

Evaluation of the uses and influences of researches on prevention and control of anemia in children

Avaliação dos usos e influências de pesquisas sobre prevenção e controle da anemia em crianças

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ABSTRACT Research in Brazil is usually publicly funded; the knowledge produced is expected to assist decision makers in improving programs and policies to achieve the expected results. However, the production and translation of knowledge in action is not a linear process, but conditioned by the researchers choices and potential users interactions. In order to understand how those involved in the demand, production and use of study results act, this paper presents the evaluation of the mechanisms involved in the uses and influences of knowledge produced by research about anemia in children. This is an evaluative research, with a single case study, imbricate levels of analysis and qualitative method. Document analysis and semi-structured interviews were used, and the categories of analysis were the modes of use (instrumental, conceptual and symbolic) and influence (according to time and source). The three forms of scientific knowledge uses of the researches selected by the decision makers were observed at different times. There was a greater influence of knowledge on manager decisions how closer the approach between management and research. Thus, the involvement of all actors for the production and effective use of knowledge is necessary for the knowledge translation to take place.

KEYWORDS Translational medical research. Health research evaluation. Anemia.

RESUMO A pesquisa no Brasil é geralmente financiada com recursos públicos. A expectativa é de que o conhecimento produzido auxilie os tomadores de decisão na melhoria de programas e políticas visando ao alcance dos resultados esperados. Porém, a produção e a tradução do conhecimento em ação não é um processo linear, mas condicionado pelas opções dos pesquisadores e potenciais usuários em interação. Com o objetivo de compreender como agem os envolvidos na demanda, produção e utilização de resultados de estudos, este artigo apresenta a avaliação dos mecanismos envolvidos nos usos e influências do conhecimento produzido por pesquisas sobre anemia em crianças. Trata-se de pesquisa avaliativa, com estudo de caso único, níveis de análise imbricados e método qualitativo. Empregaram-se análise documental e entrevistas semiestruturadas, sendo as categorias de análise os modos de usos (instrumental, conceitual e simbólico) e influência (segundo o tempo e a fonte). Observaram-se as três formas de usos do conhecimento científico das pesquisas selecionadas pelos tomadores de decisão em diferentes momentos. Verificou-se maior influência do conhecimento em decisões de gestores quanto maior a aproximação entre gestão e pesquisa. Assim, o envolvimento de todos os atores para produção e uso efetivo do conhecimento faz-se necessário para que ocorra a translação do conhecimento.

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PALAVRAS-CHAVE Pesquisa médica translacional. Avaliação da pesquisa em saúde. Anemia.



Introduction

One of the expectations as regards the undertaking of research is the search for evidence that helps to clarify knowledge gaps or point out solutions to problems, in the face of an issue that requires decision making¹⁻³. However, research results, even for applied research, such as program evaluations, do not automatically translate into a decision to improve, close, or revise an intervention. The knowledge produced by these studies is expected to contribute to the judgment of merit and value about the object of evaluation, with the greatest validity and pertinence possible, positively influencing decisions⁴.

Studies that involve potential users in the development of research projects (managers, professionals or those for which practices are intended) have been referred to as investigations that favor the utility and purpose of evaluation by identifying and incorporating users' needs and demands, whether aiming at studies or validation of findings⁵⁻⁷. Building strategic partnerships to promote access to research results can positively impact the translation of knowledge into action^{6,7}. However, it is necessary to facilitate dialogue and the rapprochement between these two worlds, academia and management, since the actors in these spaces have their priorities and action dynamics^{6,8}.

The ways in which knowledge produced through studies and research can be used have been widely described and can be summarized as to the uses and influences of these evaluations^{1,9-11}. Traditionally, the following are considered as modalities of use: instrumental, as the direct incorporation of the study results, when the research provides the necessary knowledge for the decision to be made; conceptual use, which refers to the potential of the study to change the understanding of those involved on the subject, to generate new ideas, to know more deeply the limits and potentialities and possible directions for action; and the

politician, related to support, validation or justification for a practice or decision about the necessary changes, to legitimize a position and gain adepts^{1,11,12}.

