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RESEARCH

Non-conventional technologies for data collection in Brazilian dissertations and theses

Tecnologias não convencionais de coleta de dados em dissertações e teses brasileiras

Tecnologías no convencionales para recolección de datos en disertaciones y tesis brasileñas

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ABSTRACT

Objective: to characterize non-conventional technologies used for data collection of dissertations and theses available in the Catalog of Theses and Dissertations (CEPEn) of the Brazilian Nursing Association (ABEn). **Method:** this is a documentary research, whose data were collected in the catalogs of theses and dissertations available at the ABEn website, from Volumes XIX to XXI. The indicators collected were: academic level; educational institution; year; qualification of the author; setting; non-conventional technology used; type of technology; association with conventional techniques; methodological design; benefits and methodological limitations. **Results:** from a total of 6346 studies, only 121 (1.91%) used non-conventional technologies for data collection, representing the final sample of the study. **Conclusion:** it is concluded that Brazilian Nursing researches still need methodological innovations for data collection.
Key words: Nursing Research; Innovation; Technology; Investigative Techniques.

RESUMO

Objetivo: caracterizar as tecnologias não convencionais utilizadas para a coleta de dados das dissertações e teses disponíveis no Catálogo de Teses e Dissertações (CEPEn) da Associação Brasileira de Enfermagem (ABEn). **Método:** pesquisa documental, com coleta de dados realizada nos catálogos de teses e dissertações disponíveis no sítio da ABEn, do Volume XIX ao Volume XXI. Foram elencados como indicadores de coleta: nível acadêmico; instituição de ensino; ano; formação do autor; local; tecnologia não convencional utilizada; tipo de tecnologia; associação com técnicas convencionais; desenho metodológico; benefícios e limitações metodológicas. **Resultados:** de um quantitativo de 6346 estudos, apenas 121 (1,91%) utilizaram tecnologias não convencionais para coleta de dados, representando a amostra final da pesquisa. **Conclusão:** conclui-se que as pesquisas da Enfermagem brasileira ainda carecem de inovações metodológicas de coleta de dados.
Descritores: Pesquisa em Enfermagem; Inovação; Tecnologia; Técnicas de Pesquisa.

RESUMEN

Objetivo: caracterizar las tecnologías no convencionales utilizadas para la recolección de datos de disertaciones y tesis disponibles en el Catálogo de Tesis y Disertaciones (CEPEn) de la Asociación Brasileña de Enfermería (ABEn). **Metodo:** investigación documental cuyos datos fueron recogidos en la colección de datos catálogos de tesis y disertaciones disponibles en el sitio de la ABEn, del Volumen XIX hasta el Volumen XXI. Fueron utilizados como indicadores de recolección: nivel académico; institución educativa; año; formación del autor; local; tecnología no convencional usada; tipo de tecnología; asociación con técnicas convencionales; diseño metodológico; beneficios y limitaciones metodológicas. **Resultados:** de un número de 6346 estudios, sólo 121 (1,91%) utilizaran tecnologías no convencionales para la recogida de datos, que representa la muestra final de la encuesta. **Conclusión:** se concluye que las investigaciones de la enfermería brasileña aún carecen de las innovaciones metodológicas para la recolección de datos.
Palabras clave: Investigación en Enfermería; Innovación; Tecnología; Técnicas de Investigación.

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INTRODUCTION

Among health professionals, a growing concern for the improvement of technical and scientific knowledge has been observed, regarding quality of care offered to the client, family and the community.

Thus, research becomes an important key strategy for construction of this knowledge. Research is considered a transformation tool that enables investigation and reflection about a phenomenon that involves the life of a subject or of the population and its possible modification[1].

In the Nursing area, research has resulted in a scientific basis for the quality of care and professional credibility. Therefore, it has been noticed an increased number of scientific publications derived mainly from Nursing graduate programs through theses and dissertations defended annually[2].

In order to understand the reality in which these publications are inserted, Nursing has been seeking to innovate their ways of doing research and thus extending their framework of knowledge. This is directly reflected, among other things, in the development of theses and dissertations that seek and implement non-conventional technologies for data collection.

