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STRUCTURE OF KNOWLEDGE ABOUT NURSING ADMINISTRATION IN BRAZILIAN GRADUATE PROGRAMS

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ABSTRACT: In order to assess and describe the characteristics of the scientific literature on nursing administration, a historical desk research was conducted according to a taxonomy proposed by scholars, including 596 abstracts on the subject available in the collection of the Theses and Dissertations Database of the Brazilian Nursing Association. The topics were classified according to the theoretical approach proposed, calculating simple and relative frequencies for each domain and the identification variables of the studies. It was found that a third of the studies assessed had been produced in the Southeast of Brazil and were the subject of master's theses. The thematic classification showed that 17.6% of the studies referred to ideological and theoretical bases of nursing administration, 13.1% to intervention methods, and 69.3% to resource administration practices. The assessment culminated with the proposition of a new structure of knowledge about nursing administration that might represent that knowledge produced in Brazilian graduate programs.

DESCRIPTORS: History of nursing. Nursing administration research. Academic dissertations. Education, nursing, graduate. Knowledge.

ESTRUTURA DO CONHECIMENTO SOBRE ADMINISTRAÇÃO EM ENFERMAGEM NA PÓS-GRADUAÇÃO BRASILEIRA

RESUMO: Para analisar e descrever as características da produção científica sobre administração em enfermagem, segundo a taxonomia proposta por estudiosos, realizou-se uma pesquisa histórico-documental contemplando 596 resumos de pesquisas sobre o tema, disponíveis no acervo do Banco de Teses e Dissertações da Associação Brasileira de Enfermagem. Classificaram-se as temáticas segundo o referencial proposto, calculando-se frequências simples e relativa para cada domínio e para as variáveis de identificação das obras. Apurou-se que a terça parte da produção estudada estava concentrada na Região sudeste do Brasil e havia sido objeto de estudo de dissertações de mestrado. A classificação temática revelou que 17,6% dos estudos se referiam a Bases Ideológicas e Teóricas da administração em enfermagem, 13,1% a métodos de intervenção e 69,3% a práticas de administração de recursos. a análise culminou com a proposição de uma nova estrutura do conhecimento sobre administração em enfermagem que representasse esse conhecimento produzido na pós-graduação brasileira.

DESCRIPTORIOS: História da enfermagem. Pesquisa em administração de enfermagem. Dissertações acadêmicas. Educação de Pós-Graduação em enfermagem. Conhecimento.

ESTRUCTURA DEL CONOCIMIENTO SOBRE ADMINISTRACIÓN EN ENFERMERÍA EN EL POSTGRADO BRASILEÑO

RESUMEN: Para analizar y describir las características de la producción científica sobre gestión de enfermería, de acuerdo con la taxonomía propuesta por estudiosos, se llevó a cabo una investigación histórica documental incluyendo 596 resúmenes de investigaciones sobre el tema disponibles en el acervo del Banco de Tesis y Disertaciones de la Asociación Brasileña de Enfermería. Se clasificaron las temáticas de acuerdo con el referencial propuesto calculando las frecuencias simples y relativas de cada dominio y de las variables de identificación de las obras. Se encontró que la tercera parte de la producción estudiada estaba concentrada en la región sudeste de Brasil y había sido objeto de estudio de disertaciones de maestría. La clasificación temática reveló que el 17,6% de los estudios se refería a Bases ideológicas y teóricas de la gestión de enfermería, el 13,1% a métodos de intervención y el 69,3% a prácticas de administración de recursos. El análisis concluyó con la proposición de una nueva estructura del conocimiento sobre gestión de enfermería que representase ese conocimiento producido en el postgrado brasileño.

DESCRIPTORIOS: Historia de la enfermería. Investigación en administración de enfermería. Tesis académicas. Educación de postgrado en enfermería. Conocimiento.

