



**WOMEN MEDICAL STUDENTS AND NEUROLOGY ARTICLES STAND OUT IN
A BRAZILIAN JOURNAL IN THE DECADE OF THE BRAIN**

**ESTUDANTES DE MEDICINA MULHERES E ARTIGOS DE NEUROLOGIA SE
DESTACAM EM REVISTA BRASILEIRA NA DÉCADA DO CÉREBRO**

**ESTUDIANTES DE MEDICINA MUJERES Y ARTÍCULOS DE NEUROLOGÍA SE
DESTACAN EN REVISTA BRASILEÑA EN LA DÉCADA DEL CEREBRO**

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ABSTRACT

The University of Taubaté is a Brazilian university that has always been involved in scientific research and publication, as evidenced by the Medical Journal of University of Taubaté (REMUT), which brings together scientific papers from various medical fields. This study was produced to identify the impact of the Decade of the Brain on REMUT publications, and its specific aim is to contribute to promote academic research by reactivating the journal. We performed a bibliometric analysis based on REMUT. We found 9 out of its 10 issues, totalizing 60 articles, published between 1988 and 1998. We distributed three journals per student and created a spreadsheet to organize the data. The 60 articles had a total of 316 authors (216 students, 91 professors, 8 residents or physician assistants, and 1 person in charge of the blood transfusion department of Municipal University Hospital of Taubaté). Female students represented a proportion of authors (51.4%) larger than the proportion of female medical students in Brazil across the same period (30.8%). Neurology predominated among the areas approached, with 9 articles (15%) that studied 5 women and 4 men aged between 0 and 60 years. It was clear that medical students developed a tradition of publishing scientific articles, which hugely contributed to their undergraduate studies. For this reason, the recirculation of REMUT would enrich knowledge among the university members, as it once brought together dedicated and attentive readers to the scientific advancements and was a safe environment for learning and disseminating medical science.

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Keywords: Bibliometric Analysis. Medical Journal. Scientific Articles. Women Medical Students. Neurology. Brazil.

RESUMO

A Universidade de Taubaté é uma universidade brasileira que sempre esteve envolvida em pesquisa e publicação científica, como evidenciado pela Revista Médica da Universidade de Taubaté (REMUT), que reúne trabalhos científicos de diversas áreas da medicina. Este estudo foi produzido para identificar o impacto da Década do Cérebro nas publicações da REMUT, e seu objetivo específico é contribuir para a promoção da pesquisa acadêmica por meio da reativação da revista. Realizou-se uma análise bibliométrica baseada na REMUT. Foram encontrados 9 de seus 10 números, totalizando 60 artigos, publicados entre 1988 e 1998. Foram distribuídas três revistas por estudante e criada uma planilha para organizar os dados. Os 60 artigos apresentaram um total de 316 autores (216 estudantes, 91 professores, 8 residentes ou médicos assistentes e 1 responsável pelo setor de hemotransusão do Hospital Municipal Universitário de Taubaté). As estudantes do sexo feminino representaram uma proporção de autores (51,4%) maior que a proporção de estudantes de medicina do sexo feminino no Brasil no mesmo período (30,8%). A neurologia predominou entre as áreas abordadas, com 9 artigos (15%) que estudaram 5 mulheres e 4 homens com idades entre 0 e 60 anos. Ficou evidente que os estudantes de medicina desenvolveram uma tradição de publicação de artigos científicos, o que contribuiu significativamente para sua formação na graduação. Por essa razão, a recirculação da REMUT enriqueceria o conhecimento entre os membros da universidade, pois anteriormente reunia leitores dedicados e atentos aos avanços científicos e constituía um ambiente seguro para o aprendizado e a disseminação da ciência médica.

Palavras-chave: Análise Bibliométrica. Revista Médica. Artigos Científicos. Estudantes de Medicina. Neurologia. Brasil.