We delimited as a non-conventional technology for data collection, for this study, the techniques used in an innovative way by Nursing, incorporating creative elements or using techniques, innovative products and tests in the data collection stage.

The application of these technologies involves creativity, planning and the mastery of technique to be employed by the researcher, so that the study, despite using a non-conventional data collection technology, kept the methodological rigor required for scientific research, critical foundation to produce consistent data[3].

Faced with this, the literature indicates that the field of new research methods is one of the key points for nursing to reach new heights in terms of research[2]. In this scope, this study is justified by the need to know what nursing graduate students have been producing about non-conventional technology for data collection, in order to subsidize the construction of knowledge in the area, being innovative, reliable and replicable.

The following research questions were elaborated: What are the characteristics of dissertations and theses available in the Catalog of Theses and Dissertations (CEPEn) of the Brazilian Nursing Association (ABEn) which had used non-conventional technologies for data collection? What and how non-conventional technologies of data collection have been used in Nursing scientific studies?

OBJECTIVE

This study aimed to characterize the non-conventional technologies used for data collection of dissertations and theses available in the CEPEn of the ABEn.

METHOD

This is a documentary research, which consists in the use of documents as the study source, aiming to extract information from the appropriate techniques for handling and analyzing data, according to scientific principles[4].

Data collection was performed in the Catalog of Theses and Dissertations of the Center for Studies and Research of the Brazilian Association of Nursing, collection that brings together academic studies produced by Brazilian Nursing graduate programs. The choice of such scientific work types occurred because these investigations are characterized by: individuality, addressing topics experienced in a meaningful way by the investigator; autonomy, resulted from author's efforts; creativity, resulted from the collaboration for the development of science; rigorously, assuming logicality and competence[5]. It is noteworthy that the creativity element represented fundamental guidance of the research, as it sought to elucidate data collection innovations in scientific research.

To facilitate the registration of the data and guide researchers, a protocol was developed entitled "Documentary Research Protocol", composed of the following items: objective of the study, guiding questions; search strategies; study selection criteria; strategies for critical assessment and data synthesis. Data collection was performed by a master's degree student and two PhD students during the period of January to February in 2014.

We used as source of data collection the catalogs of theses and dissertations available on the ABEn website, Volume XIX to XXI. Inclusion criteria were: dissertations and theses, components of the CEPEn from the ABEn, which used non-conventional technologies for data collection.

Dissertations and theses not available in full or electronically on the databases were excluded.

Initially the studies were selected from reading the abstracts and then full text data collection was done.

Data were registered in a spreadsheet built in Microsoft Excel 2010, following the categories:

- Academic level: if it was an academic master's, professional master's or a PhD;
- Educational institution: Higher Education Institution (HEI) where the scientific work was conducted;
- Year of publication: the year in which the dissertation or thesis was published in full;
- Qualification of the author: Author's educational background according to *Currículo Lattes**;
- Setting of the study: Brazilian State where the collection of research data was conducted;
- Non-conventional technology used: innovation used in the data collection stage, grouping the results in the following categories: audiovisual resources, visual arts, performing arts, educational technologies, mapping technologies, music, dynamics groups, interview with technological tools and development of products;

* This is an academic Brazilian curriculum, which is endorsed by the government and used to check qualifications or publications of anyone who is enrolled at the platform as follows: http://lattes.cnpq.br/

- Technology type: according to the classification that explores the technologies in the area of health technologies as light, light-hard and hard[6], considering: light - data collection based in the human interaction, with or without simple material resources, not guided by systematic theoretical frameworks; light-hard - use of simple materials, but guided by theoretical frameworks systematized and organization development of instruments and/or evaluation of education, assistance and/or management from simple resources; and hard - development of organization instruments and/or evaluation of education, assistance and/or management from advanced technological resources, using equipment and/or computerized materials;
- Association with conventional techniques;
- Methodological design: according to the classification that classify research in: bibliographic, descriptive, experimental and exploratory[7] and approach used - if qualitative, quantitative or mixed;
- Study object: grouped in categories: teaching, research, management or assistential practices;
- Objective of the research: verb indicated the general objective of the research;
- Benefits and methodological limitations of the reported data collection stage.

