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Scientific study participation profile of students completing undergraduate nursing: an exploratory study

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ABSTRACT

Aim: To analyze the scientific participation of nursing graduates; to investigate academic scientific production of graduates and check research fostering in the institutions analyzed. **Method:** A descriptive, exploratory, quantitative study conducted in six nursing colleges of Paraíba, with 170 graduates who responded to a particular form between October and November 2011. For data analysis we used Epi Info 3.5.2°. **Results:** It was found that 22.90% of students participated in undergraduate research projects. Of these, 61.53% were from public institutions. The average quantity of publications was 1.73 abstracts and 0.25 articles per student, with a preference for the 'Public Health' area (34.10%). Only 9.40% intended to enter an academic career upon completion. **Discussion:** Difficulties in the fixation of undergraduates in scientific activities are related to the institutional fostering to promote research. **Conclusion:** It is necessary to rethink the scientific activities for the construction of new directions for the profession, enhancing the training of nurses.

Descriptors: Nursing Research; Education, Nursing; Students, Nursing.

INTRODUCTION

Brazilian nursing, as a science and a production source of knowledge, has expanded and diversified its scientific production since the quantity and frequency of publications in professional journals and the increasing indexing of these journals in international databases demonstrate the strength of the knowledge produced⁽¹⁾.

Such development confirms, in a larger context, a period of scientific development that has occurred in Brazil: currently, 10,000 doctors per year complete their studies. The country occupies the 13th position in the international ranking of scientific publications, producing approximately 30,000 articles and accounts for 2.12% of the world's scientific literature⁽²⁻³⁾.

Investment in post-graduation studies, funding of innovative projects, and training of specialized human resources are the strategies in which the growth opportunities are anchored⁽⁴⁾. The intent is to have productivity and scientific development through a policy of reducing the average time of completion of master's degrees and doctorates, resulting in a greater number of young researchers in the market that have ample time for performance⁽⁵⁾.

In order to promote and achieve those goals the Institutional Program for Scientific Initiation Scholarships (PIBIC) inserts undergraduates into the dynamics of scientific research and provides tools for formulating research policies. Disseminated in 78% of public higher education institutions (HEIs) and 71% of the private colleges, the PIBIC prepares qualified students for the postgraduate programs, decreasing by up to 10 years time the stricto sensu training of the researcher^(4; 6-7).

The program, however, has constraints in terms of their access. In 2007, for example, nursing scientific initiation (IC) programs ac-

counted for only 642 of the 25,500 scholarships distributed by the National Council for Scientific and Technological Development (CNPq)⁽⁸⁾. It appeared that 2.5% of the IC scholarships are allocated in nursing, which can be seen as an impediment to access to research.

The practice of undertaking research in graduating programs is usually mandatory for the Final Project of the course (TCC), which encourages students to undertake a certain amount of research and helps that their interest in scientific production is manifested only after completion of the course, a fact that shows the relative lack of preparation of the professionals in conducting scientific investigations⁽⁸⁾.

Therefore, a range of occasional researchers is created, who choose to publish in low quality journals due to the lack of encouragement and guidance regarding the prerogatives of mature science. A study indicates that 55% of nursing research production will not achieve even regional attention⁽¹⁾.

Encouraging undergraduate research at the locus of the formation of the professional nurse is essential for the development of new generations with the skills and competencies that meet the specific demands of the individual and of collective nursing⁽¹⁾.

A student open to scientific research will be a professional who is able to have the proper attitude, facing the unknown and will always be aware of new discoveries, and inferring changes in their conduct culminating in effective practices in disease prevention and treatment improvement, making them more effective and less aggressive⁽⁸⁾.

There is the need, therefore, to ascertain the current status of nursing research in order to seek improvement of scientific activities in undergraduate courses. This analysis should aim to consolidate scientific experiment as a process that should begin at the undergraduate

level and be perfected during the formation of a master's and PhD level researcher⁽⁸⁾.