INTRODUCTION

Graduate education in Nursing in Brazil started with the first Master's program in Nursing in 1972, offered at Anna Nery School of Nursing, *Universidade Federal do Rio de Janeiro* (UFRJ) and, one year later, at the *Escola de Enfermagem da Universidade de São Paulo* (EEUSP), which in 1974 included the concentration area Nursing Administration (NA).¹ Twenty-one years later, in 1995, the School of Nursing at *Universidade Federal da Bahia* (EEUFBA) also started to offer a Master's program with the same concentration area.²

Besides these two programs with the concentration area in NA, the scientific nursing community currently contains 45 (8.9%) research groups on NM, among the 507 active nursing research groups registered in the current database of the Brazilian Scientific and Technological Development Council (CNPq).³

This finding demonstrates that a small part of the nursing scientists tends to focus on research about NA. In addition, as some authors observe,⁴ according to whom the prevalent themes in research in this area had been the supervision and management human resources, signaling, since the onset of the third millennium, that the lack of studies on NA was predictable.

In the same sense, one reflection about the international cooperation among graduate programs in NA confirmed the existence of "a lack of resources and knowledge in nursing administration",⁵ and the approaches on the theme outside Brazil can indicate frailties in the construction of this knowledge, even beyond the national borders.⁶ In fact, a search in the SciELO Library and in the databases MEDLINE and LILACS, before proposing this study, demonstrated that there was no scientific literature about the structure of knowledge on NA based on original research.

In her proposal to distinguish groups of scientific production in graduate nursing research, a researcher on the epistemology of nursing knowledge in Brazil presented a set of research lines to represent nursing knowledge, so that NA is named "Management of Health and Nursing Services".⁷ The same researcher alerted, however, that the research line should be tried out and cultivated until a consistent knowledge repertoire about them became available. This concept aroused the interest in investigating what Brazilian nurses have experienced and cultivated about NA in graduate research between 1963 and 2011, which is the focus of this study.

In the specific field of NA, in the attempt to trigger reflections on the theme and in view of the needs manifested by undergraduate and graduate studies about the content of NA, Sanna⁸ presented a model "Knowledge structure on nursing administration" (ECAE), which was built based on teaching and management practice and their research products on the theme. Nevertheless, the author alerted on the lack of scientific production about different themes in this area, also indicating the need for mechanisms that could help the researchers to focus their research on NA.

The considerations by Sanna⁸ aroused the interest in examining the correspondence of the graduate production on NA cultivated between 1963 and 2011 - in the light of the ECAE the author proposed - in order to seek evidence on what is present in this distribution tree in the set of scientific production.

Considering that the theme is of interest to the scientific nursing community, in view of the concerns of researchers and international agencies⁹⁻¹¹ with presenting conceptual models that contain NA or particular aspects of it, there were sufficient reasons to analyze and describe the characteristics of scientific production on NA at the graduate level, between 1963 and 2011, according to the ECAE proposed by Sanna, and to propose a new ECAE.

METHOD

A historical desk-research with a quantitative approach was undertaken, focused on the history of nursing research. In total, 7,722 abstracts were examined, available in 30 volumes of the Catalogue of Dissertations and Theses of the Nursing Study and Research Center (CEPEn) of the Brazilian Nursing Association (ABEn).¹² Its qualification as a historical research rests on the definition "Systematic collection and critical assessment of data on past events".^{13:295}

The time period proposed for this research ranges between 1963 and 2011. This period was defined, respectively, by the identification of the oldest and most recent research product on NA in the collected of CEPEn at the time of the data collection, which permitted analyzing the 48-year-trajectory of knowledge production in this area. The oldest is the cathedral thesis by Glete de Alcântara (1963), who discussed the job market in nursing and the latest is the set of 32 theses and dissertations defended in 2011, inserted in the catalogue mentioned, which discuss human resource management, but also include a product on the job market.

What the range of this study is concerned, abstracts were included from degrees defended more than five years before the publication of some catalogues and which had not been forwarded to CEPEn yet, which is certainly a limitation in this study.