We highlighted the research required the approval of the Ethics and Research Committee, since the selected data are public domain documents.

RESULTS

From the initial quantity of 6,346 abstracts of dissertations and theses that composed the catalogs of ABEn analyzed - Volume XIX to XXI - only 121 studies were selected to be part of the final research sample, which represents only 1.91% of the researches produced by Nursing between 2001 to 2013. Table 1 presents the quantitative results of documentary research in all stages.

Most dissertations were from academic master courses (79; 65.29%), followed by PhD thesis (42; 34.71%), with no studies resulting from professional master courses.

Figure 1 shows HEI in which studies were developed. We highlight the Universidade de Sao Paulo (32; 26.42%), Universidade Federal do Rio de Janeiro (27; 22.31%), Universidade Federal de Santa Catarina (15; 12.40%) and Universidade Federal do Ceara (14; 11.57%). When grouped by Brazilian regions, most HEIs were located in the South and Southeast, each containing six (35.29%) universities, followed by the Northeast (4; 23.54%) and Midwest (1; 5.88%). No production was developed in the HEI of North Brazil.

The authors of the studies analyzed, significantly, were nurses (116; 95.85%). Interestingly, however, we also found systems analyst research (1, 0.83%), licensed graduated in mathematics (1, 0.83%), bachelor's degrees of social workers (1, 0.83%) and occupational therapist (1, 0.83%). An author (0.83%) had two degrees: social service and law.

Most studies were developed in the states of Rio de Janeiro (29; 23.94%), Sao Paulo (27; 22.31%) and Rio Grande do Sul (20; 16.53%).

Box 1 shows the non-conventional technologies used in data collection of the studies analyzed, with their respective benefits and limitations.

Seventeen studies (14.05%) combined the use of more than one non-conventional technology for data collection. Most studies used audiovisual resources (44; 36.36%), dynamics for facilitating the expression of ideas (33; 27.27%), product development (24; 19.83%) and mapping technologies (16; 13.22%).

Table 1 - Total of studies in the Nursing Catalog of Researches and Researchers of the CEPEn, studies about the use of non-conventional technologies for data collection in nursing research, pre-selected and selected, 2014

Volume	Total of studies*		Pre-selected studies**		Selected studies***		Final sample	
	n	%	n	%	n	%	n	%
XIX	460	7.25	7	3.65	1	0.71	0	0.00
XX	280	4.41	7	3.65	0	0.00	0	0.00
XXI	285	4.49	6	3.13	2	1.43	2	1.65
XXII	318	5.01	3	1.56	4	2.86	8	6.61
XXIII	383	6.06	23	11.98	8	5.71	0	0.00
XXIV	554	8.73	26	13.54	16	11.43	12	9.92
XXV	518	8.16	24	12.50	23	16.43	20	16.53
XXVI	445	7.01	24	12.50	23	16.43	19	15.71
XXVII	482	7.60	22	11.46	20	14.29	20	16.53
XXVIII	368	7.80	6	3.13	6	4.29	6	4.96
XXIX	547	8.62	8	4.17	8	5.71	8	6.61
XXX	900	14.18	17	8.85	14	10.00	13	10.74
XXXI	806	10.68	19	9.88	15	10.71	13	10.74
Total	**6346**	**100**	**192**	**100**	**140**	**100**	**121**	**100.00**

**Number of abstracts of the volumes.*
***As inclusion criteria*
****As inclusion and exclusion criteria*

Box 1 - Non-conventional technologies used in data collection in the analyzed research, methodological benefits and limitations mentioned, 2014

