How to cite this article:

ABSTRACT
Objective: To compare the profile of nursing research groups registered at the CNPq Research Groups Directory in 2006 and 2016.
Method: Descriptive and documentary analysis, The data has been collected in 2006 and in 2016, with parameterized search with the term “nursing” at the CNPq Research Groups Directory. The selected variables have been organized in a Microsoft Office Excel spreadsheet.
Results: The research groups have increased from 251 in 2006 to 617 in 2016, with important increase of the number of participants, among students and researchers. There was a decrease of the number of groups without students. However, 22% remain without undergraduate students’ participation.
Conclusions: It has been observed an important increase regarding the interest on research activities, when comparing both scenarios. The nursing research groups reflect structural and political advances in generation of science, technology and innovation, however, the undergraduate students’ and the foreign researchers’ participation should still be encouraged.
Keywords: Nursing. Research groups. Nursing research. Education, graduate. Education, higher.

RESUMO
Objetivos: Comparar o perfil dos grupos de pesquisa em Enfermagem cadastrados no Diretório do CNPq em 2006 e 2016.
Métodos: Estudo descritivo documental. A coleta de dados aconteceu em 2006 e 2016 a partir de consulta parametrizada com o termo Enfermagem no Diretório dos Grupos de Pesquisa, na página online do CNPq, sendo realizada a análise descritiva. Os dados foram organizados em planilha do Excel.
Resultados: O número de Grupos de Pesquisa aumentou de 251 em 2006 para 617 em 2016, com incremento no número de participantes. Houve redução do número de grupos sem estudantes, embora 22% permaneçam sem participação de alunos de graduação.
Conclusões: Os grupos de pesquisa em Enfermagem refletem avanços estruturais e políticos na geração de ciência, tecnologia e inovação da área, entretanto ainda deve ser incentivada a participação de alunos de graduação e pesquisadores estrangeiros, bem como a ampliação de recursos tecnológicos e das parcerias interinstitucionais.

RESUMEN
Objetivo: Caracterizar el perfil de los grupos de investigación en enfermería registrada en el Directorio CNPq en dos momentos distintos: en 2006 e 2016.
Método: Estudio descriptivo documental, desde el Directorio de Grupos de Investigación en Brasil en 2006 y 2016, con un aumento significativo en el número de participantes, aunque el 22% no cuenta con la participación de estudiantes graduados. Los datos fueron organizados en una hoja de cálculo de Microsoft Office Excel.
Resultados: Los grupos de investigación aumentaron de 251 en 2006 a 617 en 2016. Además de aumentar el número de grupos, que reveló un aumento significativo en la proporción de los miembros, los investigadores y los estudiantes por grupo.
Conclusiones: Hubo un aumento significativo en el interés en actividades de investigación en la comparación entre los dos escenarios. Los grupos de investigación en enfermería reflejan avances estructurales y políticos en la generación de la ciencia, la tecnología y la innovación y la formación de científicos en el campo. Sin embargo, debe seguir fomentando la participación de los estudiantes universitarios.
INTRODUCTION

The National Council for Scientific and Technological Development (CNPq), a body linked to the Ministry of Science, Technology and Innovation (MSTI), was created in 1951 as the National Research Council, later assuming the current denomination. In 1965, post-graduation courses were regulated in Brazil, with the institutionalization of the master’s and doctorate degrees, with 38 courses in the country\(^1\). The nursing area has followed this teaching evolution, with the creation of the first master’s degree in nursing of the country, in 1972, by the Universidade Federal of Rio de Janeiro\(^2\).

The CNPq is considered the center of the strategic science planning in Brazil, and aims at fostering the scientific and technological research, at acting in the formulation of its policies, promoting the training of human resources for issues of economic and social relevance, support studies, encouraging the training of Brazilian researchers, strengthening knowledge and collaborating to advance the frontiers of knowledge. In this way, it contributes to the valorization of the Brazilian scientific production and the recognition of the national researchers by the international scientific community\(^3\).

The Brazilian researchers are articulated in scientific and technological research groups (RGs), organizations linked to universities and other higher education centers, scientific research institutions and technological institutes. Within the RGs, the members are classified as researchers (permanent members involved in research activities), students (secondary school level, graduation and post-graduation lato sensu and stricto sensu level) and technical support staff. However, the CNPq does not interfere in the identification of the members of the GRs, and it is up to the leader of each group to define the participation of each member\(^4\).