Aiming to contribute to the understanding of scientific literature in undergraduate nursing and provide useful and objective resources in the assessment of the results of scientific activity, this study aimed to analyze the profile of scientific participation of the students at undergraduate level, to check for encouragement and promotion of research practice in colleges surveyed from the students' speeches, and to investigate the scientific production of scholars in their final year.

METHOD

This is a cross sectional, descriptive, exploratory study with a quantitative approach, held in six HEIs in the state of Paraíba that offer graduate programs in nursing. We selected those with courses in their final graduation stage, with the presence of students in the classroom. These HEIs will be referred herein as institutions A (Public), B and C (private) and are located in Campina Grande / PB; institution D (private) is located in Patos / PB; institution E (Public) and F (private) are in the city of Cajazeiras / PB.

We chose students from the last period of the course as they are connected to the development of the Course Conclusion Work in addition to being in the period where difficulties manifest with greater intensity due to the non-development of these investigative skills in previous years⁽⁸⁻⁹⁾.

The student population amounted to a total of 278 individuals enrolled in a course. The sample consisted of 170 subjects of the 161 stipulated, according to the sample size calculation for finite populations, with a 95% significance rate. For sample size calculation we considered the formula $n = t_{5\%}^2 * P * Q * N / e^2 (N-1) + t_{5\%}^2 * P$

* Q, where N = number of students enrolled, $t_{5\%}$ = significance level, e = absolute sampling error and P = a ratio of 50% considering the enrolled students that can develop research activities, considering that this ratio allows a maximum sample size. Therefore, by calculating $t_{5\%} = 1.96$; $P = 50\%$; $Q = 50\%$, $e = 5\%$ and $N = 278$, we obtain $n = 161$ students. Figure 1 details the enrollment of the sample units.

Data was collected between October and November 2011. We developed a form with 30 objective and mixed questions, structured around three main directions in order to obtain information regarding:

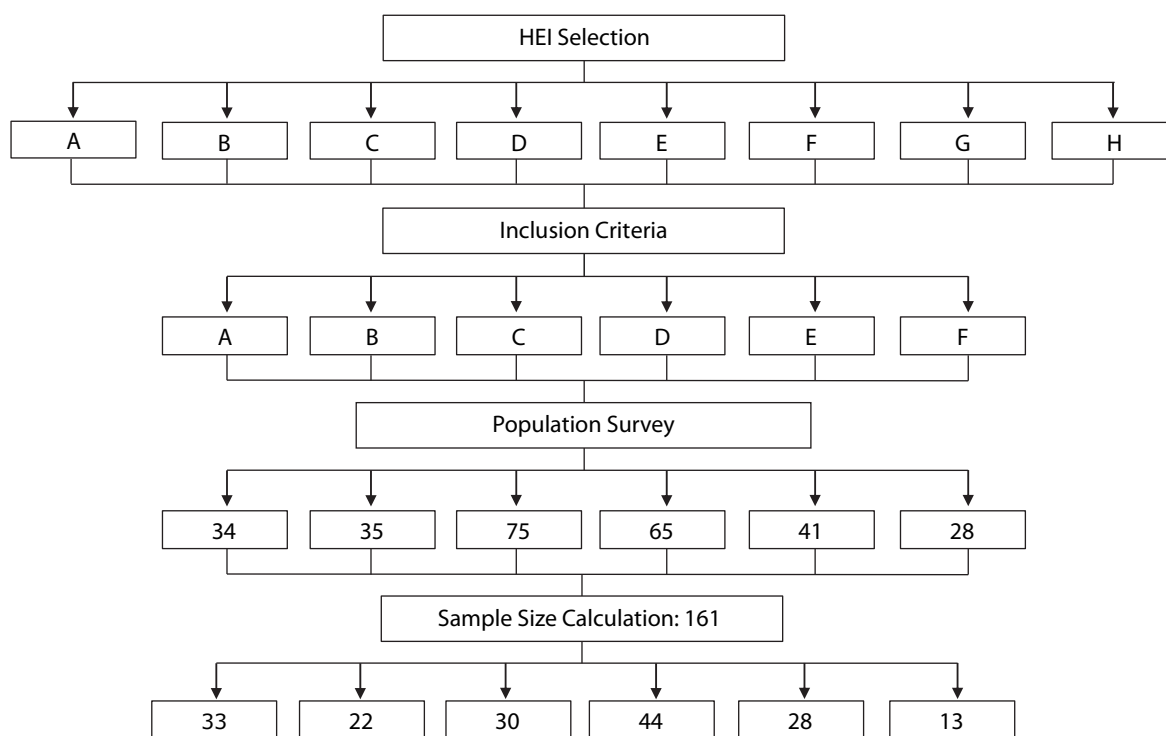
- 1) demographic profile;
- 2) understanding of research;
- 3) profile of scientific production.

