourage students to choose research topics that have the potential for significant findings and clinical relevance. Engage with them to identify gaps in knowledge or areas of emerging importance within the field of pediatrics.

CONCLUSION

The publication rate of pediatric theses remains low. Theses with "Very Honorable Mention with Congratulations from the Jury and Proposal for Thesis Prize" were more likely to result in publications compared to theses with other mentions. This reflects the importance of the writing and methodological quality of the thesis and its statistically significant association with the publication rate.

REFERENCES

1. Chadli-Debbiche A, Mrabet A, Abidi E, Borsali-Falfoul N, Dziri C. Impact of pathology thesis supported at the Faculty of Medicine of Tunis (2000-2010). *Tunis Med.* 2016;94(3):172-5.
2. Elloumi H. Thesis supported at the Faculty of Medicine of Tunis

- from 2004 to 2005: Scientific outcomes and predictive factors for publication. *Tunis Med.* 2017;95(4):236-41.
3. Chadli Debbiche A, Abidi E, Falfoul Borsali N, Mrabet A, Dziri C, Elloumi H. Doctoral thesis publications in indexed journals: A study of thesis supported at the Faculty of Medicine of Tunis from 2008 to 2010. *Tunis Med.* 2017;95(10):847-53.
 4. Boissonneault J. Bibliometrics [Online]. 2022 [cited March 27, 2022]. Available from: <https://sites.google.com/a/etsmtl.net/bibliometrie/>
 5. Deboin MC, Fovet Rabot C, Lambert MC. The impact factor (IF) and its associated indicators to assess the reputation of a journal [Online]. 2017 [cited March 27, 2022]. Available from: <https://coop-ist.cirad.fr/evaluer/le-facteur-d'impact-et-ses-indicateurs-associes/1-familiarisez-vous-avec-le-facteur-d'impact-fi-ou-impact-factor-if>
 6. Scientific Journal Rankings. Scimago Journal & Country Rank [Online]. 2022 [cited March 27, 2022]. Available from: <https://www.scimagojr.com/>
 7. Ben Salem K, Bouanene I, Mosbahi N, Elmhamdi S, Soltani MS, Ben Abdelaziz A. Bibliometric profile and outcomes of thesis supported at the Faculty of Medicine of Monastir (Tunisia). *Pédagogie Médicale.* 2011;12(3):169-78.
 8. Abbes S. Medical intensive care thesis at the Faculty of Medicine of Tunis: Bibliometric profile and outcomes [Thesis]. *Medicine: Tunis;* 2020. 107p.
 9. Fabre A. Publication of pediatric residency thesis. *Arch Pediatr.* 2015;22(8):802-6.
 10. Carpentier M, Roue JM, Jaffrelet M, Barraine P, Salaun PY, Le Gal G. Publication of medical residency thesis at the Faculty of Medicine of Brest: Current state and avenues for improvement. *Presse Med.* 2012;41(5):542-3.
 11. Fondin H. The language of scientific publication: The predominance of English and research. *Documentation et Bibliothèque.* 2009;25(2):59-69.
 12. Procedure for the State Doctorate in Medicine [Internet]. FMT. [cited 8 Dec 2022]. Available from: <http://www.fmt.rnu.tn/these1>.
 13. Charfi R, Mlika M, Cheikhrouhou S, Fekih HE, Sellaouti F, Zakhama L, et al. Evolution et impact des publications de la faculté de médecine de Tunis : étude sur 55 ans. *Tunis Med.* 2020;98(3):211-8.
 14. Bouyahya K. Theses in gastroenterology defended at the Faculty of Medicine of Tunis: bibliometric study from 2004 to 2016. [Thesis]. *Medicine: Tunis;* 2022. 89p.
 15. Ministère de l'Enseignement Supérieur de la Recherche Scientifique. Évaluation de la thèse par les membres du jury pour l'obtention du doctorat en médecine [On-line]. 2021 [cited 27 March 2022]. Available from: http://www.fmt.rnu.tn/wp-content/uploads/2021/12/17.-Grille-d_evaluation-de-la-these-de-doctorat-par-le-jury.pdf.