Non-conventional Technology – n; %*	Benefits	Limitations
Audiovisual resources – 44; 36.36 Photography – 14; 11.57 Cutting and pasting – 13; 10.74 Draw – 12; 9.92 Filming – 9; 7.44 Movie – 2; 1.65	*Photography*: offers strong descriptive data; allows clear meanings; strengthens trust relationship with researcher (provide camera). *Filming*: repeated exposure (increases the possibility of analysis and understanding of the observer).	*Photography*: invasion of privacy; cost; time spent; difficulty in interpreting the data; not consistent with the reality of the subjects (fear and insecurity to handle camera). *Filming*: stand still camera can capture only one angle; filmed subjects present themselves anxious and fear.
Dinamics – 33; 27.27 Sensible Creative Method – 25; 20.66	Collective knowledge production; ease of socializing experiences and subjectivities; expression of difficult socialization topic; valuing individuals (co-researchers); therapeutic nature of artistic resources.	Difficulty of assembling group; density of the collected data.
Product Development – 24; 19.83 VLE – 6; 4.96 Instruments – 5; 4.13 Educative materials – 4; 3.31 DEC – 4; 3.31 Computerized system – 4; 3.31 Artefact – 1; 0.83	*Virtual Learning Environment* (VLE): active participation of students; dynamic teaching; collaborative learning; multisensory learning; evaluation at different moments and dimensions; greater motivation and commitment of students. *Distance Education Course* (DEC): greater flexibility and transposition of barriers.	*VLE*: ability of students and precarious computer labs. *Validation of tools*: complex process; difficulty of recruiting experts. *Computerized system*: time spent; need for a team of experts; need for updates and continuous tests.
Mapping technologies – 16; 13.22 Genogram – 11; 9.10 Ecomap – 9; 7.44 Georeferencing – 4; 3.31 Familiogram – 1; 0.83 Flowchart analyzer – 1; 0.83	*Genogram*: facilitates the treatment plan; better interviewer-interviewee interaction; represents a change of options. *Ecomap*: allows objective visualization of the family support network. *Georeferencing*: allows another researcher to geographically locate a specific geographic coordinate.	Not cited.
Interview with technological tool – 9; 7.44 Telephone survey – 5; 4.13 *Google docs* – 2; 1.65 Virtual Community – 1; 0.83 Blog – 1; 0.83	Transposition of barriers, possibility of reaching heterogeneous samples.	*Telephone survey*: missing calls (sample losses). *Google docs*: difficulty of participants adherence.
Performing Arts – 5; 4.13	Contribution to the subjective expression of the subjects; encouragement to reflection; suitability for the child audience.	Difficulty of assembling group; density of the collected data.
Performing Arts – 5; 4.13 Painting – 3; 2.48 Modeling – 2.48	Contribution to the subjective expression of the subjects; encouragement of reflection; suitability for the child audience.	Difficulty of assembling group; density of the collected data.
Music – 3; 2.48	Contribution to the subjective expression of the subjects; encouragement of reflection.	Difficulty of assembling group; density of the collected data.
Educational technologies – 2; 1.65 Conceptual Maps – 1; 0.83 Games– 1; 0.83	Keeping with the problem-based education; construction of knowledge according to pace and learning style of students.	Not cited.