The data collection involved the systematic reading of the 7,722 abstracts and the identification and selection of 703 whose titles or contents evidenced a relation with NA. These abstracts were classified in a database constructed in Microsoft Excel®, according to the variables: degree; year of defense; geographical location; and program of origin of the studies. At the same time, they were ranked according to the similarity and thematic relevance in the component variables of the three main groups: Ideological and theoretical bases of nursing administration; Intervention methods; and Resource administration practice of the ECAE,⁸ i.e. the theoretical framework for the analysis.

The content of the database was submitted to the triangulation process by peers. The evaluators – doctoral graduates who served as advisors at the Master’s and Doctoral levels, leaders of research groups and editors of scientific journals – identified that, among the 703 abstracts assessed, 107 of them, despite discussing the NA, should be withdrawn from the study because they discussed themes on health management and administration teaching, among others. This left the 596 abstracts that constituted the study population.

The data were analyzed by verifying the relative and absolute frequencies of the research variables specified above, by collating the themes found in the abstracts, using the ECAE as a reference framework.⁸

After collating the classification product of the abstracts according to the ECAE with the end product of the thematic analysis,⁸ gaps and unconformities were identified or the existence of themes already present in the reference structure were confirmed, providing support for the proposal of a new ECAE.

Although it did not involve human beings, the research project was submitted to the Research Ethics Committee (CEP) of *Universidade Federal de São Paulo* (UNIFESP) and approved under Opinion CEP n. 0171/12HE.

RESULTS

The scientific production at the graduate level about NA in Brazil started to flourish in the first half of the 1960’s, progressing at an average 12 productions per year, until the repertoire addressed in this study was constituted, whose distribution over time is displayed in Figure 1. In the same figure, the continuity of the scientific production on some themes is also highlighted, such as Human resource administration practice and the alternation in others, such as Material resource administration practice.

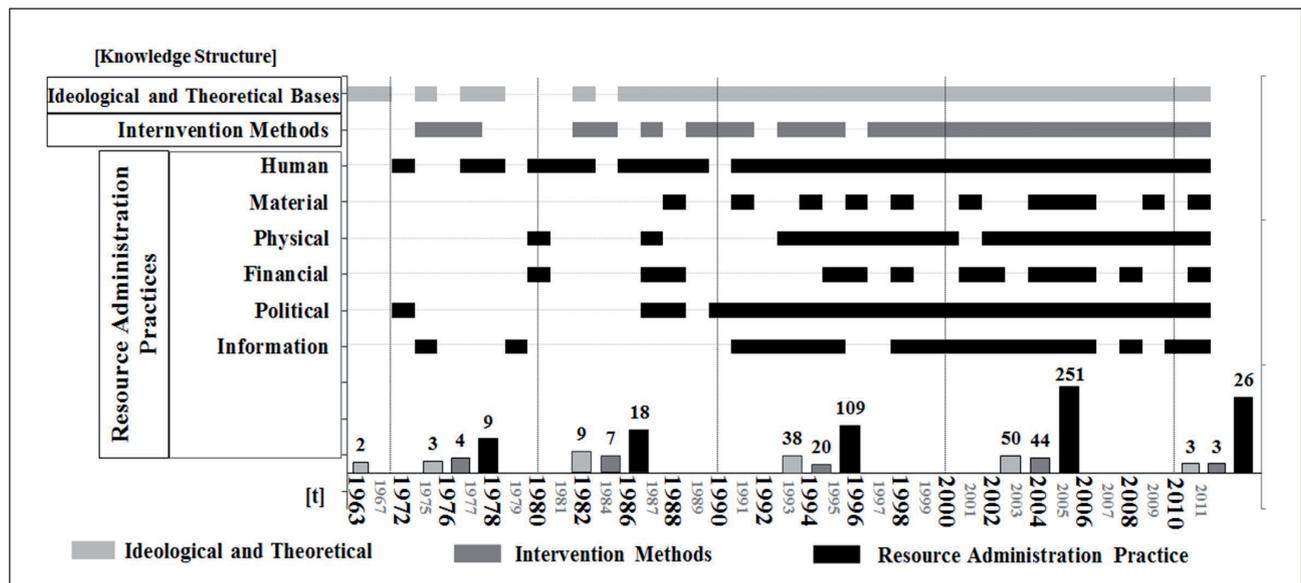


Figure 1 - Temporal distribution of graduate production according to the background Knowledge Structure on Nursing Administration, 1963-2011. São Paulo-SP, Brazil, 2013

The number of publications on NA per decade were as follows: 1960=2; 1970=16; 1980=34; 1990=167; 2000=345; and at the start of the decade 2010=32.