The Brazilian RGs in activity are allocated within the Directory of Research Groups in Brazil, the CNPq database on human resources, research lines, scientific and technological production, established partnerships and the institutions related to the groups. In this database, the actors involved can constantly update information about their groups, being an important tool for the information exchange. Thus, from this Directory it is possible to characterize the limits and the profile of the scientific activity in the country, and to identify its fragilities and potentials. To enter the Directory, the institution of the RG must be registered in the Directory of Institutions of the CNPq, and the periodical update is necessary, at least every 12 months, as a criterion for maintaining the certification of the group\(^5\).

It is essential for nursing to value the scientific production for the development of a clinical practice based on evidence, allowing greater visibility, recognition and its consolidation as a science. In this sense, The RGs are important strategies for qualifying the profession, encouraging professionals to critical, reflective and investigative thinking since their formation\(^6\).

The importance of the interface between research and academic training is due to the positive influence of scientific research in parallel with the professional practice. Nursing research has the role of producing and improving knowledge, seeking the qualification of care and, thus, increasing people’s quality of life. The investment in scholarship opportunities in Scientific Initiation (SI) encourages the participation of students, since the graduation course, in the universe of academic research, which favors the training of professionals who can be better prepared for the job market, and encouraged to graduate\(^7\).

Researches related to the scientific production of national nursing RGs have been produced focusing on the presentation of the current group profile\(^8\)-\(^10\). However, no studies that present the evolution of the scenario have been found, as well as the identification of the advances and challenges to be transposed.

The development of scientific studies that characterize the evolution of the research groups in nursing allows the recognition of the potentials and fragilities of the nuclei of the scientific production. And, evaluating the direction of the knowledge production, it is possible to structure the principles and practices in order to reorient the nursing training process, favoring health policies and strengthening nursing as a science\(^11\).

In this context, the question is: How did the scenario of nursing research groups registered in the CNPq Directory evolve in 2006 and in 2016? This study aimed at comparing the profile of nursing research groups registered in the CNPq Directory in 2006 and in 2016.

METHOD

This is a descriptive documentary study, based on the Directory of Research Groups in Brazil. Data collection took place in two moments. The first one was in August of 2006, in the page of the CNPq, by parameterized query, that is, textual search in the current base with the term “nursing” applied to the fields: name of the group, name of the research line, repercussions of the RG, research line keyword, and the name of the researcher. It is believed that in these topics of the area research groups the word “nursing” has been cited. In this collection, 340 RGs have been located.
Of these, 251 were characterized as nursing research groups, and 89 groups belonged to different predominant areas. It is worth mentioning that the researchers involved in this study have a database for this period\(^8\), which is not available for full access, considering the crosses made by the researchers.

The second collection took place in April of 2016, also with the search term "nursing" applied to the fields: name of the group; name of the research line; research line keyword; and repercussions of the group. A total of 846 RGs have been located, of which, only those that indicated nursing have been selected as the area of coverage. Of these, 229 have been de-characterized because they present another area of coverage, being: collective health (105), medicine (48), education (14), nutrition (8), physical education (7), psychology (6), pharmacy (4), history (4), dentistry (4), among others (29). Thus, totaling 617 groups in the nursing area.

The database has been prepared by retrieving the following elements from each group: name, situation (if certified by the institution, and whether or not updated), year of formation, name of the leaders, institution, number of research lines, link to partner institutions, human resources indicators of the group, and use of relevant equipment and software. The data has been organized in an Excel spreadsheet, grouped and analyzed through descriptive statistics (averages, minimum and maximum amplitude, percentage) and inferential, presented in absolute and relative numbers.

It should be observed that the researchers have followed ethical principles in the research, preserving the identification of the Research Groups or educational institutions in terms of structure and productivity.