RESUMEN

La Universidad de Taubaté es una universidad brasileña que siempre ha estado involucrada en la investigación y publicación científica, como lo demuestra la Revista Médica de la Universidad de Taubaté (REMUT), que reúne trabajos científicos de diversas áreas de la medicina. Este estudio se realizó para identificar el impacto de la Década del Cerebro en las publicaciones de REMUT, y su objetivo específico es contribuir a la promoción de la investigación académica mediante la reactivación de la revista. Se realizó un análisis bibliométrico basado en REMUT. Se encontraron 9 de sus 10 números, totalizando 60 artículos, publicados entre 1988 y 1998. Se distribuyeron tres revistas por estudiante y se creó una hoja de cálculo para organizar los datos. Los 60 artículos contaron con un total de 316 autores (216 estudiantes, 91 profesores, 8 residentes o médicos asistentes y 1 responsable del departamento de hemotransfusión del Hospital Municipal Universitario de Taubaté). Las estudiantes mujeres representaron una proporción de autoría (51,4%) mayor que la proporción de estudiantes de medicina mujeres en Brasil en el mismo período (30,8%). La neurología predominó entre las áreas abordadas, con 9 artículos (15%) que estudiaron a 5 mujeres y 4 hombres con edades entre 0 y 60 años. Quedó claro que los estudiantes de medicina desarrollaron una tradición de publicación de artículos científicos, lo que contribuyó significativamente a su formación de pregrado. Por esta razón, la recirculación de REMUT enriquecería el conocimiento entre los miembros de la universidad, ya que anteriormente reunía a lectores dedicados y atentos a los avances científicos y constituía un entorno seguro para el aprendizaje y la difusión de la ciencia médica.

Palabras clave: Análisis Bibliométrico. Revista Médica. Artículos Científicos. Estudiantes de Medicina. Neurología. Brasil.



1 INTRODUCTION

One of the most important media to propagate scientific work, if not the most important, is writing. It can be used for research and for publication of scientific articles, which are complementary to academic training, clinical care and work in the field of health sciences [1]. The motivation for scientific publication may be demands of the job market or grant pursuing to support research, for example [1]. Scientific publications allow national and international acknowledgement of both authors and institution and, if the publication is on a topic of high global importance, the authors' country and region can achieve a major acknowledgement [1].

The Taubaté Faculty of Medicine began on April 22, 1967. In 1982, it became part of the University of Taubaté (Unitau). From the moment of its creation, the university synchronized its history with the education of the Paraíba Valley, given that it was the first university in this region of São Paulo state, in Brazil. Such concomitant development is illustrated by the publication in October of 1988 of the first issue of Medical Journal of University of Taubaté (“Revista Médica da Universidade de Taubaté” – REMUT), which inaugurated a yearly publication of 10 issues (all of them available only in printed version), until 1998, when it was published for the last time.

This study is a bibliometric analysis of REMUT. A bibliometric analysis consists in analyzing journal publications and assessing their influence or repercussion in the academic field or even in the society as a whole [2].

The objective of this article was to analyze the interest in the field of neurology in the years when REMUT was published and shed light on the possible impact of the decade that was named as the Decade of the Brain [3] on the edition of a Brazilian medical journal. Indeed, the area most frequently cited in the journal was neurology. Interestingly, we also found a contribution of female students as authors higher than the proportion of female medical students in general, showing the role of women in science production across the decade of 1990. Finally, this article has the intention of serving as an argument for the reactivation of REMUT, which could foster and give new purpose to scientific research carried out by the medical students of Unitau.

2 MATERIALS AND METHODS

The data for this work was collected by three students from the Faculty of Medicine of Unitau (GAFBB, IFAG, and NSJ), in the library of Bom Conselho campus (Taubaté, Brazil), where the faculty is located. We looked for the 10 issues of REMUT, founding nine of them.

To analyze the nine issues, we distributed three journals to each of the medical students and created an Excel spreadsheet to gather the data we found. In this spreadsheet, we put the following analysis criteria in the columns: issue number; year of publication; number of articles per issue; title; abstract; keywords; number of authors, differentiating between students and professors; gender of authors; materials and methods; number of references; and health subject. We also recorded the international classification of diseases (ICD) for each disease, according to its latest version, i.e., ICD-10. We then analyzed each issue and filled out the spreadsheet. Throughout this process, the medical students held fortnight meetings with their mentor (VMPG), who helped to define the analysis criteria and advised how to fill out the spreadsheet.