The three types of uses should be considered as complementary aspects, and not as contradictory or exclusionary in relation to the use of research, being dependent on decision-making situations¹³. Furthermore, it must be accepted that some research will never be used, as research can be considered a risky business, and some studies will not lead to usable results¹⁴.

Evaluative research can, also, exert its influence at different times, either immediately, after the evaluation cycle, or in the long term (time); either during the evaluation process or through its results (source). Influence analysis, combined with other variables, provides a better way to think, communicate, and aggregate evidence-based information about the consequences of evaluation¹⁵.

As a strategy for the analysis of the possible uses and influences of knowledge in the context of an intervention, one can resort to the identification of events and inscriptions produced in the course of research. Events are understood to be occurrences capable of bringing about changes in a system through translations, that is, any displacement between the actors involved and other systems of action, resulting in an intervention. Although they do not evolve linearly, events can produce new translations when other interests, needs, limits and knowledge present themselves^{11,16,17}.

The circulation of events will produce what Latour¹⁷ defines by inscriptions, which are the ways in which products of knowledge are materialized (documents, scientific productions, guidelines, records), allowing new translations and articulations to be made from them, but maintaining their features. It is the inscriptions that circulate among the actors involved, mobilizing pertinent and relevant facts for each group involved, enabling the formation of alliances that lead to propositions of interests for the group and, consequently,

the expression of consensus in decisions of an institutional nature^{11,17}.

Promoting research is part of the strategies of the Ministry of Health (MS) to improve the Brazilian health system, through the National Policy for Science, Technology and Innovation in Health (PNCTIS). The National Agenda of Health Research Priorities (ANPPS) was the first national instrument for prioritizing demands due to finite resources, despite criticism of its scope¹⁸. The financing of strategic research, whether regional or national, is expected to produce knowledge and generate products that help in the formulation of evidence-informed health policies, as well as contribute to the improvement of socio-health practices^{18,19}. In the MS, the sector responsible for this action is the Department of Science and Technology (Decit)¹⁹.

Within the scope of the ANPPS, the Food and Nutrition (F&N) sub-agenda was one of the first to receive investment, with 85 projects funded in 2004²⁰. Research investment from 2002 to 2014 for the F&N area was around R\$ 16,3 million, of which 71% through national funding, through public calls, and through direct hiring²⁰. However, little is known about the use of its results by public health management.

It is assumed that, even in the case of studies conducted with the direct intention of producing applicable and possible results that may generate some change about the original problems or demands, the way this knowledge is produced and disseminated may not favor this purpose. In order to understand the mechanisms for incorporating research into health policies, the present study evaluated the uses and influences of knowledge produced by research on the prevention and control of anemia in children within the MS between 2002 and 2014.

Methodology

This study is part of the dissertation²⁰ entitled Evaluation of the uses and influences

of knowledge from research funded by the Ministry of Health on the F&N sub-agenda. It was approved by the Research Ethics Committee of the Sérgio Arouca National School of Public Health (Ensp/Fiocruz) on May 20, 2016 (Opinion n° 1.553.677).

This evaluation consisted of a case study with intertwined levels of analysis and qualitative research approach. The mapping of scientific production promoted by Decit/MS was performed through the Health Research database (<http://pesquisasaude.saude.gov.br/>) in June 2016, using the filter 'Food and Nutrition sub-agenda', selected for its pioneering spirit as a promotion area. The defined period corresponds to the studies available in this database on the subject, and, together with the General Coordination of Food and Nutrition of the Ministry of Health (CGAN/MS), the study theme was delimited, aiming at meeting the evidences, as well as the importance of interested people participation in favoring research uses. The 'prevention and control of anemia in children' was identified for the case study due to the magnitude of the problem in this population and the existence of programmatic interventions, which makes this topic a priority for the technical area.