After assessing the temporal characteristics, another interesting characteristic of the graduate

production on NA can be investigated in Table 1, which shows the origin of this production and can indicate both dissemination hubs of this knowledge and the presence of regional asymmetries and development priorities in the area. In this context, two units from a public university stand out.

Table 1 - Graduate Production on Nursing Administration according to teaching institution and geographical position, 1963-2011. São Paulo-SP, Brazil, 2013

Region	N	%	State	N	%	Institution/Program of Origin	N	%			
Southeast	431	72.3	SP	326	75.6	<i>Universidade de São Paulo [EEUSP=152 + EERP=141]</i>	293	89.9			
						<i>Universidade Federal de São Paulo</i>	19	5.8			
						<i>Universidade Estadual de Campinas</i>	10	3.1			
						<i>Other Higher Education Institutions</i>	4	1.2			
			RJ	75	17.4	MG	30	7.0	<i>Universidade Federal do Rio de Janeiro</i>	50	66.7
									<i>Universidade Federal do Estado do Rio de Janeiro</i>	17	22.7
									<i>Other Higher Education Institutions</i>	8	10.7
			South	87	14.6	SC	51	58.6	<i>Universidade Federal de Minas Gerais</i>	29	96.7
									<i>Universidade Federal do Triângulo Mineiro</i>	1	3.3
						RS	20	23.0	PR	16	18.4
<i>Fundação Universidade Federal do Rio Grande</i>	10	50.0									
Northeast	59	9.9				CE	11	18.6	<i>Universidade Federal do Rio Grande do Sul</i>	5	25.0
									<i>Other Higher Education Institutions</i>	5	25.0
			<i>Universidade Federal do Paraná</i>	10	62.5						
			<i>Universidade Estadual de Maringá</i>	6	37.5						
Central-West	19	3.2	GO	15	78.9	<i>Universidade Federal da Bahia</i>	37	97.4			
						<i>Universidade Estadual do Sudoeste da Bahia</i>	1	2.6			
						<i>Universidade Federal do Ceará</i>	11	100.0			
						<i>Universidade Federal da Paraíba</i>	7	100.0			
			RN	3	5.1	<i>Universidade Federal do Rio Grande do Norte</i>	3	100.0			
						<i>Universidade Federal de Goiás</i>	15	100.0			
						<i>Universidade de Brasília</i>	3	100.0			
			MT	1	5.3	<i>Universidade Federal de Mato Grosso</i>	1	100.0			

Concerning the titles, among the 596 research products on NA, 450 (75.5%) were studied in Master's degrees, being 17.1% on Ideological and theoretical bases, 12.1% on Intervention methods and 70.2% on Resource administration practice; and 146 (24.5%) products were studied in Doctoral degrees, being 19.7% on Ideological and theoretical bases, 14.3% on intervention methods and 66.0% on Resource administration practice.

What the thematic classification of the scientific production at the graduate level is concerned, according to the background ECAE,⁸ 17.6% of the studies referred to Ideological and theoretical bases, 13.1% to Intervention methods and 69.3% to Resource administration practice. Table 2 details the panorama of this production, evidencing gaps in the knowledge produced, mainly on Physical and material resource administration practice.