The data collection instrument was submitted to external review by professors with experience in the selected theme and to pre-test in order to validate it, correct inadequacies and questions not understood, and to improve the clarity and objectivity of the questions in order to reduce the possibility of bias.

The time of collection was previously agreed with the respective coordinators of the courses. We adopted a collective approach in the classroom before the classes began and in a single moment only, avoiding the possibility of repeating the participation of students. We assured the right to autonomy in participating in scientific studies and reiterated the option of withdrawing at any stage of the research. The application of the instrument occurred only after signing an informed consent term.

We organized the data in a database using Epi Info v3.5.2^o software and performed the descriptive statistical analysis. The responses of mixed questions were grouped by keywords according to how frequently they appeared. The charts and spreadsheets were designed in Microsoft Excel 2007^o software.

Figure 1 – Sample units' workflow.



Source: Research data, 2011.

With regard to ethical aspects, the study was submitted to the Research Ethics Committee at State University of Paraíba and received assent to its execution, under CAAE register number: 0496.0.133.000-11.

RESULTS

The research involved 170 subjects. Of these, 138 (81.2%) were women. As for the age level, the sample had a minimum age of 21 years and maximum of 50 years. There was a general average of 26.35 years, and 24.45 years for public and 27.06 years for the private institutions.

Unmarried students (72.40%) who declared themselves as white (51.80%), Catholic (75.90%), with a monthly income of two to three minimum wages (38.80%) and whose main family provider worked for the government (43.50%) predominated. Taking into account only public

institutions, most students (30.0%) reported receiving a minimum wage income (Table 1).

It was found that 23.50% have some type of employment or paid activity to fully support themselves. In private colleges, 28.20% were observed to fall into this category. Many (40.0%) of those who had labor assignments were health professionals.

Table 1 - Socio-demographic aspects of nursing graduates from institutions of higher education in the state of Paraíba.

Characteristics	Specification	N = 170	%
State of origin	PB	102	60,00%
	PE	16	9,42%
	RN	11	6,47%
	CE	7	4,11%
	Others/Not known	34	20,00%

Age	20 to 24 years old	87	51,17%
	25 to 29 years old	40	23,52%
	30 to 34 years old	16	9,42%
	34 to 39 years old	11	6,47%
	40 years or older	6	3,52%
	Not known	10	5,90%
Marital status	Single	123	72,35%
	Married	38	22,35%
	Divorced	7	4,11%
	Not Known	2	1,19%
Ethnicity	White	88	51,76%
	Mullato/Mixed	67	39,42%
	Black	11	6,47%
	Oriental	3	1,76%
	Not known	1	0,59%
Religion	Catholic	129	75,89%
	Protestant	30	17,64%
	Kardecist	5	2,95%
	None	6	3,52%
Occupation (own or tutor's)	Public Govern- ment Worker	74	43,52%
	Freelancer	34	20,00%
	Retired	25	14,70%
	Executive	15	8,84%
	Not known	22	12,94%