**Percentages calculated according to the total sample of studies (N = 121).*

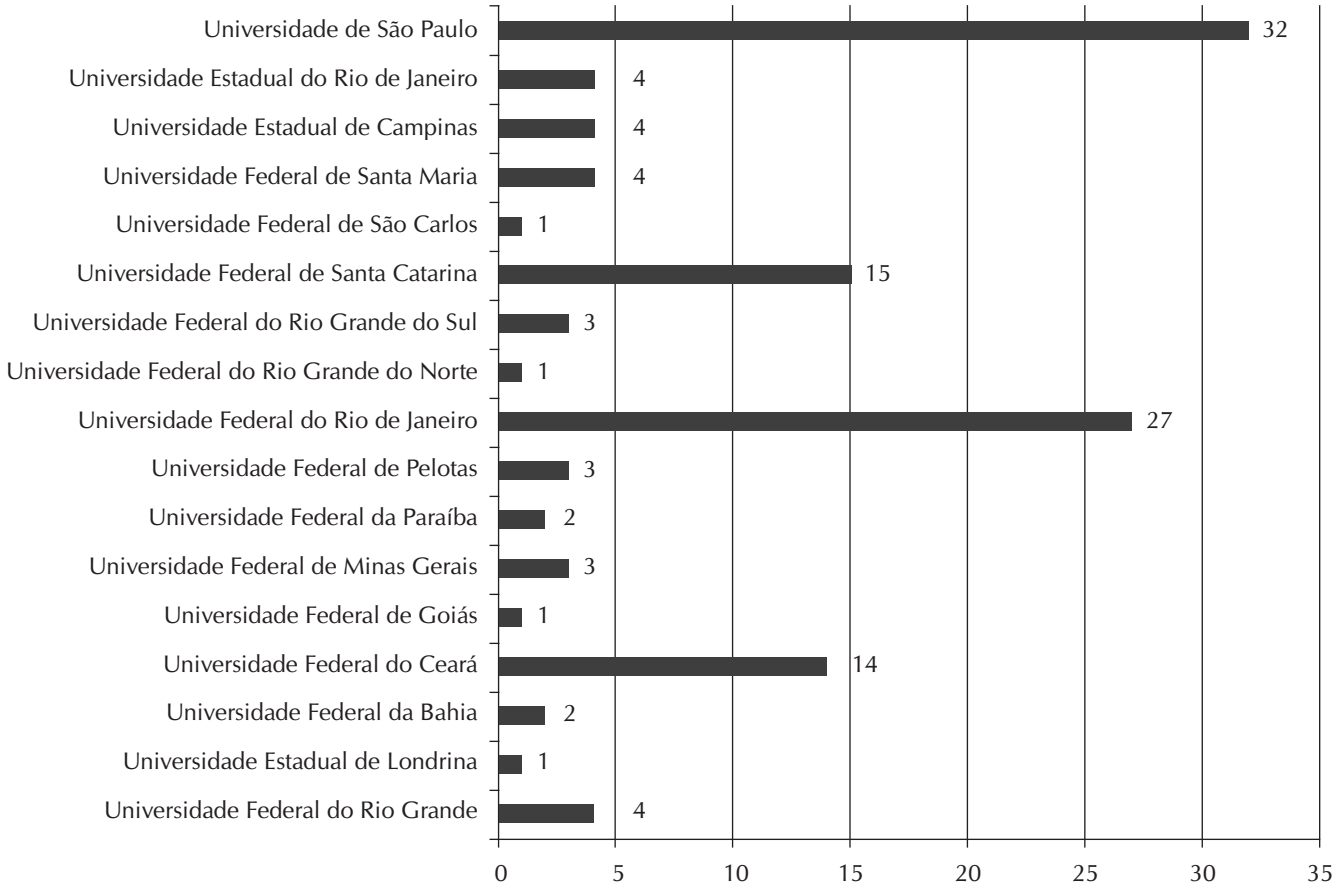

Figure 1 - Higher educational institutions development of studies on the use of non-conventional technologies for data collection in nursing research, 2014.

The productions that used non-conventional technologies for data collection had continuous growth over the years, with more studies from 2007 (21; 17.33%).

When analyzing the four HEI that produced more studies developed with innovations in their data collection, according to the technology used, the highlights were: Universidade de Sao Paulo, research that developed products (11; 45.83% of researches that developed these products); Universidade Federal do Rio de Janeiro in the use of dynamic facilitating the expression of ideas (16; 48.48 %) and performing arts (3; 60.00%); Universidade Federal de Santa Catarina in the use of dynamic facilitating the expression of ideas (7; 21.21%); and Universidade Federal do Ceara in the use of audiovisual resources (12; 27.27%) and visual arts (3; 60.00%).

Most studies (103; 85.12%) were used, in conjunction with conventional research techniques, highlighting: interviews (63; 52.07%); participant observation (35; 29.93%); questionnaire/form (24; 19.83%); and field diary (21; 17.36%).

Most research with qualitative approach (79; 65.29%), followed by quantitative research (34; 28.10%) and mixed approaches (8; 6.61%). Table 2 presents the methodological design of dissertations and theses analyzed, along with the type of technology, the object of study and study objectives in each category.