Researches contracted by means of 'national development' and 'direct contracting' were selected, two types of funding for studies and research from Decit/MS, which totaled 25 studies, that is, 62.5% of the research found on the delimited theme. The 'decentralized development' modality was not considered in the present study because of the impossibility, considering the time of a master's degree and the available resources for expanding key informants, such as the coordinators of studies funded in the Brazilian states.

From this first sorting, the following study selection criteria were applied: research completed until 2014; research on anemia in children; research related to the chosen programs; final research report available for

consultation. In the end, four studies were elected from the Public notice CT-Saúde MCT/MS/CNPq n° 30/2004 and one research contracted directly in 2011.

In the analysis method, it was considered that the circulation of events can produce inscriptions (ways in which knowledge products are materialized). Among the inscriptions produced, those related to management, especially, can give rise to new events, in consequence of the results of the studies used by the actors involved in the process of knowledge translation.

To identify the events and inscriptions produced by the studies and classify them according to the types of uses and levels of influence, document analysis was used. CGAN/MS documents related to anemia prevention and control programs were part of this analysis (meeting minutes, management reports, offices and memos, books, newsletter, booklets and other dissemination materials) and research products such as scientific articles, presentations at congresses, academic papers, media. From this survey, events related to the changes generated by the knowledge produced and their inscriptions about the F&N sub-agenda were identified.

The mapping of events and the association of registrations were evaluated and classified according to the usage models (instrumental, conceptual and symbolic) and the dimensions of influence (source and time) in the evaluation. All references to selected studies in official program documents, meeting minutes, media reports or targeted courses were considered forms of use and/or influence.

On a complementary basis, to assess the occurrence of uses and influences of scientific knowledge from research funded by Decit/MS on the F&N sub-agenda, semi-structured interviews were conducted from August to

November 2016. Key informants were interviewed by the researcher in charge. The study included three CGAN/MS managers who worked directly or indirectly with the selected programs; and four managers from Decit/MS, who participated in the hiring and dissemination of the chosen research. In addition, three researchers who participated in the selected studies were interviewed by videoconference.

The assessment of qualitative data was made by the technique of content-oriented analysis²¹, through successive readings and transversal form, highlighting in the text the excerpts with relevant significance, verifying similarities and differences between constituted subassemblies, and deepening the articulations between this information and the theoretical references of the research.

Results

Four events were considered essential (*chart 1*). In the same chart, the inscriptions indicating the circulation of events are described.

The events identified were: i) 2004: Public notice CT-Saúde MCT/MS/CNPq n° 30/2004, which included the four selected studies; ii) 2011: Direct contracting 'Effectiveness of home fortification with vitamins and minerals to prevent iron deficiency and anemia in children under one year: a multicenter study in Brazilian cities'; iii) 2013: Update of iron prescription for children by the National Iron Supplementation Program (Event arising from Studies 1 and 3 of the 2004 Event); iv) 2014: Implementation of the Strategy for Infant feeding fortification with micronutrients powders (vitamins and minerals) – NutriSUS (the 2011 Event was directly responsible for this 2014 Event).

Chart 1. Events and registrations produced by the evaluation process of Food and Nutrition research