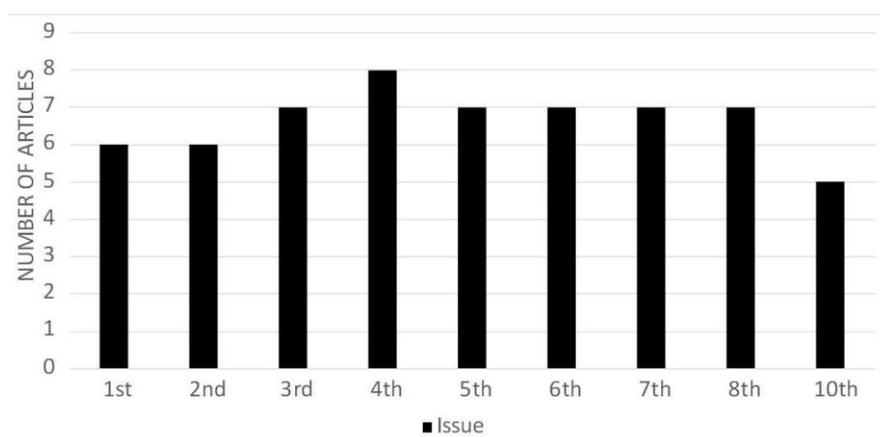
After this data collection, we searched for publications involving the area of neurology using the title, keywords and abstract of each article. Next, more specific data collection was carried out from the neurology articles, in which the age group covered in the article and the gender studied in the scientific research were sought.

3 RESULTS

REMUT published 60 articles in nine issues between 1988 and 1998, thus accounting for an average of 6.67 articles per issue. The number of articles per journal issue is shown in Fig. 1.

Figure 1

Number of articles per issue



Given that REMUT is a university journal, a significant proportion of its authors were medical students, particularly from Unitau, totaling 216 students as authors and 91 mentors. Three articles had the participation of residents (five individuals in total) from the Municipal University Hospital of Taubaté (H-MUT), one article had the participation of three assistant

physicians from the orthopedics and traumatology service at the H-MUT and one article had the participation of a person responsible for the blood transfusion and distribution sector at the H-MUT, totaling 316 authors. Therefore, the average number of authors per journal was 35.11 and the average number of authors per article was 5.27. The median of authors per article was 5.

We checked the gender of the mentors from the scientific papers published in REMUT and found that, of the 91 mentors, 59 (64.8%) were men and only 32 (35.2%) were women (Fig. 2). As for the number of student authors, 216 in total, 105 (48.6%) were men and 111 (51.4%) women (Fig. 3).

Figure 2

Gender of professors among authors of the articles

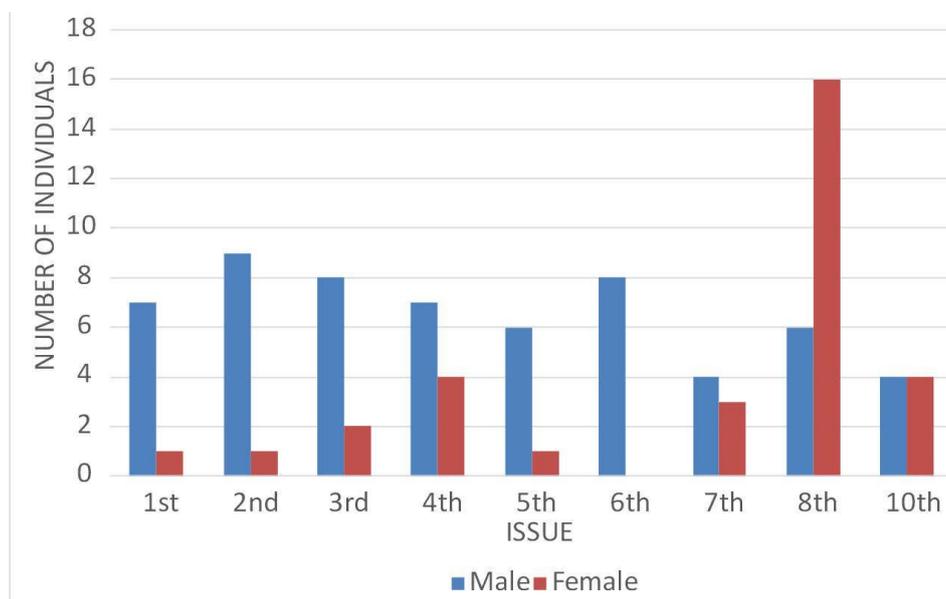
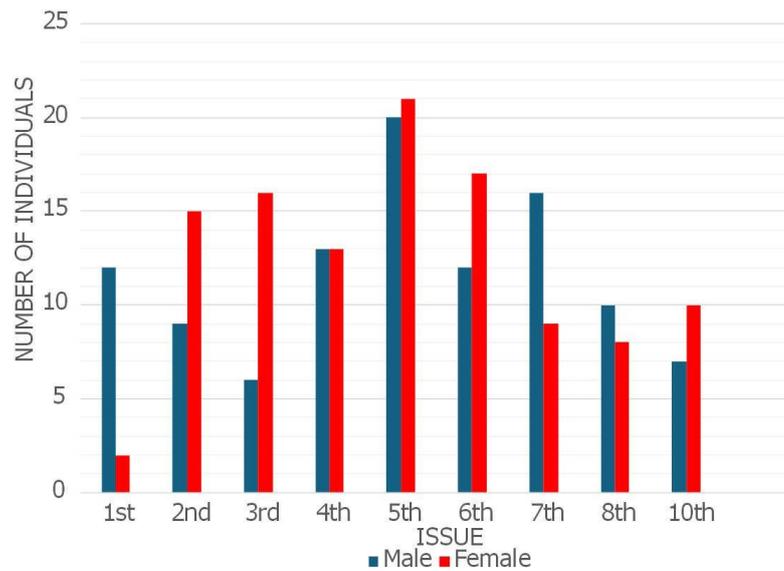