The descriptive studies (89; 73.56%) were more frequent, not existing bibliographic researches in the sample. Regarding the type of non-conventional technology used, the highlights were the light-hard technologies (53; 43.80%), followed by hard (46; 38.02%) and light (22; 18.18%).

Regarding the object of study, significantly, there were more research on the assistential practices (63; 52.07%), with emphasis on studies that investigated conceptions of care (14; 22.22%). Among the components of the category research studies (33; 27.27%), we highlight the objects of studies concerning family relations (4; 12.12%). Dissertations and theses about teaching (14; 20.66%) encompassed: the development of Virtual Learning Environments (VLE) (9; 36.00%), construction of educational materials (6; 24.00%), educational interventions (6; 24.00%) and the promotion of Distance Education Courses (DEC) (4; 16.00%). There were no researches in management category.

Table 2 - Characteristics of studies regarding the methodological design, the type of non-conventional technology used, the object of study and objectives, 2014

Methodological design	Type of technology – n; %	Object of study – n; %	Objective (n)*
Bibliografic (N = 0)	Light – 0; 0.00 Light-hard – 0; 0.00 Hard – 0; 0.00 **Total – 0; 0.00**	Teaching – 0; 0.00 Research – 0; 0.00 Management – 0; 0.00 Assistential practices – 0; 0.00 **Total – 0; 0.00**	No studies.
Descriptive (N = 89)	Light – 21; 23.60 Light-hard– 38; 42.70 Hard – 30; 33.70 **Total – 89; 100**	Teaching – 2; 2.25 Research – 32; 35.96 Management – 0; 0.00 Assistential practices – 55; 61.79 **Total – 89; 100**	To understand (16), to describe (14), to analyze (13), to identify (13), to know (9), to learn (5), to characterize (3), to unveil (3), to investigate (3), to assess (1), toverify (1), to discuss (1), to reflect (1), to rethink (1), to dimension (1), to develop (1), to estimate (1), to provide (1), to evaluate (1)
Experimental (N = 2)	Light – 0; 0.00 Light-hard – 1; 50.00 Hard – 1; 50.00 **Total – 2; 100**	Teaching –2; 100.00 Research – 0; 0.00 Manager – 0; 0.00 Assistential practices – 0; 0.00 **Total – 2; 100**	To develop (1), to compare (1)
Exploratory (N = 30)	Light – 1; 3.33 Light-hard– 14; 46.67 Hard – 15; 50.00 **Total – 30; 100**	Teaching – 21; 70.00 Research – 1; 3.33 Management – 0; 0.00 Assistential practices – 8; 26.67 **Total – 30; 100**	To develop (10), to build (4), to elaborate (3), to identify (2), to assess (2), to investigate (1), to analyze (1), to validate (1), to unveil (1), to implement (1), to plan (1), to structure (1), to contribute (1), to verify (1)

**Verbs were extracted from the general objective of the study analyzed.*

DISCUSSION

The fact that the research sample size represents only 1.91% of the studies from CEPEn of the ABEn, from 2001 to 2013, revealed the paucity of studies that seek to incorporate non-conventional technologies in the data collection stage and therefore, innovation within the Nursing research area.

It is known that the development of research focuses on sustaining economic growth and improving quality of life, since it is directly related to daily life and is oriented towards the most immediate demands and the search for answers to universal questions[8]. Therefore, graduate programs should integrate such assumptions, being responsible for fostering researches with social returns, incorporating and responding to the demands to which they belong.

In nursing, it is emphasized that the growth in numbers of theses and dissertations production build an important scientific collection[9] and must consolidate the principles of personality, creativity and rigor[5].

Thus, innovation becomes an essential condition, especially in modern times characterized by constant technological evolution, understood in an expanded concept, not as just machines and equipment, but as knowledge and human interactions that are constantly evolving, bringing new demands and requirements to research. Thus, in addition to the consumption of new technologies, it is believed that nursing must create and generate innovations, stimulating their testing in a systematic manner by scientific research[10].