Table 2 - Distribution of graduate production according to background Knowledge Structure on Nursing Administration, 1963-2011. São Paulo-SP, Brazil, 2013

Background Knowledge Structure on Nursing Administration 596 (100.0%)						
Resource Administration Practice 413 (69.3%)						
	Intervention Methods 78 (13.1%)	Human Resources Administration Practice 147 (24.7%)	Material Resource Administration Practice 10 (1.7%)	Physical Resource Administration Practice 53 (8.9%)	Financial Resource Administration Practice 21 (3.5%)	Political Resource Administration Practice 150 (25.2%)
Ideological and Theoretical Bases 105 (17.6%)						Information Resource Administration Practice 32 (5.4%)
Administration Theories 13 (2.2%)	Planning 11 (1.8%)	Dimensioning 63 (10.6%)	Prevision 1 (0.2%)	Architecture 2 (0.3%)	Funding 0	Organizational Structure 12 (2.0%)
Philosophy of Nursing Work 23 (3.9%)	Decision Making 10 (1.7%)	Recruitment 3 (0.5%)	Acquisition 3 (0.5%)	Project 0	Budget 1 (0.2%)	Client History 8 (1.3%)
Health Policy 21 (3.5%)	Supervision 10 (1.7%)	Selection 0	Storage 0	Decoration 0	Costs 16 (2.7%)	Organization Manuals 3 (0.5%)
Health, Nursing and Labor Legislation 3 (0.5%)	Auditing 47 (7.9%)	Distribution 6 (1.0%)	Conservation 0	Legislation and Denomination of Compartments 0	Productivity 4 (0.7%)	Administrative Documents 0
Job Market and Activity Areas 45 (7.6%)		Performance Assessment 10 (1.7%)	Distribution 2 (0.3%)	Safety of Clients and Professionals 0		Print Materials and Electronic Forms 9 (1.5%)
		Continuing Education 65 (10.9%)	Control 4 (0.7%)	Occupational Risks 26 (4.4%)		Change 5 (0.8%)
						Interdepartmental Relations 5 (0.8%)

In view of the panorama presented and departing from the premise that NA is a complex object that, in the light of Cartesian thinking, is better observed by decomposing its constituent elements, Figure 2

represents the proposal of a new structural perspective in knowledge on NA. The features picture the contents on NA the Brazilian scientific nursing community produced between 1963 and 2011.