EVENTS							
2004: Public Notice CT-Saúde MCT/MS/CNPq nº 30/2004							
STUDY 1: Evaluation of the cost and effectiveness of daily and weekly ferrous sulfate supplementation to prevent iron deficiency anemia in children under one year of age		STUDY 2: Nutritional anemia: supplementation as a prevention and treatment measure in early childhood		STUDY 3: Impact of weekly iron supplementation on hemoglobin level and mental and motor development of children in day care centers in the City Hall of Recife		STUDY 4: Evaluation of the efficacy of three regimens in the prevention and drug treatment of anemia in infants	
2011: Direct contracting		2013:		2014:		National Iron Supplementation Program (prescription update for children).	
Effectiveness of home fortification with vitamins and minerals in preventing iron deficiency and anemia in children under one year of age: a multicenter study in Brazilian cities		NutriSUS – Strategy for Infant feeding fortification with micro-nutrients powders (vitamins and minerals)					
REGISTRATIONS							
ACADEMIC PRODUCTS	Scientific articles published	Scientific articles published	Scientific articles published	Scientific articles published	Scientific articles published	—	—
	Thesis	Dissertation	Monograph and dissertation	Dissertation and Thesis	Dissertation	—	—
	Poster/works presented at congresses	Poster/works presented at congresses	—	Poster/works presented at congresses	Poster/works presented at congresses	—	—
FACTS IN THE MANAGEMENT	—	Invitation to participate in Enfac	—	—	—	Tripartite Inter-Managers Commission for Decentralization of input purchases: municipal responsibility	Incorporation of vitamin and mineral supplement in early childhood education by Conitec
	Child Care Line/RJ - daily dose for children in the city of RJ	Decit Newsletter nº 06	—	Decit Newsletter nº 06	Enfac Bulletin - how to prevent childhood anemia and other nutrient deficiencies	National Iron Supplementation Program: general conduct manual	NutriSUS – Strategy for Infant feeding fortification with micro-nutrients powders (vitamins and minerals): operation manual
DOCUMENTS PUBLISHED	—	—	—	—	NutriSUS – Strategy for Infant feeding fortification with micro-nutrients powders (vitamins and minerals): evidence guide	Online form for monitoring information on iron and folic acid supplementation actions developed at the municipal level	NutriSUS booklets published by the states
	Minutes of the PNSF conduct review Working Group (GTPNSF)	—	Minutes of the PNSF conduct review Working Group (GTPNSF)	—	Minutes of the PNSF conduct review Working Group (GTPNSF)	—	—
MINUTES/REPORTS	Meeting Memory in MG	—	Management reports	—	Management reports	Management reports	—
	Management reports	—	Management reports	—	Management reports	Management reports	—

Chart 1. (cont.)

EVENTS	—	Final Assessment Seminar – Food and nutrition	—	Final Assessment Seminar – Food and nutrition	Home Fortification Strategy Workshop in Brazil	—	—
QUOTES ABOUT THE EVENTS	Primary Care Report No. 46. Brasília, 2008	—	—	—	—	—	Electronic media reports about NutriSUS
	Iron deficiency anemia in infants: review focusing on prevention. SBP, 2012						Youtube videos about NutriSUS
	NutriSUS Evidence Guide, Brasília: Ministry of Health, 2015						
COURSES	—	—	—	—	—	DLE course with daily recommendation	DLE course about NutriSUS

Source: Own elaboration (2018).

Public notice CT-Saúde MCT/MS/CNPq nº 30/2004, the first research notice on F&N issued by MS after the creation of Decit²², aimed to expand the production of basic and applied knowledge about F&N, contributing to the improvement of health conditions of the population. It was considered as the first Event because it made possible the promotion of studies that resulted in the prevention and control of Iron Deficiency Anemia (IDA). Four studies from this edict were selected that showed new strategies to combat IDA: two focused on weekly supplementation (studies 1 and 3), which appeared on the international scene as a way to minimize the side effects of ferrous sulfate administered to children and increase adherence to treatment; and two (studies 2 and 4) that evaluated the effectiveness of supplementation with more than one mineral and/or vitamin. At the time, these studies would bring information to institute

a supplementation program, but the urgency of management caused the National Iron Supplementation Program (PNSF) to be established in 2005.

Registrations related to the 2004 Event were academic in nature and also generated important management-related registrations (*chart 1*). Studies 1 and 3, whose registrations were expressed later than the event, strongly contributed to the event of the third event in 2013. This, regarding the restructuring of the PNSF, was a milestone in the strategy to combat the IDA, when the iron supplementation becomes daily rather than weekly, which, in turn, generated its own subscriptions.