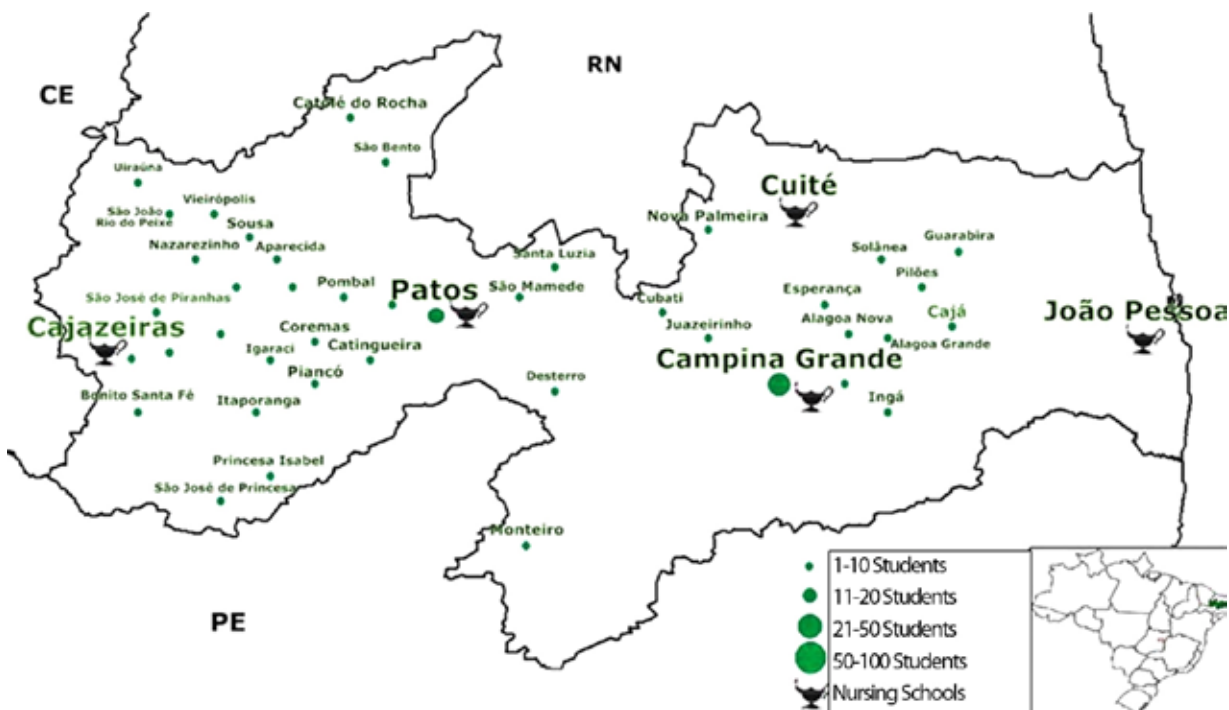
Income	Up to 1 minimum wage	51	30,00%
	2 to 3 wages	66	38,82%
	4 to 6 wages	12	7,06%
	No income	27	15,89%
	Not known	14	8,23%

Source: Research data, 2011.

Regarding the distribution of students by institution, there was a higher quantity of students enrolled in private schools. The distribution was as follows: FIP 25.90%, UNESC 17.60%, FSM 16.5%, FCM 12.90%, UEPB 9.40%, and UFCG 7.60%. In private institutions, 73.70% of students come from within state itself; in public institutions, this percentage dropped to 65.90% (Figure 2).

Students were questioned about their participation and aspirations in science research (Table 02). Most of them (98.20%) said performing scientific research was important to nursing for

Figure 2 - Geographical distribution regarding origin of nursing students and the concentration of nursing schools in the state of Paraíba.



Source: Research data, 2011.

the acquisition, improvement and update of knowledge (54.40%); to develop and solidify nursing as a science (22.10%); and for the building of paradigms that enable improvements in the teaching and practice of the profession (16.90%). A total of 6.60% of the graduates also cited other reasons why the research is important, especially in solving the problems of Brazilian health.