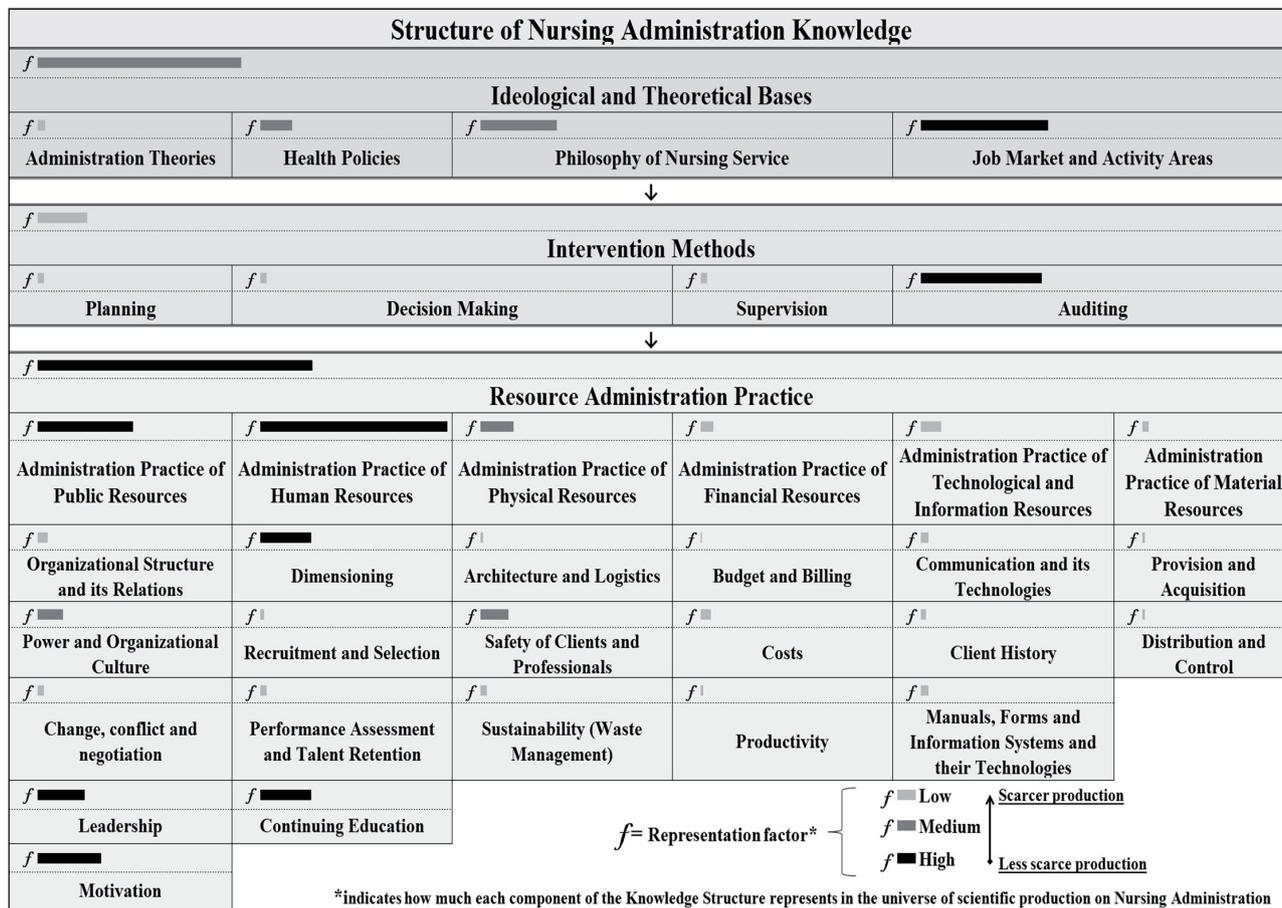


Figure 2 - Proposal for a new Knowledge Structure on Nursing Administration, 1963-2011. São Paulo-SP, Brazil, 2013

DISCUSSION

The first studies on NA discussed Ideological and theoretical bases of NA and came from the generation of autodidact nursing researchers.¹⁴ The first was the cathedral thesis Glete de Alcântara defended in 1963 about “Job Market and Activity Areas”.

A landmark in resource administration practice is the creation of the first nursing graduate courses at the Master’s level, characterizing the production of academic nursing researchers.¹⁴ These emerged in 1972 as Human resource administration practice and Political resource administration practice, whose production was more regular during the study period. The production on Physical resource administration practice and Information resource administration practice was less regular, but Mate-

rial resource administration practice and Financial resource administration practice were the subgroups with most gaps in knowledge production.

Studies on Intervention methods started to be defended as from 1975, 12 years after the first studies on Ideological and theoretical bases of NA, and three years after the first studies on Resource administration practice. This demonstrates that the first researchers on NA felt the need to answer theoretical-ideological questions and questions on the administrative practice before they discussed the intervention processes.

As to the mapping of the graduate production on NA, according to the geographical location of the teaching institution of origin, the study demonstrated that the Brazilian Southeast led the

production in this area, particularly the *Universidade de São Paulo* (USP) which, among all themes, had concentrated efforts on the study of "Dimensioning" and "Continuing Education". The small difference between the production on the campi in São Paulo and Ribeirão Preto (7.8%) is noteworthy, indicating that this is an institution traditionally dedicated to the study of NA, which was studied in other studies that pictured its trajectory.¹⁵⁻¹⁶

The South ranks second through the contribution of the *Universidade Federal de Santa Catarina* (UFSC), mainly dedicated to the theme "Philosophy of Nursing Work". Although this university does not adopt the concentration area NA, a study group has been dedicated to the study of NA since 1988, which could justify its production on this theme.¹⁷

In the Northeast, the *Universidade Federal da Bahia* (UFBA) stood out, whose researchers were inclined to the theme "Auditing". This fact seems coherent, as the survey on the activities of the graduates from the Graduate Program of the School of Nursing at UFBA, in the theme area Management, demonstrated that 74.9% were acting as faculty and 11.3% also accumulated management functions, which can explain this program's contribution to the development of NA in this region.²

In the Central-West, the only institution that produced knowledge on NA was the *Universidade Federal de Goiás* (UFG) and, in the North, nothing was produced on NA during the study period.