In addition, study 1 produced direct consequences for local management, denoting here the instrumental use of knowledge. In consequence of the results of this research, the alteration of the municipal program of supplementation of children with ferrous

sulfate of the Health Department of the city of Rio de Janeiro (*chart 1*) was observed, as one of the interviewees points out:

We had a reverberation of the results within the city hall of Rio [...] we had moments of contact with other users, of the result, let's say, in the scope of management beyond the national management and central management of the municipality. (P1).

Through an interview, it was also confirmed that the public to be reached by the studies were the managers, especially the federal ones, since they were national promotion notices, and that the researchers wanted their results to be used to subsidize F&N policies. The results of these studies were presented at specific meetings and at a seminar held in October 2007 organized by Decit/MS to this end.

In 2011, CGAN/MS, after discussing with national expert groups on the inclusion of home-made food fortification as a programmatic strategy for the prevention of anemia in children under one year of age, decided to engage, in partnership with Decit/MS, direct contracting of research 'Effectiveness of home fortification with vitamins and minerals in preventing iron deficiency and anemia in children under one year of age: a multicenter study in Brazilian cities', also called Enfac – National Study for Home Fortification of the Complementary Food, the second Event. The expectation was to provide input for future decisions and broaden discussions regarding the possible implementation of home fortification as a strategy to compose the set of interventions for the prevention and control of micronutrient deficiencies in primary care.

The 2011 Event also accumulated many registrations, and was directly responsible for the fourth Event in 2014, according to reports from key informants, who stated that:

after Enfac, there was already the Nutrisus, designed to go out. So, it was really a very intentional thing to be immediately applied. (GD3).

the first time I saw such an effective and immediate deployment of a research. To turn the result of a search into a policy. (GD4).

This study was conceptually, politically and instrumentally used, as there was direct application of the results, besides allowing greater knowledge about the strengths and weaknesses and possible directions for the action to be implemented. It also mobilized people with understanding and information about the necessary changes in the control and prevention of iron deficiency anemia in children, supporting the implementation of a strategy already conceived by the technical area.

Finally, the 2014 Event – the creation of 'NutriSUS – Strategy for Infant feeding fortification with micronutrients (vitamins and minerals) – was considered as an event because of its importance for the strategy of prevention and control of nutritional problems. It has become the most publicized event in electronic media, including the Distance Learning Education (DLE) course, made available to health professionals.

In the classification of events and their inscriptions according to the uses and dimensions of influence (*chart 2*), it is observed that the same event, by the different destinations given to it, such as the 2011 Event, can be classified into the three modalities of use.

Similarly, study 1 of the 2004 Event, in addition to the conceptual use expected for a survey, also produced uses of a political nature, as evidenced by both the minutes and management reports and key informants, by stating that

we had them as a reference. They had a lot of publications on this topic and they are really experts in this area, so we had a relationship with them, yes... and they supported us a lot. (GAN1).

It indicates, therefore, a prior interaction between managers and researchers about the need for research at the time to verify the effectiveness of the intervention (weekly supplementation) implemented by the PNSF.

Chart 2. Classification of events and registrations according to uses and influences

		Uses of knowledge		
		Instrumental Use	Conceptual use	Political use
Influence of time	Immediate	<ul style="list-style-type: none"> - Public Notice nº 30/2004: • Study 1: Child Care Line /RJ 		<ul style="list-style-type: none"> - 2011: Direct contracting • Workshop • Management report • Work group
	End of the cycle	<ul style="list-style-type: none"> - 2011: Direct contracting • Enfac Bulletin - 2013: PNSF • CIT agreement (decentralization) • PNSF General conduct Manual - 2014: NutriSUS • Incorporation of the supplement by Conitec • NutriSUS Operational Manual 	<ul style="list-style-type: none"> - Scientific articles, theses, dissertations and booklets on: • Public Notice nº 30/2004 • 2011: Direct contracting • 2014: NutriSUS • 2013: PNSF - DLE Courses on PNSF and NutriSUS - Videos and reports 	
	Long term	<ul style="list-style-type: none"> - Public Notice nº 30/2004: • PNSF conduct change in 2013 	<ul style="list-style-type: none"> - Public Notice nº 30/2004: • Study 1: Quotes from this study published in 2008 and 2012 	<ul style="list-style-type: none"> - Public Notice nº 30/2004: • Study 1 (GTPNSF management reports and meeting Minutes)
		Result		Process
Source influence				

Source: Own elaboration (2018).