**RESULTS**

The first RG in nursing in Brazil was the Núcleo de Estudos e Pesquisa do Idoso (Center for Studies and Research of the Elderly) – NESPI, created by the Universidade Federal of Bahia (UFBA) in 1973. After that, in 1982 the Grupo de Estudos sobre Cuidados em Saúde de Pessoas Idosas (Study Group on Health Care for the Elderly) – GESPI, of the Universidade Federal of Santa Catarina (UFSC) was developed. And in 1985 the Núcleo de AIDS e Doenças Sexualmente Transmissíveis (Nucleus of AIDS and Sexually Transmitted Diseases) – NAIDST, and the Núcleo de Estudos, Ensino e Pesquisa do Programa de Assistência Primária de Saúde Escolar (Center for Studies, Teaching and Research of the Primary School Health Care Program) – PROASE were created, both of the Universidade de São Paulo (USP).

The total number of groups increased from 251 in 2006 to 617 in 2016, a growth of 146% over the years, with 2010 being the most prominent year, with the creation of 58 new groups (Graph 1). All the 617 currently active groups are certified, that is, they are updated periodically by the institution to which they belong. However, 174 (28%) have not been updated for more than 12 months.

It can be seen that, of the 251 RGs accounted for in 2006, 43 (17%) were not included in 2016, which indicates the closure, over the years, of a significant portion of the groups found in the first search.

In 2006, 232 (92%) RGs ranged from one to five lines of research, which has remained stable over the years, but...
in 2016 571 (93%) groups presented up to five lines of research (Graph 2).

The data of 2016 also showed that 131 (21%) groups developed their studies around only one research line, which demonstrates the direction to new knowledge, and the systematization of scientific production in niches of knowledge.

The search of 2016 revealed that 249 (40%) groups had from 18 to 34 members, and 238 (39%) had from one to 17 members. This profile differs from that of 2006, when 175 (70%) had up to 17 members and only 58 (23%) had from 18 to 34 participants, which reveals an important group growth and an increased interest in participating in the research scenario (Graph 3).

The search of 2016 has evidenced that most of the researchers were doctorates (64%), followed by masters (26%), specialists (6%), undergraduates (2%), and others (2%). In 2006, 184 (73%) groups had up to 8 researchers and 56 (22%) had from 9 to 16. In 2016, there was a significant increase in the number of researchers per group, with 341 (55%) counting up to 8 researchers; and 211 (34%) had from nine to 16 (Graph 4).

There was a significant participation of the students in the RGs in 2016, since the composition of the groups averaged 59% of students, 36% of researchers, 4% of technicians, and 1% of foreign collaborators.

According to the data from 2016, 32% of the students were undergraduates, and 37% were indicated as others, making impossible an accurate analysis on the proportion of each level of training. Besides these, 14% were presented as doctorate students; 12%, as master’s degree students; and 6% as specialization students. In 2006, 244 (97%) groups had up to 21 students in their training, and in 2016 this proportion dropped to 488 (79%) groups. In 2006, nine (4%) groups had more than 22 students, a number that increased to 130 (21%) groups in 2016, which shows an increase in the number of students per group.

It is also registered that 27 (4%) RGs from the 2016 database did not have students of different training levels in their composition, compared to 50 (20%) who were in the same situation in 2006, which represents a reduction of 46% of groups in this situation. However, 134 (22%) groups

**Graph 3 – Number of Members by Nursing Research Group in Brazil. 2006-2016**

Source: [3]

**Graph 4 – Number of Researchers by Nursing Research Group in Brazil. 2006-2016**

Source: [3]
still did not present undergraduate students among their members, demonstrating detriment to the training of nurses, considering the importance of the integration between teaching and research for the professional training, and the incentive to the formation of new masters and PhDs.

There was also a greater detail of the information provided by the CNPq regarding the research groups. In 2016, the new structure of the platform allowed to identify that 30 (5%) groups had relevant software, which have been used in research and development activities, and that were already registered by the CNPq or developed by the RG itself. Only four (1%) reported using their own equipment worth more than R$ 100 thousand, including: microcomputers, Statistical Package for the Social Sciences (SPSS) software, High-Performance Liquid Chromatography (HPLC) software, Structuring of the Heart Failure Clinic, Interdisciplinary Laboratory of Gerontology, and Wound Repairs Laboratory.

Still, the data referring to 2016 revealed that 151 (24%) groups had at least one partner institution, with a total of 313 registered institutions. Of these agreements, 217 (69%) were established with universities; 40 (13%), with hospitals and clinical care institutions; and 19 (6%) with government agencies such as city halls, and municipal and state secretaries, among others (37-12%). Among the partner universities, it is worth mentioning that a significant number (37-17%) were foreign, which tends to strengthen the visibility of national nursing research.

