Research groups of health evaluation in Brazil: an overview of collaborative networks

Grupos de pesquisa de avaliação em saúde no Brasil: um panorama das redes colaborativas

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ABSTRACT The objective of the study was to characterize the research groups recorded in the Health Evaluation thematic area of the National Council for Scientific and Technological Development (NCSTD) directory, categorized per certification, year of inception, region and state of the country, institution and research line. By means of data retrieved from NCSTD' health evaluation area research groups from 1976 to 2017, we identified 385 groups. Of these, 30 groups could not be analyzed due to their exclusion from the database (6,7%), non-existence (0.8%) or double entry (0.3%). Descriptive statistics applied to the 355 groups revealed that they are present in all regions of the country, although very unequally distributed. There is a higher concentration in the Southeast region (42.8%), at the São Paulo – Rio de Janeiro axis, being the main voids located in the states of Amapá, Roraima and Rondônia. The most frequent research line respected 'evaluation and monitoring of health interventions'. The research groups' depiction confirmed the well-known Brazilian inequality in the production of knowledge, as well as the need both to deepen research on collaborative research networks under evaluation and to promote research and training.

KEYWORDS Research Groups. Health evaluation. Directory. Science.

RESUMO *O objetivo deste estudo foi o de caracterizar os grupos de pesquisa registrados na área temática avaliação em saúde do Diretório do Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), segundo sua certificação, ano de formação, região e estado do País, instituição e linha de pesquisa. Por meio do levantamento de todos os grupos de pesquisa da área de avaliação em saúde do CNPq de 1976 a 2017, identificaram-se 385 grupos. Não foram analisados 30 grupos por terem sido excluídos (6,7%), serem inexistentes (0,8%) ou duplicados (0,3%). Estatística descritiva aplicada aos 355 grupos analisados revelou que estão presentes em todas as regiões do País com distribuição bastante desigual, havendo maior concentração na região Sudeste (42,8%), sobretudo no eixo São Paulo – Rio de Janeiro; os principais vazios se localizam nos estados do Amapá, Roraima e Rondônia. A linha de pesquisa mais frequente foi a de 'avaliação e monitoramento de intervenções em saúde'. O panorama dos grupos de pesquisa confirma a conhecida desigualdade brasileira na produção de conhecimentos, bem como a necessidade de se aprofundar a investigação sobre as redes colaborativas de pesquisa em avaliação e de se promover a equidade investigativa e de formação.*

PALAVRAS-CHAVE *Grupos de pesquisa. Avaliação em saúde. Diretório. Ciência.*

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Introduction

Both nationally and internationally, science, technology and research have experienced growing importance as backing for the need to develop and overcome existing crises in the world. The contemporary world scenario of globalization has required greater breadth of education, knowledge, new techniques and approaches, with a consequent growth in the number of researchers, scientists and technologists[1] primarily to deal with current economic, social and environmental problems.

In Brazil, teaching and research funding agencies have encouraged the formation of research groups and the building of partnerships between institutions and researchers for the progress of the studies[2]. The National Council for Scientific and Technological Development (CNPq) is an agency to the Ministry of Science, Technology, Innovations and Communications (MCTIC). Since 1951, it has as one of main attributions to foster scientific and technological research and to encourage the generation of new Brazilian researchers. CNPq plays a central role in formulating and leading Science, Technology and Innovation (CT&I) policies. Its performance contributes to the national development and to the recognition of Brazilian research bodies and researchers by the international scientific community[3].

In recent years, Brazil has shown a virtuous growth in technological production and research knowledge developed by teams of senior and junior researchers, organized under the denomination of Research Groups and Lines[4,5], which has not been different in the health area. The group is defined as a group of individuals organized hierarchically around one or, occasionally, two leaders, being this hierarchy grounded on the experience, prominence and leadership in the scientific or technological field. The group carries out a professional and permanent involvement with the research activity, whose work is organized around common lines of research, and, to some extent, shares facilities and equipment[6].

The expansion of these groups in Brazil, especially in the last decade of the twentieth century, generates also greater development of scientific production as the building of alliances between researchers organized in groups and stronger competition in the academic environment, both for financial and symbolic resources as for recognition and credibility. Despite being characterized by a database of optional filling in, the universe covered by the CNPq database has increased over time, which can be assumed that it exerts relevant influence on the national scientific community[7].