Most registrations took place at the end of the cycle. Regarding Public Notice nº 30/2004 (Event 1), although none of the four studies verified the immediate use of the results by the federal managers requesting the research, there was the immediate use of study 1 by the local manager, using its results to change the conduct of the municipal program. However, in the long run, they contributed to the set of evidence that led to the change in conduct of PNSF, as evidenced in the inscriptions and confirmed in the interviews:

[...] as they were the first experiences, brings different perspectives, different conclusions, but we had to seek a common axis between them... CG-PAN took time to understand and put together these pieces to be able to respond in terms of management. (GAN3).

[...] because the whole product is very rich here, but maybe it had the surprise part, because they all fit perfectly within the scope and gave an answer that, at that moment..., I think they surprised, and that is why the delay in responding. (GAN2).

It was verified that studies 1 and 3 had several inscriptions identified as conceptual or symbolic use, among them, the contribution to the creation of the Working Group to rediscuss the PNSF (GTPNSF), with the participation of some researchers of these studies. Only in 2013 the program was reformulated, considering the results of the study (the conduct for children went from weekly to daily). Another change was the decentralized acquisition of supplements by the municipal, district and state spheres, through the use of the Pharmaceutical Assistance Basic Component, according to

Ordinance n° 1.555, of July 30, 2013, denoting an instrumental use due to the GTPNSF discussions.

As usually happens, most events and their registrations took place due to the results of a research. The exceptions found were the 2011 Event and its registrations, and the minutes of the meetings of the GTPNSF, when dealing with the multivitamin and the mineral powder, considered as deriving from the Enfac research process. It should be noted that both were also classified as being of political use, because, as reported by the key informants of the CGAN, the whole process was built in partnership between managers and researchers.

Frequently, scientists consider that the mission of the research system is to generate new knowledge, and concern with its uses and applications is in the background⁷. According to the results of this study, this challenge seems to have been faced by the funding agency with the promotion of evaluation seminars involving managers, technical area and researchers to discuss the products of the studies, as happened with the studies of Public Notice n° 30/2004.

However, there is an awareness that the seminar is an alternative, but several strategies for dissemination and communication of study findings are required, as pointed out by one of the interviewees

[...] It has to be a set, communication has to be based on many settings. The seminar is still useful, because it is a form of direct contact with the researcher. I think that in this matter of involvement in the process, partial reports, discussion throughout the process, I think these are important instruments of not only having the 'demand and response' moment... even to mature the negotiation. (GAN3).

However, the present study observed that the creation of new knowledge, although presented to interested parties, often does not lead to its incorporation. Even with the unanimous understanding between researchers and

managers of Decit/MS, in this Event 1, that the research results and their products were delivered to the main users, coordinators of the technical area of F&N, the incorporation of the findings fell short of the researchers' expectation, translating into few management inscriptions. The exception was study 1, where, throughout the development of the study, there was a constant interaction (before, during and at the end of the study) between research group and technical area.

Discussions

Investing in health research to fill knowledge gaps contributes to the development of actions, programs, intervention tools and products, providing subsidies for the improvement of SUS²³. To this end, it is important to consider the networks involved in the development and use of research, considering partnerships between teaching and research institutions and service providers, health secretariats, municipal health foundations, and philanthropic and municipal hospitals.