Among the 30 teaching institutions that contributed to the knowledge production on NA at the graduate level, 86.6% were public, 70.0% of which were federal and 30.0% state-owned. Although a smaller number of universities had contributed to the knowledge on NA, 49.2% of the entire Brazilian production came from a single state-owned university, USP.

As to the other relevant aspects related to the knowledge construction on NA, Ideological and theoretical bases were studied in doctoral projects - 2.6% more than Master's projects - and the productivity on the theme "Job Market and Activity Areas", in which productions on cooperativism and entrepreneurship are observed, signaling trends in the activity areas of nursing.

In the proposal of the new ECAE, the component "Legislation on Health, Nursing and Services" was no longer addressed in the Ideological and theoretical bases. The production on this component was insufficient to maintain it or showed affinity with

another component, thus justifying the reconfiguration of the components in the group Ideological and theoretical bases.

In the new configuration, the knowledge on NA is hierarchically structure, with the group Ideological and theoretical bases at the top of the structure. Based on these findings, it is deduced that that is the structure because the use of the Intervention methods and the operation of the Resource administration practices only happen if the nursing services have an objective and a direction based on ideologies and philosophical premises on the nature of the service. This can be illustrated through the pronouncement of the mission, vision and values of the nursing services, for example.

Intervention methods was the smallest part of the production of NA and was studied by Master and Ph.D. students in almost the same proportions. The researchers tended towards the theme "Auditing", which was also observed in another study on the knowledge production in NA in nursing graduate programs.¹

In the new ECAE, the Intervention methods precede the Resource administration practices because it is considered that, to put any of them in practice, the components of the Intervention methods need to be used which, according to the classical administration theory, correspond to planning, organizing, directing and controlling basic functions of the administrative process. Right below the Intervention methods come the Resource administration practices, put in practice through the administrative processes which, in turn, are executed according to the ideologies and theories that move the nursing services.

Differently from the other two groups, Resource administration practices accumulated the largest volume of scientific production and was a preferred study theme at the Master's level, which exceeded the Ph.D. level by 4.2%.

Political resource administration practice and Human resource administration practice were preferred research themes which, together, corresponded to 71.9% of the scientific production on Resource administration practice. The nursing executives working at the North American health services considerably appreciate these themes, like in the example on patient safety.¹⁸ This would explain the influence of the reflection on these themes in the universe of Brazilian NA, which acknowledges the hegemony of American thinking in this field.

Political resource administration practice stood out with the themes "Motivation" and "Leadership", which together totaled 64.6% of its content. Nevertheless, the themes "Conflict and Negotiation" and "Change" were hardly representative. In the latter, evidences were identified that their content also addressed conflicts. Hence, in the new ECAE, these themes were joined, originating the component "Change, Conflict and Negotiation".

Along the same logic, the combination of the content on "Interdepartmental Relations" and "Organizational Structure" originated the component "Organizational Structure and its Relations". The theme "Power and Culture" was called "Power and Organizational Culture", adapting to the administrative language as well as to the characteristics of their practice, guided by the policy of the organizations the nursing services are inserted in.

The content on Human resource administration practice was preferred by 87.0% of the researchers who elected "Continuing Education" and "Dimensioning" as the main study foci. In the new ECAE, the latter theme incorporated the content of the component "Distribution", due to its applicability in the staff dimensioning process. For the same reason, the component "Selection" was joined with "Recruitment", resulting in the component "Recruitment and Selection". On the other hand, "Performance Assessment" was called "Performance Assessment and Talent Retention" to cover this content in the approaches to trainee programs, professional qualification and competency development, observed in performance assessment processes.