With regard to the participation of foreign collaborators, 40 (6%) groups had 65 researchers. These were mainly from Portugal (19; 29%), whose interest can be justified by the knowledge of the language, followed by the United States (10; 16%), Peru (8; 12%), Mexico and Italy (5; 8% each), France, Canada and Spain (4; 6% each), among others (6; 9%).

### DISCUSSION

According to the data from 2012, 49% of the nursing research groups in Brazil registered at CNPq were not updated. There is a significant improvement of this indicator, since in 2016 this number was reduced by approximately half. Updating the groups on the platform every 12 months is a requirement of the CNPq Research Groups Directory since the creation of the RG. After this period, the group appears as not up-to-date and not certified, and may be excluded from the base.

The growth of RGs in the nursing area in the last 10 years follows the progress of the post-graduation programs in the area, as well as the number of researchers with a CNPq research productivity grant. A study of the Brazilian Nursing History research groups found that in 1998 there were 14 postgraduate nursing programs in the country, and in 2010 this number was increased to 39. By 2016, we had 70 post-graduation programs in the basic area of nursing in operation, which shows an important progress. This growth is considered a reflection of the incentive policy led by the area representatives in the CNPq and in the Coordination of Improvement of Higher Education Personnel (Capes), the efforts of nursing PhDs in the demand for research promotion, and advances in the structure of the post-graduation programs of the area.

Universities and other institutions of higher education are facilitators for the articulation with international researchers, which allows the consolidation of nursing of advanced practices, through the strengthening of decision-making skills, specialized knowledge and clinical competence. In this context, the activities of research and production of new knowledge developed in groups encourage the sectorization by areas of interest, as well as aggregate researchers and professional experts, students and other members interested in the subject, encouraging the theoretical deepening and mastery of practice in their knowledge field. Thus, defining the research lines of a RG sets up a guide for its studies and research.

In Spain there are few specific post-graduation programs in the nursing area. However, targeting the thematic areas through well-defined research lines contributes to strengthening the profession and improving people’s lives.

The articulation among multiple research groups from different institutions, as well as various subjects, among them the assisting professionals, students and professors/researchers, with objectives of convergent studies, facilitates the intellectual exchange, enriches the knowledge produced and facilitates the approximation between the scientific production and the professional practice.

The process of knowledge production must take place in a collective, integrated, dynamic, continuous and complementary way, which underlies the work of the RGs, which organize themselves to carry out shared activities of knowledge production. This collective construction, through the interaction and exchange of knowledge between the members of the RG or members of several groups, is configured as a new way of producing science.

Preparing nurses to deal with global health problems presupposes partnerships and institutional efforts across national and local boundaries, as well as sufficient investment to promote such connections. The partnership between nursing education institutions allows the students, during their professional training, to understand beyond their reality, expanding their possibilities for reflection and action.
In the Spanish health sector, there are investments in exchanges between national and international research institutions, as well as the incentives for nurses to participate in advanced research teams, promoting the evidence-based practice\(^{(12)}\).

The RGs are structured by teams of researchers led by one or two coordinators, who maintain academic and intellectual leadership in this scenario. It is important to consider the profile of the Phd in nursing recommended in order to achieve the research and practice of excellence, since the RGs invest constantly in the search for financing and management of financial resources, which demands an entrepreneurial profile and leadership of its coordinators\(^{(4)}\).

A 2012 study found that 87.5\% of the Nursing History researchers in Brazil had a Phd or master's degree, following the same proportion of the findings of this study. The strong presence of researchers with stricto sensu training implies a greater qualification of the activities developed, especially in the orientation of students and in the conduct of the researches of the groups\(^{(4)}\).

Stabilizing as a researcher is a challenge that requires the nursing professional effort, commitment, patience, and important investment of time. Researchers need to build their careers from the graduation in order to early acquire research skills. This is fundamental to establish credibility as a researcher and to enable him/her to undertake researches that will influence health policies and practices\(^{(13)}\).