In the midst of this debate, Barreto[8] observes the indices of the importance and growth of public health research activities in Brazil. As stated by the author, the number of research groups in the area grows quickly, having the CNPq research group database registered almost 400 groups involving approximately 2,500 researchers. The number of products arisen from the scientific activity grows evidencing the improvement of the research theoretical-methodological quality and the broadening of the national scientific production involvement of Collective Health in the international scenario.

The scientific environment has become more complex, generating a solid critical body, expanding the number of post-graduation courses and students, creating new agents in the scientific field, eventually reaching the logic and operation of agencies and organizations institutions addressed to knowledge management. The involvement of students and teachers in research groups and collaborative research networks favors the creation of bonds, besides providing the preservation of research in Brazil[9,10]. That building of a broadened view of the research process enhances new studies and the gathering of new groups[11].

The growing number of health assessment groups and research lines in Brazil and other countries and their production evinces the relevance of the knowledge field and practices regarding collective health[12,13]. Primary

research groups were organized in the 1990s in the departments of preventive and social medicine, as well as in public health schools. At that time, such university groups provided part of the advisors required to develop evaluation deals signed among the Ministry of Health, International Bank for Reconstruction and Development (IBRD), and Inter-American Development Bank (IDB)[12]. Among them, we emphasize the Family Health Expansion and Consolidation Program (Proesf), which has transferred financial resources to expand the coverage, qualification and consolidation of the Family Health Strategy in Brazilian municipalities since 2003.

Also the relation between research groups under evaluation as the implementation of monitoring and evaluation in the public management enabled the improvement and reinforcement of some areas, despite the country poor evaluative culture. As for the evaluation of policies, programs, services and technologies, the difficulties are well known of those who invest in the production, recognition of necessary conditions for the construction of knowledge, abstract product, and in those who organize its transformation into practices[14].

In other words, no matter how much the expansion is recognized, the profiles of the groups remain unknown, as do the research lines of health evaluation, their groupings and networks, making it difficult to acknowledge strengths and weaknesses concerning their contributions to the Unified Health System (SUS). Thus, this article aims to characterize the research groups enrolled in the health assessment thematic area of the CNPq as to their certification, year of graduation, region and state of the country, institution and research line.

Data and methods

This is a descriptive and exploratory study on research groups in the area of health assessment recorded in the Research Groups Directory provided by CNPq since 1992, year since which its database has preserved the same basic definitions and purposes.

The CNPq Research Groups Directory gathers information on ongoing research groups in the country and includes researchers, students, technicians, research lines in progress, as well and scientific, technological and artistic production generated by the groups. These are groups of researchers, students and technical support staff organized for the accomplishment of research lines that follows a hierarchical rule based on experience and on technical-scientific proficiency[6].

Data retrieval was carried on in May 2017 by means of CNPq site address http://dgp.cnpq.br/dgp/faces/consulta/consulta_parametrizada.jsf. Afterwards, the Diretório dos Grupos de Pesquisa/Consulta/Base Corrente was accessed so to search for the descriptor *'avaliação em saúde'* (health assessment), being inserted the descriptors *'nome do grupo'* (group name), *'nome da linha'* (line name) and *'palavra-chave'* (keyword), from which all groups in the interval 1976-2017 were retrieved.

Data were organized by means of Microsoft Office Excel and the analysis was carried out by applying descriptive statistics to the database containing the 355 research groups considered alive. Thirty no longer existing groups were excluded from the analysis. The main variables considered for analysis were certification, year of graduation, regions and states, predominant areas, institutions and research lines.

Results

As from the survey, a total of 385 research groups were recorded in CNPq database. Among them, 76% were certified, 10% were certified but not updated, and 5% were uncompleted *(table 1)*. It is important to note that groups under completion of data or out of date are under pending certification. Situations identified as excluded, non-existent or duplicate were not considered in the analysis.

Table 1. Distribution of health assessment research groups as for 2017 certification