Documental research showed to be an area that needs to be driven in Nursing: the incorporation of non-conventional technologies of data collection in their scientific investigations. It is noteworthy that the innovative technologies of data processing and analysis were not covered by the research objectives, but also need to be studied because they constitute essential areas of research methodology.

Most dissertations resulting from academic master's degrees, in line with the reality of Brazilian graduate studies, following a historical trend, is a growing type of graduate course in Brazil that provides more and fastest titles, aspect also revealed in other documentary research[9,11].

An intriguing fact, however, was the lack of production arising from professional master's degrees, a course which, today, is a fertile field in Nursing, since its purpose is to strengthen ties between university and practice, fostering research that

will return for services in the search for solutions to the everyday problems of assistance and care management[12].

Regarding the geographical distribution of the 17 HEIs in which the research was developed, the highlights were the South and Southeast of Brazil, aspect also shown in other studies[9,11,13-15]. This corresponds to a quantitative aspect of the distribution of graduate programs in the country, but also an inequality scenario that reflects on the research activities of initiatives in partnership with international researchers, still timid and limited to a few graduate programs strongly consolidated [15].

The existence of other qualification areas of knowledge of the research authors in the field of Nursing graduate studies elucidates a trend of research in partnership, when innovations are incorporated from the demand of a collective work of experts, especially those guided by the informatics.

The innovation process is complex, nonlinear, uncertain and requires interaction, brings new demands, requiring multidisciplinary knowledge and workers with different specialties[16].

Thus, the innovative research process promotes new skills: to know how to learn continuously; the know-how, that is, acting through technological tools that provide the facilitation of work and the optimization of time and resources; and how to be, incorporating different types of interactivity through the use of technologies[17].

Non-conventional technologies in Nursing research are revealed, thus, as an overview of multiple innovations, covering nine categories and, within these, 29 creative possibilities of data collection, which often were used in combination. The benefits and limitations of each category of non-conventional technologies were highlighted, demonstrating that the process of innovation is beneficial, but also requires adaptations in order to ensure the methodological rigor.

Audiovisual resources that were highlighted at the Universidade Federal do Ceara demonstrated to be significant resources in the production of reliable research data, as they enabled the repeated analysis by the observer, as recorded material may be used for subsequent analysis. Thus, especially in collective works, details of action, intensity, speed, the presence of many actors, with encouragement for spontaneity, become points of difficult to control by the researcher[18]. These aspects can be minimized by the use of audiovisual resources in the data collection stage, especially photography and filming, highlighted in documentary researches.

The use of dynamics facilitating the expression of ideas, technology was widely used at the Universidade Federal do Rio de Janeiro, showing active research methodologies, consonant with research processes that require group relations, seeking the subjectivity of the individual, in particular with topics of difficult expression. They encourage the shared discourse and a dialogic process with intense exchange of psychological, attitudinal and behavioral content between the study subjects[18], facilitating the collection of subjective data.

A limitation evidenced on the use of dynamic facilitation of expression of ideas in data collection was the density of the produced content, since it is characterized by intense subjectivity. In this context, we highlighted the importance of theoretical frameworks that support the collection and analysis of data with scientific rigor. As part of the dynamics, the Sensitive and Creative Method was significantly cited, based on Paulo Freire's framework, characterized by the appreciation of the uniqueness of each group of participants and the collectivization of experiences, following systematic steps to collect data by dynamic and group processes[19].

Literature highlights the efficiency of the method in data collection as a pedagogical strategy, confirming the multiple forms of shared expressions and experiences, with an informal, natural and constructive character, encouraging a creative and significant effect on the formation and exchange of knowledge[19].

As for the research that developed innovative products, especially for the productions of the Universidade de Sao Paulo, most of them were inserted in the teaching object of study, from the development of Virtual Learning Environments and Distance Education Courses, materials and educational interventions.

These initiatives are part of the current demand for a more participatory education, with content that may be used according to the needs of students learning pace. This technological advance can also support the nurses' daily life, providing information and enhancing the acquisition of knowledge, in continuing education[17,20-21].