Figure 3

Gender of medical students among authors of the articles

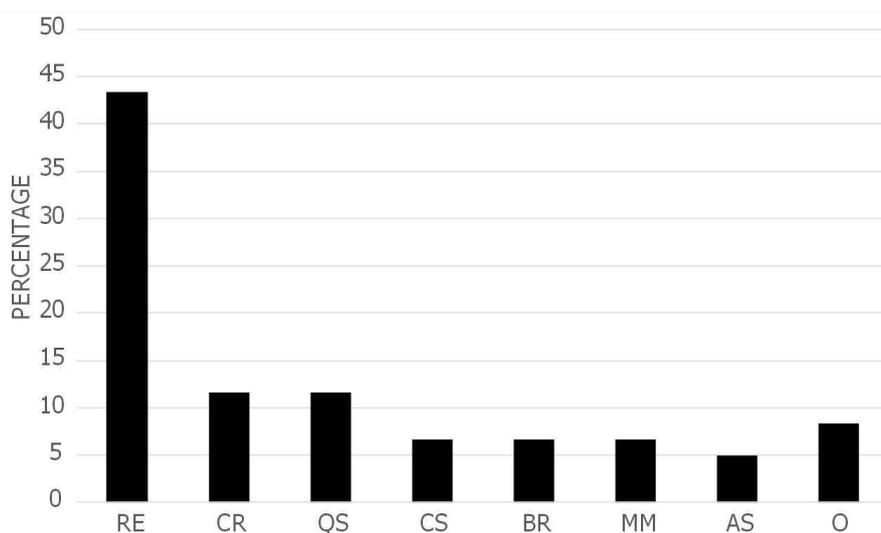


The analysis of the keywords in each article showed an arithmetic average of 2.8 terms per article. However, 17 articles from issues number 2, 3, 4, 5, and 6 had no keywords.

The types of study published in REMUT involved mostly patient assessment (55%), including retrospective studies (43.3%) and case reports (11.7%) (Fig. 4).

Figure 4

Types of study of REMUT articles



REMUT is a medical journal that encompasses a wide range of themes from a very diversified areas of medical practice (Table 1). In the nine issues analyzed, nine articles involved the neurological field, which totals 15% of the articles published by the journal.

Table 1*Areas encompassed by REMUT articles*

| Area of study | Number of articles | Percentage |
|-----------------|--------------------|------------|
| Neurology | 9 | 15% |
| Infectology | 9 | 15% |
| Plastic Surgery | 8 | 13.3% |
| General Surgery | 8 | 13.3% |
| Cardiology | 6 | 10% |
| Pediatrics | 5 | 8.33% |
| Genetics | 4 | 6.66% |
| Anatomy | 3 | 5% |
| Other areas | 30 | 49.88% |

Note that the total percentage is above 100%, as articles covering more than one medical specialty were included in two or more areas.

With regard to the gender of the individuals assessed in the neurology area, there was a greater presence of females: in the 9 articles published, 5 (55.6%) dealt with females and 4 (44.4%) with males. The age range was very wide, ranging from newborns to 60 years old.