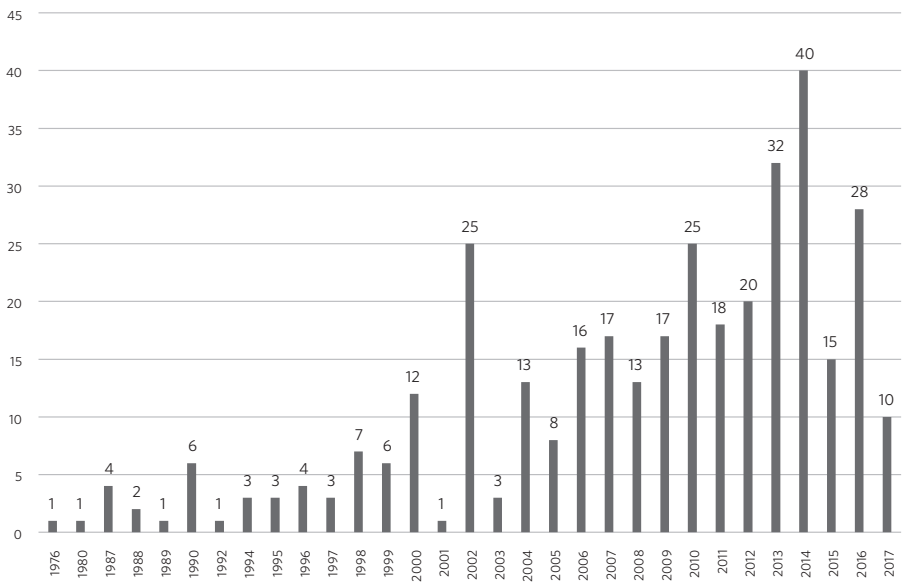
Certification	N	Percentage
Non-existent	3	0.8
Doubled	1	0.3
Excluded	26	6.7
Under filling in	21	5.4
Certified	294	76.4
Certified - not updated	40	10.4
Total	**385**	**100**

Source: Own elaboration.

According to the census conducted by CNPq since 1993, the growing number of research groups in Brazil is undeniable. The 2016 census accounted 531 institutions registering 37,640 research groups and 199,566 researchers, of which 129,929 were PhDs. The number of groups recorded in 2016 increased 149% in relation to 2002, the number of researchers grew 251%, and that of doctors, 278% (http://lattes.cnpq.br/web/dgp/censo-atual/).

From the 355 groups considered for analysis, those that arose or were modified over time are considered as health evaluation groups or groups that carry out an evaluation research line. The survey reveals the existence of groups in this field since 1976, although not significantly until 1999 (*graph 1*). From 2000 on, the number of groups increased until 2016, despite a small reduction in 2001. The peak occurred in 2014, when 40 research groups were created.

Graph 1. Distribution of health evaluation research groups per year of creation: 1976 to 2017



Source: Own elaboration.

Health Sciences are the major area of knowledge that encompasses health assessment groups (83.1%), an expected result due to the research choice of health assessment (table 2). Although to a lesser extent, the existence of groups in the humanities (8.7%) and applied social sciences (3.7%) is meaningful since they absorb areas of health-related knowledge and practices.

Table 2. Distribution of research groups per major areas of knowledge, 2017

Major areas of knowledge	N	Percentage
Health sciences	295	83.1
Human sicences	31	8.7
Applied social sciences	13	3.7
Engineering	8	2.,2
Biological sciences	5	1.4
Empty. Not defined by the group area	2	0.6
Exact and earth sciences	1	0.3
Total	**355**	**100.0**

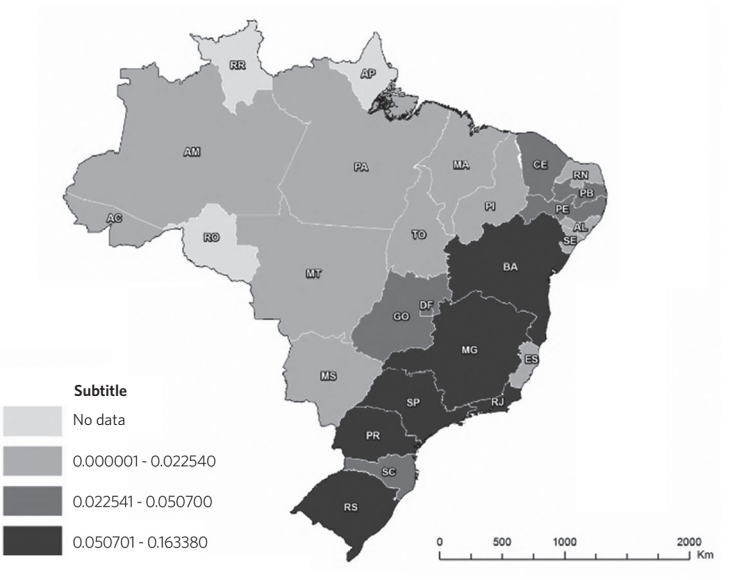
Source: Own elaboration.

However, it is noteworthy that areas such as engineering (2.2%), life sciences (1.4%) and exact and earth sciences (0.3%) have groups studying health assessment. What may help in understanding this apparent misalignment is the fact that assessment is a cross-sectional area, and something peculiar to the health sector may appear in one of the other areas of knowledge containing assessment research.