Regarding publications, 35.30% said they had participated in projects that culminated in publication. Of these, 68.30% published in Annals events; 18.30% for events with no anal and 1.70% in scientific journals. About the subject of the projects, 35.60% were abstracts, 32.20% oral presentations, 18.80% expanded abstracts, and 3.3% were articles. During graduation, 94.10% attended scientific meetings, most of these local (45.90%) or regional (34.70%) events.

We registered that 34.40% had the intention to publish the Course Conclusion Work; of these, 49.3% stated that the intention was for a scientific journal. When asked about which media they would look for, only 7.5% mentioned specific journals, such as the Brazilian Journal of Nursing (40.0%), Brazilian Journal of Public Health (20.0%), Journal of the School of Nursing of USP (20.0%), or the Brazilian Journal of Maternal and Child Health of IMIP (20.0%).

It was found that only 9.40% intended to continue the research, postulating *sensu stricto*

training; 58.80% planned to specialize in one area or try an internship; 23.50% preferred to join the assistance healthcare workforce.

We also observed that 45.90% of the sample had a Lattes platform curriculum. Of these, 71.70% were from public schools; 48.80% of the total sample claimed to keep it updated.

It was found that 22.90% participated in projects involving scientific initiation (PIBIC, PIVIC, PIBID, PIBITI, PROPESQ, PET etc.), a percentage equal to those who participated in research groups registered in the CNPq.

Analyzing the productivity of the graduates (Figure 3), we detected an average of 1.73 abstracts and 0.25 articles per student. Thus, 75.30% did not have at least an abstract and 93.70% have never published a scientific article.

The preference regarding the research area was 34.10% for public health, 24.10% for fundamentals of nursing, 18.20% for mother-child care, and 10.60% in the medical-surgical area. It was noticed that 1.20% chose to develop work in other areas of nursing, 2.40% in other sciences, and 9.40% had no preference.

About the stimulus for research, 56.30% reported that a lack of stimulation by the institution and faculty, and 25.30% reported that the incentive was satisfactory.

On the financial incentive, 11.20% of students received scholarships. Those who already

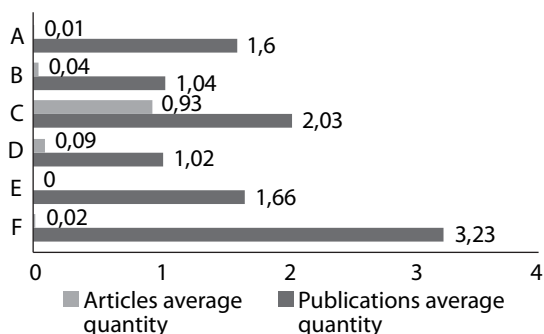
Table 2 - Representation of the percentage involvement of nursing graduates of public and private institutions with scientific research.

	Public (N = 46)						Private (N = 124)					
	Yes		No		Missing		Yes		No		Missing	
	N	%	N	%	N	%	N	%	N	%	N	%
Like to do research?	40	86,9	4	8,6	2	4,3	108	87	15	12	1	0,8
Participated in scientific initiation projects?	24	52,1	22	27,8	0	-	15	21	97	78,2	12	9,6
Participated in research groups?	18	39,1	27	58,6	1	2,1	21	26,9	95	76,6	8	6,4
Participated in events?	44	95,6	0	-	2	4,3	116	93,5	4	3,2	4	3,2
Participated in publications?	26	56,5	14	30,4	6	13	34	27,4	56	45,1	34	27,4
Intend to publish Course Final Work?	31	67,3	1	2,1	14	30,4	36	29	15	12	73	58,8

Source: Research data, 2011.

possessed one received incentive for a period of 16.05 months approximately. Of this group, 50.0% published their studies.

Figure 3 - Separation of average quantity of publication of abstracts and scientific articles per student in higher nursing education institutions in Paraiba - 2011



Source: Research data, 2011.

DISCUSSION

The findings of this study reveal a picture of discrete scientific participation of graduates, highlighting important aspects that expose the difficulties in the practice of scientific initiation in nursing education.