The components "Project", "Decoration", "Legislation and Naming of Compartments" and "Occupational Risks" were excluded from Physical resource administration practice. The first three because they are not part of the list of nursing research foci in the 48 years of graduate production, and the latter, despite a consistent number, due to the fact that part of its content was relevant to the occupational health area. Another part of the products in this segment, however, addressed sustainability and waste management as management practice related to the physical environment and, therefore, was integrated in a component called "Sustainability (Waste Management)". Similarly, the term "Logistics" was added to the component "Architecture" because they address similar themes on accessibility and circulation flows, pictured in the contents of the studies analyzed.

"Funding" was excluded from Financial resource administration practices because there were no studies on the theme, and the term "Billing" was added to the component "Budget", which was also quite frequent in the content of the studies. The components "Productivity" and "Costs" stayed unaltered and, although the latter stood out from the others, it still lacks reflections when compared to the international scenario, in which the theme was already considered a priority in studies dating back to 1987.¹⁹

Due to its close relation with the technological resources in the nursing services, like the information systems, decision support systems and other resources employed in information technology for example, Information resource administration practice was called Technological and information resource administration practice. Except for the component "Patient Record", this permitted the re-configuration of the others into two new components: "Communication and its Technologies, representing the interfaces between communication in NAE, the information system, nursing consulting and marketing in nursing; and "Manuals, Forms and Information Systems and their Technologies", resulting from the combination of the other components.

Finally, in Material resource administration practice, the result of the thematic similarity originated two new components "Prevision and Acquisition" and "Distribution and Control", while the remainder was excluded due to a lack of content. The first component is justified by the fact that studies on material purchases also discuss the prevision process, through needs analysis and estimation procedures. The second is justified by the fact that the distribution of materials was presented as depending on control mechanisms, within the management policy of material resources.

CONCLUSION

This study revealed that, in 48 years of scientific production at the graduate level, Brazilian nursing produced 7,722 titles, but only 7.7% were focused on NA. In that group, 75.5% came from Master's programs and 24.5% from Doctoral programs.

The temporal distribution of the products was not homogeneous but became more voluminous over time and with the increase in the number of programs and students. The production in all groups did not show continuity, observing intervals or even interruptions in the interest in certain themes.

Concerning the geographical origin of the research products on NA, the study demonstrated that 72.3% came from the Southeast of Brazil, particularly USP, 14.6% from the South, particularly from UFSC, 9.9% from the Northeast, especially UFBA, and 3.2% from the Central-West, particularly UFG. The North did not present any production on NA during the study period.

Ideological and theoretical bases of NA corresponded to 17.6% of the abstract and was studied in 17.1% of the Master's theses and 19.7% of the Doctoral dissertations. The first research produced on this theme was defended in 1963, but the area only gained regular production as from 1986, which can explain the production volume in comparison with Resource administration practice.

Resource administration practice obtained the largest production volume, with 69.3% of the abstracts analyzed on this theme, and was discussed in 70,2% of the Master's theses and 66.0% of the Doctoral dissertations. The first studies produced on this theme were defended in 1972 - in Human resource administration practices and Political resource administration - reaching a regular production as from 1986.

The collation of themes in the graduate scientific production on NA using the background ECAE demonstrated that some gaps and shortcomings existed. These can deserve further studies that consider the range of the period under study, i.e. from 1963 till 2011 and answer the reasons why they occurred and their link with the extraordinary scientific and technological advances that influenced the emergence of new techniques. In view of the findings, a reformulation for the knowledge architecture on NA was proposed, based on the existing architecture.

In the new proposal, the knowledge on NA is hierarchically structure. Some existing components in the old structure were excluded because there was no representative scientific production. Others were totally or partially reformulated and had their content redirected to the component that better represented the content of the abstracts, originating a new ECAE. Hence, the new ECAE proposed in this study was the approach that best represented the graduate production on NA between 1963 and 2011.

This study result, although limited to the period defined and to the source, whose data entry is not always updated, can guide the scientific community that studies NA. This support is related to setting

priorities and driving research funding resources on the themes with a lack of research products, as some components of the knowledge structure showed hardly expressive research products when compared to others. The new structure proposed also lacks validation in the scientific community. The intention is to determine the validity in future research.

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