The distribution of research groups in health evaluation by geographic regions of the national territory is uneven. According to *table 3*, the Southeast region concentrates 42.8% of the groups, followed by the Northeast (23.9%), South (20.6), Midwest (8.5%) and North (4.2%). Interregional and intra-regional inequality can be noted by the distribution of groups within the Federated Union (UF) themselves.

Among UFs, groups are concentrated in the axis that connects São Paulo (16.3%) to Rio de Janeiro (15.5%), where main Brazilian health education and research institutions are located, as well as the market of goods and resources. The distribution draws attention to the lack of research groups in Amapá, Roraima and Rondônia, and an insignificant number in the North and Northeast. Such a reality can be retrieved from the distribution of research groups by quartile per UF, where the concentration and voids are very evident (*figure 1*).

Figure 1: Distribution of health evaluation research groups by quartile per Federation Unit



Source: Own elaboration.

Figure 1 indicates the need for further research on research networks since many research groups from different regions and UFs work in collaboration and partnerships. That is, it is yet not possible to relate the research to the groups locations, because they move strongly to the areas covered by new researches and existing training.

As for the research lines, 2,262 lines were identified and there are research groups holding up to 19 research lines. For the purpose of analysis, the first two lines of each group were analyzed because they also are understood to be the most significant for each group as evince the connections built by the groups with the health thematic areas to which the evaluation is linked.

The most frequent retrieved research line was 'Evaluation and monitoring of health interventions', totaling 130 (23.9%) references *(table 3)*. It should be noted that different denominations were considered for the term 'interventions', which may appear as 'health systems, programs, services, actions and practices', although without specifying to which thematic field the interventions were related, but necessarily containing the term 'evaluation' in their descriptive.

Table 3. Distribution of health assessment research groups per research line

Research lines	N	Percentual
Evaluation and monitoring of health interventions	130	23.9
Evaluation of specific interventions	96	17.6
Evaluation approaches	67	12.3
Health technologies	60	11.0
Education and working process	55	10.1
Planning, politics and management	53	9.7
Epidemiology	32	5.9
Social and human sciences	2	0.4
Nursing and health care	12	2.2
Mental health	6	1.1
Information on health	5	0.9
Others	27	4.9
Total	**545**	**100.0**

Source: Own elaboration.

Two other classifications were related to the assessment: (i) Evaluation of specific interventions, 96 cases, emphasizing interventions related to primary care (35 lines) and psychology (21 lines); and (ii) Evaluative approaches, 67 cases, bringing more recent themes of the national literature such as knowledge translation. The most common approach is economic evaluation, totaling 18 lines of research *(table 3)*.

It is also worth mentioning the presence of the three disciplinary fields of public health listed in the research lines of health evaluation. The three fields add up to 15.96% of the research lines, being 9.72% concerned to planning, policy and management, 5.87%, to epidemiology, and 0.37%, to social and human sciences *(table 3)*.

The line 'Others' (4.95%) corresponds to a set of themes that could not be related to the evaluation, such as biomechanics, cardiology and racial discrimination.

Comments

The growing trend of research groups in Brazil is due to the process of valuing, investments and advances in science, technology and innovation[1,5,15], particularly in the health area. Following the same trend, the expansion of health assessment research groups from 2000 on coincides with SUS implementing process of Monitoring and Evaluation (M&E)[16,17,] more specifically in Primary Health Care1[2,18], which has been a major driver of health assessment groups and research lines.

Research groups from different areas of knowledge experienced substantial growth due to increased production, qualification of members, strengthening of research grounds and greater visibility and recognition of their importance for the advancement of science, technology and innovation[1,5,15]. However, Barreto[8] states the

necessity that research groups, particularly those of Collective Health, deepen the thinking about the capacity of broadened questions – posed as consequence of their social insertion –, and carry on the theoretical and methodological debates, which are vital for reassuring the scientific field.

It is noticeable that many are the reasons why research groups are built, which also applies to those of health evaluation. Grouping is linked to a number of aspects such as the allocation and scarcity of research resources; the obligation of researchers to enroll in research groups by research funding institutions; the free building of teams consisted of a researcher and undergraduate and graduate students; the thematic connection; and even the games of interest.

However, the complex objects of health research must be tackled, which compels efforts in the sense of managing and translating knowledge to field professionals and users of the investigation, preventing research diversification from fragmenting the practices when knowledge is transformed into action[8,10], as occurred in other fields.