First, the very expansion of nursing as a science and work force leads to setbacks for the practice of scientific research. With the increasing availability of courses, especially in the private education system, there is a growing demand for students who need to work to provide funding for their education, a fact that interferes directly with their scientific participation.

Working in complementary time can constitute an obstacle to developing activities beyond the curriculum requirements (internships, monitoring, research and extension), limiting students to training reduced only to classroom lessons⁽⁷⁾. A double shift, undoubtedly, prevents the development of research skills in the everyday life of the student^(8;10).

This seems to be a trend in nursing and other courses: more and more people are involved in work experience while still a student. The report from the National Survey of Higher Education (ENADE) indicates that 28.20% of undergraduates and 53.7% of graduates in the country have labor assignments⁽¹¹⁾.

Another point that demands concern is the need to problematize the effects of this intense expansion and its impact on the nurse/patient relationship in the dimension of staff and the health care needs of the population. Nursing training has the fifth highest number of people in active enrollment in the country and currently has 920 graduation programs, 772 of these being private. The state of Paraíba has 17 courses, and based on the average population of the study produces ~1,200 professional nurses per year in the state⁽¹¹⁻¹²⁾.

It is worth noting that the demographic profile of the students had not changed compared with previous studies⁽⁷⁻¹³⁾. Women continue to be most significant in the category, a fact perceived throughout the historical process of the development of the profession⁽¹⁴⁾. However, male participation has become increasingly clear: according to the Organization for Economic and Co-operation Development (OECD), male professionals already represent 13% of nurses, a percentage in accordance with the findings of this study⁽¹⁵⁾.

A second impediment in the practice of research at the undergraduate level is the lack of knowledge of the scientific area by the students. Poor training in terms of strategies that favor scientific initiation, the lack of incentive to participate in research groups (GP), and the lack of a link of nursing courses to postgraduate studies result in biased training assistance⁽⁶⁻⁹⁾.

The immediacy of care practice or the expertise to do so is the purpose of the majority of respondents. The investment in academic

careers and master's degrees, for example, is just a wish of a few. The very publication of the Final Work requires an effort considered by many as unnecessary since there is no awareness of the appropriation of research as a way to strengthen the identity of nursing or as a contribution to professional practice⁽⁵⁾. According to the ENADE, 20% of nursing graduates from across the country believe that scientific initiation projects had little or no involvement in their education⁽¹¹⁾.

Participants presented no familiarization to basic terms in scientific circles as PIBIC, PIVIC, PIBITI, PIBID and Lattes: most students did not present a Lattes curriculum, and the ones who did usually do not keep it updated. The Lattes constitutes the main indicator of research activity. It is indispensable for analyzing student's merits and competencies, as well as assessing universities and other institutions⁽⁶⁾. It came from the need to share findings and its absence or lack of updating indicates that the student does not have effective participation in scientific research of any kind⁽¹⁶⁾.

The Qualis classification system and examples of scientific journals are almost entirely unknown, even with the growth of publications and the emphasis on the currently experienced scientific productivity⁽¹⁴⁾. Only 7.5% of participants indicated the journal they intended to publish the Final Work in, but none could explain the reason for that choice.

As for research groups, the true locus of scientific research, we noticed a low percentage of students that comprise them. Authors point out that a common feature of these nursing groups is that they possess few graduates and many researchers of a high tier. However, there is difficulty in fostering the development of their activities⁽¹⁶⁾.

Nursing research groups usually become engaged in two or three lines of inquiry and are predominantly linked to public HEIs, exposing

the disparity of the scientific organization of public and private HEIs⁽¹⁶⁾. Furthermore, the greater participation of public school students in the scientific context is due to an increased presence of research studies and more incentive to perform research in their academic daily lives.

The research group is the place of the genesis of the studies: the design, production, tracking and sharing of results. Sharing scientific findings, in turn, is also a purpose of meetings, seminars and conferences⁽¹⁷⁾. At this point, the majority of students participating in local scientific events suggest a limitation in the interchange of ideas, research areas and methodologies, requiring the need to encourage their presence in national and international events of greater scientific relevance as a contribution to the potentiation of a scientific vision.