The qualification of the RGs and, consequently, of the Post-Graduation Programs to which they are linked is the result of their scientific productions and of the growth of high impact publications. The strengthening of the RGs adds value to graduation, master’s and doctorate courses, fostering excellence in the performance\(^{(4)}\).

The significant participation of students that are part of the RGs accompanies the incentive and direction of the knowledge production, considering the curricular guidelines that recommend the articulation among teaching, research and extension. However, it is worrying to maintain groups that do not involve students, given the potential of recruitment and identification of future researchers, reflecting benefits to the teaching and to the production of science. There is a growing interest among students in participating in research activities, which requires motivation and encouragement by teachers/researchers\(^{(5)}\).

Amongst the research promotion activities at the graduation level, the SI is the main strategy to stimulate new talents and the formation of new researchers. The insertion in RGs allows the graduation student articulation with more experienced colleagues and guiding teachers, allowing the sharing of the knowledge produced\(^{(4)}\). The production of nursing graduation students, either in the IS activity through the Institutional Program of Scientific Initiation Grants (PIBIC), or by the Institutional Program of Initiatives in Technological Development and Innovation (PIBITI), or in the accomplishment of the Course Conclusion Paper (TCC) in public universities that have post-graduation programs, is recorded in the reports of these programs, especially in the collection portal of Capes\(^{(16)}\), which justifies the importance of investing in the registration of the participation of these nursing RGs.

It is important to encourage students, as future professionals and researchers, to be aware that their care actions must be accompanied by critical and reflective thoughts, in order to give meaning to these actions, so that they serve as a guide to guide the practice\(^{(7,17)}\).

The production of quality knowledge in nursing and health presupposes investments in policies, management and innovation, which brings recognition to the RG, its researchers and its productions. In order to achieve high productivity and excellence in activities, it is necessary to have adequate physical structure, in a productivity-friendly environment\(^{(4)}\).

The development of the scientific production activities of a research group requires sufficient infrastructure with advanced equipment and technologies that are appropriate to the research objects and research lines of the RG\(^{(4)}\). The use of teaching and research Technologies is recognized as an innovative and differentiated strategy, with important potential to contribute to critical thinking and complex decisions\(^{(18)}\).

However, the use of technologies to increase research is still not so frequent in nursing. Less than 2\% of the theses and dissertations of nursing post-graduation programs in Brazil from 2001 to 2013 have used non-conventional data collection technologies, which include creative and innovative data collection techniques, products and tests. What shows the limited production of studies that make use of technologies in the field\(^{(18)}\).

Comparatively, in the last 10 years, the research groups in nursing have advanced substantially in the expansion in number of groups, of participants and graduation students, keeping their efforts concentrated in the development of thematic expertise, demonstrated by the number of research lines. Despite the growing appreciation of information and interest in the development of research, the process of translation of knowledge in nursing and health is still incipient, which means, at the same time, the need and challenge in the Brazilian reality. In this way, the fragility of the small numbers of inter-institutional partnerships, of foreign participants and technological resources is
pointed out. The difficulty in identifying research problems that are relevant to the practice, the low involvement of knowledge users in research processes, and the low investments in studies on the subject by funding agencies, are barriers to be addressed in order to qualify and incorporate the results of scientific research into the professional practice approach, indispensable for the promotion of evidence-based nursing[10].

**FINAL CONSIDERATIONS**

This study has presented the characterization of the RGs of the nursing area available in the Directory of Research Groups on the CNPq page in 2006 and in 2016. The comparison between the two scenarios has made it possible to verify, in the trajectory of the national nursing research groups, important nuclei for the development of studies and academic research, denoting the efforts in the construction of knowledge in nursing and health for a decade.

The research groups in nursing reflect their structural and political advances in the generation of science, technology and innovation in the area; however, the participation of graduate students and foreign researchers, as well as the expansion of technological resources and inter-institutional partnerships, should still be encouraged.

This study presents limitations related to the oscillation of the number of RGs available in the CNPq portal, which should be investigated by the use of secondary data. This is due to the constant possibility of insertion of new groups, as well as eventual exclusions from groups that have not been updated for more than 12 months.

**REFERENCES**


**Corresponding author:**
Caroline Cechinel Peiter
E-mail: carolcechinel@gmail.com

Received: 10.26.2016
Approved: 04.18.2017