Mocelin[1] affirms that the broadening process of research groups both forges new conditions of operation and organization, norms and values of the 'scientific community' as contributes to the disclosure and debate of scientific knowledge and bibliography proliferation of Brazilian scientific production, research lines and internationalization. That is, the growth of health assessment research groups and the diversity of research lines suggest the consolidation of a field of knowledge and practices and its particularities, especially due to its transversal character.

However, even taking such expansion into account, are scarce the studies applying the information available in CNPq research group database. Araújo[5] understands that the identification of research groups in Health Science and Technology can help characterize, strengthen and consolidate their performances, provided the respect for the institutional context in which they are inserted and the peculiarities of the knowledge area of each of them; the networking and visibility of the groups by their scientific production, i.e. research and thematic approached; among others.

The results show that health evaluation groups are concentrated in the Southeast region, along the axis connecting São Paulo to Rio de Janeiro. The result is similar to the one that characterizes the Southeast region by the largest number of research groups in public health studies, as well as research groups of sanitary care[19,20]. Such a concentration of health assessment groups exposes the need to further explore evaluation research networks provided that groups and researchers interact in the research work, in training, scientific production, place of working, objectives and institutional links.

The building of researchers' networks resulted largely from the explicit policy of agencies and programs, suggesting that the setting up of groups and networks does not spontaneously results from the dynamics of the relations between researchers[9]. The availability of resources for group projects, as for the evaluation, especially regarding the policy of monitoring and evaluation in Primary Health Care[18], has fostered a movement for the searching of partners from consolidated or emerging research centers, often resulting in the gathering of 'artificial' groups, although the initiative has also elaborated broader and more relevant projects[1].

Furtado e Vieira-da-Silva[12], advocate that the link between evaluative research groups and ministerial initiatives in that regard illustrates the interaction between agents originating from the 'scientific field' and from the 'bureaucratic field'. The authors state that, despite the evaluators' production be concentrated in the academy, the Ministry of Health took on a relevant role by hiring them as consultants, conducting evaluative processes with its own personnel, and advancing evaluative actions by means of universities through public notices. In other words, as noted by Cruz[16], public management, with or without the use of external resources, embraces a proactive character, undertaking its own agenda concerning both education and research institutions and evaluation groups.

In this context, attention is to be drawn to the

greater presence of health assessment groups in the states of São Paulo, Rio de Janeiro, Bahia, Minas Gerais, Paraná and Rio Grande Sul, areas coinciding with the existence of important research and training centers in the country, particularly primary health care training centers. Rapini[21] relates the collaboration among institutions to which research groups are linked to production sectors.

Mocelin[1] understands that the scientific community is thus grounded due not only to the importance of knowledge itself but also to the diversification of knowledge management and to the economic appraisal of science and technology. So, it is expected that knowledge and practices regarding evaluation will be consolidated in a perspective of building more useful and accessible knowledge, so to promote more equitable health system.

Conclusion

The overview of research groups confirms the familiar S&T inequality in Brazil and provides elements that enable the reduction of gaps in the field of health evaluation. These groups are concentrated in the southeastern region, which is justified by the its wide network of S&T institutions and researchers, confirming the recognized Brazilian inequality in knowledge production and the need to promote investigative and educational equity.

The prevailing line of research reveals the compromise of health researchers with the future of SUS. However, there is clear need for greater investment targeting and support for the building up of collaborative research networks on evaluation, mainly to operate in the health regions where existing problems demand more agile, appropriate and effective responses.

Finally, to explore research opportunities by linking public and institutional policies with funds that maintain and reinforce the studies developed by evaluation researchers is an important strategy for social development. Hence, the relevance of research groups that support and strengthen the field of evaluation due to the complexity and diversity of the health sector cannot be lost of sight. It is also important that these groups restrain from speeding the production so to invest particularly in the quality of training and production of scientific knowledge in health evaluation, and to increase meta-evaluation.

Collaborators

Cruz MM (0000-0002-4061-474X)* contributed to the study design and planning, data collection, analysis and interpretation, paper writing, final manuscript approval. Oliveira SRA (0000-0002-6349-2917)* contributed to the study design and planning, data collection, analysis and interpretation, paper writing, and content critical review. Campos RO (0000-0003-0469-5447)* contributed to the paper design and planning, data collection, and content critical review. ■

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References

1. Mocelin DG. Concorrência e alianças entre pesquisadores: reflexões acerca da expansão de grupos de pesquisa dos anos 1990 aos 2000 no Brasil. Rev. Bras. Pós-Graduação. 2009; (11):35-64.