Among the nine articles on the field of neurology in the nine editions of REMUT, the first one was published in the in the first issue, in 1988, linking the area of neurology with infectology. The second neurology article was published in the second issue (1989) and was a case report on meningioma during pregnancy. The third article was published in the third issue (1990), also being a case report, on pseudotumor cerebri associated with polycythemia vera; the fourth article was published in the same issue, being a review on acute intoxication. The fifth article was published in the fifth issue of the journal (1992), on the treatment of spinal injuries; the sixth article was published in the same year and discussed neural and hormonal mechanisms in the regulation of gastric acidification. The seventh article was published in 1995 in the eighth issue of the journal and is related to pediatrics, addressing the Babinski reflex. The eighth article was published in 1998, in the tenth issue, and is an epidemiological study of 1000 cases of traumatic brain injury. The last article related to the neurological area was also published in the tenth issue and evaluated the incidence of infection in ventriculoperitoneal shunt and meningocele surgeries.

4 DISCUSSION

Using ICD-10 as a classification criterium, four themes stood out in the assessed issues: plastic surgery, general surgery, infectious diseases, and neurology. The two last areas displayed the largest number of articles, each one representing 15% of them.

As mentioned above, REMUT existed during the 1990s, which was declared as the Decade of the Brain [3] by science policymakers and scientists worldwide, revealing an expectation that prioritizing investment in neurosciences could foster public health improvement and economic growth. Accordingly, it was a period of great innovations and discoveries in neuroscience. For example, a major discovery of that decade was the demonstration that neurons in mammals are also produced after birth, which challenged the long-lasting neuroscience dogma that stated that neurons in mammals are formed during fetus development only [4].

We observed that this interest in neurology around the world reflected in the publications of REMUT. The Decade of the Brain had an influence not only on publications, but also on the medical education in Taubaté, given that in the same decade, precisely in 1995, the medical residency program in neurology started in the city, which kindled more interest of medical students in the area.

Other facts also caught our attention, particularly regarding the gender of the authors. According to the Federal Council of Medicine, men were the predominant group in medical schools in Brazil in 1990 [5]; 69.2% of students were men and only 30.8% were women. However, our data revealed that women made up the majority (51.4%) as students participating in scientific publications in REMUT, although they represented a minority as mentors (35.2%).

This feature unveils a pioneering role of women medical students at Unitau. Such a role remains relevant up to the current days [6]. Accordingly, even though women are still a minority in medical schools (30.8% in 1990 and 46.6% in 2020), they have often sought to use their academic life to carry out research and publish scientific papers, as our results indicate.

A situation that has not been overcome yet is the apparent difficulty of women medical students to follow academic activities after they graduate, as our results and the literature suggest [6]. In this regard, according to the Organization of Ibero-American States, Brazil is the Ibero-American country with the highest percentage of scientific articles signed by women, either as their main author or as a co-author [6]. Between 2014 and 2017, Brazil published around 53,300 articles, 72% of which were signed by female researchers as at least one of the authors. Nonetheless, although women are authors in the majority of the articles, they were minority (49%) of the total number of authors of articles published in the year of 2017 [6].

Another important point to consider is the diversity of research areas of the papers published in the journal, which was made possible by the freedom that the students had to



choose the subject to be assessed, underpinned by the influences of the scientific community in which they were educated.

Furthermore, our results showed that most of the published articles focused on patient studies. The relevance of patient studies in medical education is that they may contribute for the development of a critical view that may be applied later in medical career.

The most common addressed area in REMUT was neurology likely because of global and local factors. The global factor was the declaration of the 1990s as the Decade of the Brain [3]. The local factor was the establishment of a residency program in neurology, which indicates a well-structured service that may influence the preferences of medical students during their formation. These features indicate that policies of research incentive and investment in cutting edge services will likely result in a favorable payoff for the country and the universities. Additionally, the publication of a journal by a university is another mean to improve the quality of its education. In its turn, such quality of education may be partly measured by the metrics of the journal.

5 CONCLUSION

This study investigated a possible impact of the Decade of the Brain on the increased interest in publications in the field of neurology in REMUT, a Brazilian medical journal. The higher number of publications in neurology and neurosurgery in REMUT was confirmed by the authors in this study, which also revealed a major role of women medical students as authors of these articles. With this work, we seek to encourage the reactivation of REMUT, showing the many benefits of this initiative in medical education.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

LEGENDS

Legend: AS: animal study; BR: bibliographic review; CR: case report; CS: cadaver study; MM: mathematical model; QR: qualitative study; RE: retrospective study; O: others (isolation



and incubation of SWAB-collected bacteria in different predetermined locations of the H-MUT, equipment analysis, methodological analysis, pharmaceutical analysis, methodological demonstration, household survey analysis, analysis of dogs in the vivarium, interviews, statistical surveys, coproparasitological examination, and risk factor analysis).

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