For some authors, managers value studies that can respond to the needs of management, the development of actions and, consequently, to the improvement of health^{9,24}. Similarly, researchers also value their participation in knowledge translation spaces, together with health policy decision makers, contributing to the definition of strategies directed to the care of the population^{8,9,24}.

In this sense, Patton²⁵ warns that the use of knowledge is a process that involves preparation and empowerment of the interested people, which increases their engagement and empowerment, with greater impact on the use of results and the program. It is not, therefore, just the presentation of results in a final report. According to the Canadian Institute of Health Research, translating knowledge is a dynamic and iterative process, with movements that involve synthesis, dissemination, exchange and application of knowledge, aiming to provide

research with greater relevance and usefulness to its users²⁶. It is important that researchers know the scenarios of daily health services as a way of approximating the needs and demands of managers and users⁸.

The certainties in science are always under reconsideration, but, when faced with the challenge of opposing current knowledge, the difficulty arises in meeting the conditions for making the necessary changes, especially since negative results are often associated with flawed or poorly designed studies²⁷.

In the present case, the non-confirmation of the hypothesis by study 1 about the effectiveness of the weekly supplementation similar or superior to the daily supplementation was received with surprise and some disappointment, both by the technical area and by the researchers, since the hypothesis was not confirmed and mainly considering that the PNSF had already been implemented. Thus, negative results may be an inconvenient truth, but they are as useful as positive results, as they allow to critically analyze pre-existing thoughts and direct new research paths²⁷.

The late resolution for the reformulation of the PNSF by changing the conduct of weekly to daily supplementation ratifies the issue of the time difference between research and management, since the PNSF was instituted before the end of the research. On the other hand, the political agenda may also change over time, and when the study is completed, the decision may no longer be a problem²⁸, and it is no longer necessary to incorporate that outcome. Political and institutional changes have significant repercussions on the continuity of actions that impact the use of knowledge generated by researches contracted in other managements⁸. In addition, changes in managers' understanding or attitudes depend not only on the outcome of scientific research, but also on favorable organizational conditions when they can use their new conceptual

understandings instrumentally^{1,12}.

When a study is the result of a participatory process, such as Enfac, contracted in 2011, in which the project is developed in agreement between researchers and managers, there is greater contact between these actors throughout the process. Such direct contracting, as an example of the case, produced immediate consequences for the management, as can be verified by the registrations produced, in particular by drawing up a newsletter to support communication to the network of F&N managers of states and municipalities.

Consequently, it is noted that, when there is active participation of interested people, reaching consensus on the relevance of the questions, methodological procedures and validation of findings, there is a favor for the translation and circulation of knowledge, confirming the pointed in literature^{8,10,24,25}. Furthermore, the involvement of other important actors acting collaboratively at different times, as seen among researchers, managers and decision makers in F&N and science and technology in the present study, potentiates the translational movements for the use of knowledge in decision making on the health policy.

Therefore, the understanding of the involvement of multiple actors and interests for the production and effective use of knowledge is necessary for the translation of knowledge, reflected in effective health gains^{1,9,15,26}.

As a limitation of this study, as it is a case study, the results found are specific to the events treated, however, the analytical model used for other studies on research uses for decision making can be applied.

Final considerations

The analysis model covered in the study allowed us to identify the three ways of using

scientific knowledge (instrumental, conceptual and symbolic) at different times by decision makers. The deepening of the study, through interviews, allowed to visualize the relations that are established between the worlds of science and management. It was found that scientific knowledge had more influence on decisions of managers when there was a closer approach between researchers and decision makers, which contributed to the use of the result in management, either instrumentally, conceptually or politically.

Collaborators

Couto PC (0000-0002-9253-2017)* contributed to the conception, planning, analysis and interpretation of data; to the drafting and critical review of content; and approval of the final version of the manuscript. Figueiró AC (0000-0003-0718-5426)* contributed to the conception, planning, analysis and interpretation of data; to the drafting and critical review of content; and approval of the final version of the manuscript. ■

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