The third problem identified in the research may be perceived as encouraging scientific initiation through the distribution of scholarship grants. There are two ways to participate in scientific initiation programs in Brazilian universities: the first is stimulated by the financial assistance provided by development institutions; the second is through voluntary participation in research⁽⁶⁾.

The institutional financial incentive is crucial in providing support to the student and to the development structure of the project. The scientific initiation scholarship grant is an individual incentive to be operationalized as a comprehensive tool for fostering human resources training⁽⁶⁾.

However, there is a major deficit in access to this financial incentive. In Brazil in 2009, 1514 PIBIC active nursing students were registered, among the 235,800 enrolled students^(8;10). We observed a lack of initiation scholarships that focused especially on a particular portion of students that came from institutions with a greater historical and cultural relevance⁽¹³⁾. Half of Brazil's HEIs support the scientific initiation by only releasing students from classes; only

25% provide resources to fund it. About 30% of the students do not participate in any scientific research activity during the whole course⁽¹⁷⁾.

Although there's no possibility of providing scholarships to all students, it is necessary to understand that scientific initiation is a much broader activity than simply the payment of a financial incentive. It is the duty of the institution, which is considered to be an important and inseparable place of academic training⁽⁶⁾.

A reflection on the scientific interest of the students of a HEI in Paraíba, taking into account the deficiencies in policy research by HEIs, the lack of institutional incentives, and the advent of double shifts among students induces a conclusive finding that the nursing graduate has a technician profile training, resulting in a construct that does not promote new knowledge or improvement to the quality of life of the population through scientific investigation⁽⁹⁾. The average quantity of articles and abstracts published translates a scenario unwelcome to the profession and contrary to the current productivity policy of Brazilian universities, which have scientific research initiation and the training of new researchers as the main activities designed as an integrated process to facilitate movement into academic life⁽⁴⁻⁵⁾. A point of great relevance found in this study was the current focus of research in public health, secondary to the new way of performing health care in this field⁽¹⁸⁾.

It is important to think about the qualification of research on the graduation levels, which should be guided by a responsibility to life and health practice. The training of new researchers in universities becomes crucial for strengthening the nursing profession, and is reflected in the improvement of the standard care provided to the extent that the research needs arising from the practice are being developed⁽¹⁹⁾.

The role of the IC and its promotion mechanisms, from which one can develop a research

activity that is driven by creativity that is capable of spreading a new attitude to knowledge, clearly appears to be an attitude of questioning and constructing alternatives to science and society, and to the state⁽¹⁹⁾.

The lack of data related to perceptions and subjectivities of the graduate regarding the research was certainly a limitation of this work. However, the quantitative data and profiles analyzed met the propositions of the study. Another limitation was the exclusion of two important educational institutions. However, the large number of participants from different HEIs is a factor that contributes to reduce this possible source of bias.

We stress that there is a need for additional studies on scientific initiation scholarship grants and their parties, aiming to determine the factors that influence the participation of undergraduates in science in order to optimize the results of investments in the training of researchers and ensuring the development of nursing as a science.

CONCLUSION

Arrangements and changes are needed to advance the consolidation of nursing as a producer of knowledge in early academic levels. The ability to reflect and rethink strategies that enable greater scientific participation of the student is essential to reverse the construction of a professional with difficulties in their development and skills for dealing with problematic issues of social significance through research.

With regard to this, studies such as this one are relevant in attempting to measure the stimulus given to research where it is essential: in graduation. Early introduction of students to research projects, encouragement for young creative participation in scientific initiation ac-

tivities, and modernization of nursing education are valuable tools to enhance desired qualities in a professional of a higher level.

We conclude that the most important action now is to educate everyone that performing research during undergraduate nursing is an excellent time for learning because it fosters personal and professional growth and contributes substantially to the development of science in all areas.

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