2. Odelius CC, Castro Sena A. Atuação em grupos de pesquisa: competências e processos. Rev. Adm. FACES J Belo Horiz. 2009; 8(4):13-31.

3. Conselho Nacional de Desenvolvimento Científico e Tecnológico. O CNPq [internet]. [acesso em 2017 out 13]. Disponível em: http://www.cnpq.br/web/guest/apresentacao_institucional.

4. Barbosa SG, Sasso TMD, Berns I. Enfermagem e tecnologia: análise dos grupos de pesquisa cadastrados na plataforma lattes do CNPq. Texto Contexto Enferm. 2009; 18(3):443-51.

5. Araujo R. Os grupos de pesquisa em ciência, tecnologia e sociedade no Brasil. Rev. Bras. Ciência, Tecnol. e Soc. 2009; 1(1):81-97.

6. Conselho Nacional de Desenvolvimento Científico e Tecnológico. Perguntas Frequentes – Diretório dos Grupos de Pesquisa no Brasil [internet]. [acesso em 2017 out 13]. Disponível em: http://plsql1.cnpq.br/censos/perguntas/perguntas.htm#5.

7. Carneiro SJ, Lourenço R. Pós-graduação e pesquisa na universidade. In: Viotti EB, Macedo M, editores. Indicadores de ciência, tecnologia e inovação no Brasil. Campinas: Unicamp; 2003. p. 169-227.

8. Barreto ML. A pesquisa em Saúde Coletiva no Brasil. Cad. Saúde Pública. 2003; 19(2):354-355.

9. Vanz SAS. As redes de colaboração científica no Brasil [tese]. Rio Grande: Universidade Federal do Rio Grande do Sul; 2009. 204 p.

10. Oliveira SRA. Redes sociotécnicas e translação do conhecimento. An do IHMT. 2019; 17(supl2):s97-s104.

11. Krahl M, Sobiesiak EF, Poletto DS, et al. Experiência dos acadêmicos de enfermagem em um grupo de pesquisa. Rev. Bras. Enferm. 2009; 62(1):146-150.

12. Furtado JP, Vieira-da-Silva LMLM. A avaliação de programas e serviços de saúde no Brasil enquanto espaço de saberes e práticas. Cad. Saúde Publica. 2014; 30(12):2643-2655.

13. Craveiro I, Hartz Z. A equidade na investigação avaliativa com foco na cooperação em Saúde para o desenvolvimento. An do IHMT. 2017; 16(supl2):s31-s38.

14. Novaes HMD. Avaliação de programas, serviços e tecnologias em saúde. Rev. Saúde Pública. 2000; 34(5):547-559.

15. Erdmann AL, Lanzoni GMDM. Características dos grupos de pesquisa da enfermagem brasileira certificados pelo CNPq de 2005 a 2007. Esc Anna Nery Rev Enferm [internet]. 2008 [acesso em 2018 nov 12]; 12(2):316-22. Disponível em: http://www.scielo.br/pdf/ean/v12n2/v12n2a18.pdf.

16. Cruz M. Avaliação de Políticas e Programas de Saúde: contribuições para o debate. In: Baptista TW F, Mattos RA. Caminhos para Análise das Políticas de Saúde. Rio de Janeiro: Rede Unidas; 2015. p. 285-317.

17. Hartz ZMA. Institucionalizar e qualificar a avaliação: outros desafios para a atenção básica. Ciênc. Saúde Colet. 2002; 7(3):419-421.

18. Felisberto E. Monitoramento e avaliação na atenção básica: novos horizontes. Rev Bras Saúde Matern Infant. 2004; 4(3):317-21.

19. Freitas CM. A produção científica sobre o ambiente na saúde coletiva. Cad. Saúde Publica. 2005; 21(3):679-701.

20. Pepe VLE, Noronha ABM, Figueiredo TA, et al. A produção científica e grupos de pesquisa sobre vigi-

lância sanitária no CNPq. Ciênc. Saúde Colet. 2010; 15(supl3):3341-50.

21. Rapini MS. Interação universidade-empresa no Brasil: evidências do Diretório dos Grupos de Pesquisa do CNPq. Estud Econômicos (São Paulo) [internet]. 2007 [acesso em 2018 maio 13]; 37(1):211-33. Disponível em: http://www.scielo.br/pdf/ee/v37n1/08.pdf.

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