The incorporation of these innovations, however, demands changes in the way of teaching and learning. New challenges are aimed at training those involved in the use and creation of technologies in the assistance work process, management, education and research of Nursing area, being necessary to bring together people, information, processes and computing resources in a common objective to maximize the benefits they receive and the technological capabilities[22-24].

A process highlighted by dissertations and theses that sought product development was the validation tools to ensure the effectiveness of the innovations promoted through a careful and systematic analysis of experts.

Overall, there was emphasis on the use of non-conventional technologies for data collection of light-hard type, and the hard ones were more frequent in experimental and exploratory studies. Literature review that aimed to analyze how Nursing has developed technological innovation for client care, reported the use of hard technologies as innovations in Nursing care practice, presenting also the need to combine hard and light technologies (or hardware and software) as a means of integrating care humanization of technological qualification, preserving the peculiar relational character of the Nursing work process[16].

A study that aimed to analyze the patents registered in Nursing, from 1990 to 2009, found that light and light-hard scientific production did not advance in the field of Nursing, and hard technologies that are invented and reinvented in practice, are hardly registered and therefore recognized to be patented[10].

It is demonstrated, once again, the need to encourage the incorporation of non-conventional data collection to Nursing research technologies, contributing to the scientific growth of this area of knowledge as well as the recognition of the Nursing role in improving their practices.

Regarding the methodological design of the studies analyzed, it is showed a greater number of research with a qualitative approach, aspect highlighted in the literature that can arise from their ability to the possibility of achieving answers to particular concerns involving the assistance and Nursing care, that is, by the adaptation to the objects of study of Nursing research[25-26]. The adequacy of the approach to the objects of study was also evidenced by the predominance of the research that had engaged in the assistential practice.

In general, there was an adaptation of the research designs to the objects of study, as well as the objectives delineated. The concern in understanding the phenomenon in full, also was evidenced by the number of studies that combined the use of conventional to non-conventional technologies, showing the importance of data triangulation.

It is known that "doing research" is a complex process, combining theory, method, operationalization and creativity, and to this end, "being a researcher" is to be integrated in the world, since there is no scientific knowledge above or out of reality[27]. The investigator should integrate theory and art in light of theoretical concepts that support his/her research, triangulating data, ensuring the necessary grounds to the quality of his/her production and therefore providing valid development of knowledge, free from spontaneity and characterized by scientificity.

Dissertations and theses analyzed also highlight as primordial elements: the follow-up of ethical principles in the research process; the environment preparation, exempting it from biases that might interfere with production of data; the need for planning and training of the research team; the use of theoretical frameworks to support and guide the scientific production.

In short, it is emphasized that the choice of a data collection method should follow methodological rigor, with the option of a specific technique or by multiple methods, especially remembering the ethical rigor in accordance with Resolution no. 466/2012 of the Brazilian National Health Council[26].

FINAL CONSIDERATION

The study sought to contribute and demonstrate what Nursing has been producing about non-conventional technology for data collection and how it is being applied, in order to subsidize the construction of knowledge in the area, being innovative, reliable and replicable.

It was found that throughout the Nursing production from 2001 to 2013 there were few dissertations and theses that were used for non-conventional technologies for data collection, emphasizing that Nursing is still in a step of incorporation of this type of innovation.

The documentary research seeks to encourage the development and the discussion about the importance of innovation and creativity in Nursing research, stimulating the role of nursing as a creative and innovative area of knowledge.

As limitations of the study, we highlight the elements that hinder the selection of the research sample: no standardization of abstracts; the absence of relevant information in the abstracts; the documents not made available in full in the Virtual Library; and the small amount of documents discussing their methodological limitations. In addition, this research is only a national picture, remaining hidden the reality beyond our frontiers.

It is also noteworthy that the innovative technologies of data processing and analysis were not the objective of the study, although they constitute important elements of Nursing research and therefore, also need to be investigated and valued.

It is suggested, therefore, that new studies, which denote the international reality of Nursing research in the use of non-conventional technologies should be conducted.

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