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INTEGRATIVE REVIEW ARTICLE

SCIENTIFIC LITERATURE ABOUT THE MISTAKES IN THE CONSERVATION AND ADMINISTRATION OF IMMUNE-BIOLOGICALS: INTEGRATIVE REVIEW

PRODUÇÃO CIENTÍFICA SOBRE OS ERROS NA CONSERVAÇÃO E ADMINISTRAÇÃO DE IMUNOBIOLÓGICOS: REVISÃO INTEGRATIVA

PRODUCCIÓN CIENTÍFICA SOBRE LOS ERRORES EN LA CONSERVACIÓN Y ADMINISTRACIÓN DE INMUNE-BIOLÓGICOS: REVISIÓN INTEGRADORA

Fabiana Lopes Joaquim¹, Alessandra Conceição Leite Funchal Camacho²

ABSTRACT

Objective: to analyze the publications that focus on the mistakes in administration and conservation of vaccines. **Method:** integrative review, due to answer the question << What is in the literature about mistakes in the conservation and administration of immune-biologicals? >> through bibliographical survey in the databases LILACS, MEDLINE and SciELO virtual library. For discussion articles in Portuguese and Spanish published between 2006 and 2013 were selected, represented in the flowchart. **Results:** sixteen articles were selected for reading, book report and categorization. **Conclusion:** for correct immune-biological conservation and administration, it is necessary the performance of the nurse in the vaccine and running permanent education activities among the nursing technicians who work in the area of immunization. **Descriptors:** Vaccines; Refrigeration; Medical Treatment Behavior; Nursing.

RESUMO

Objetivo: analisar as publicações que enfocaram os erros na administração e conservação de vacinas. **Método:** revisão integrativa, com vistas a responder a questão << O que há na literatura sobre erros na conservação e administração de imunobiológicos? >> mediante levantamento bibliográfico nas bases de dados LILACS, MEDLINE e na biblioteca virtual SciELO. Para discussão, foram selecionados artigos em português e espanhol publicados entre 2006 e 2013, representados no fluxograma. **Resultados:** foram selecionados dezesseis artigos para leitura, fichamento e categorização. **Conclusão:** para correta conservação e administração de imunobiológico, faz-se necessário que o enfermeiro atue nas salas de vacina e execute atividades de educação permanente junto aos técnicos de enfermagem que trabalham nos setores de imunização. **Descritores:** Vacinas; Refrigeração; Conduta do Tratamento Medicamentoso; Enfermagem.

RESUMEN

Objetivo: analizar las publicaciones que enfocan los errores en la administración y conservación de vacunas. **Método:** revisión integradora, con el propósito de responder a la pregunta << ¿Qué hay en la literatura sobre errores en la conservación y administración de inmune-biológicos? >> mediante levantamiento bibliográfico en las bases de datos LILACS, MEDLINE y en la biblioteca virtual SciELO. Para discusión fueron seleccionados artículos en portugués y español publicados entre 2006 y 2013, representados en el flujograma. **Resultados:** fueron seleccionados dieciséis artículos para lectura, informe y categorización. **Conclusión:** para la correcta conservación y administración de inmune-biológicos se hace necesario la actuación del enfermero en las salas de vacuna y ejecutando actividades de educación permanente junto a los técnicos de enfermería que trabajan en los sectores de inmunización. **Descriptor:** Vacunas; Refrigeración; Conducta del Tratamiento Medicamentoso; Enfermería.

¹Nurse, Specialist in Infection Control in Health Assistance and Family Health, Master degree in Science in Health Care, Nursing School Aurora de Afonso Costa, Fluminense Federal University/MACCS/EEAAC/UFF, Niterói (RJ), Brazil. E-mail: fabykim_enf@yahoo.com.br

Fluminense Federal University/MACCS/EFAAC/UFF. Niterói (RJ), Brazil. E-mail: fabrykim_cim@yahoo.com.br.

INTRODUCTION

Immunization is one of the most effective measures in preventing diseases by promoting the reduction of morbidity and mortality from immune-preventable diseases. Diseases that have plagued the country as polio, measles, smallpox and rabies have been eradicated or are under control due to adoption over the past three decades of specific immunization¹

The success of the smallpox vaccination campaigns in the 60s and the evidence that the widespread use of this behavior had the power to eradicate diseases, led the Ministry of Health to determine in 1973 the formulation of the National Immunization Program (NIP), being institutionalized in 1975. In this way, the NIP starting coordinating immunization activities carried out routinely on the network of services, offering all vaccines with quality to all children born annually in our country, trying to achieve vaccine coverage of 100% homogeneously in all municipalities and in all neighborhoods.²

NIP is responsible for providing guidance regarding appropriate conservation, manipulation, transport and application of vaccines¹, however it is necessary for the continuity of guidance provided to professionals and the monitoring of processes that involve the manipulation of immunobiologicals.³

The application of immune-biologicals is a procedure extremely executed within nursing practices, but it is obvious that although there are professionals working for years in vaccine basic health units, they do not receive specific training to work with the immune-biologicals.⁴

To promote immunization, nursing professionals must be aware that this procedure is to inoculate an antigen into the bloodstream for antibody production against certain infectious-contagious disease⁵ and that the safety and effectiveness of immunobiologicals are not enough if the professionals involved in the process do not follow specific recommendations for conservation, handling, administration, post-vaccine monitoring, guidelines for population attended among others⁶, so the administration takes place safely and avoiding malpractice, negligence or recklessness by the professional involved with the client.⁷

The justification of this study is on the need to prevent mistakes related to the conservation and administration of immunobiologicals, showing relevant for assistance and nursing education, because the recurring mistakes in conservation/administration of

vaccines and the serious consequences that these errors can lead to nursing staff and mainly to the patient. The relevance was also for the development of research on the subject since we found limited publications in national and international bases that would contribute to the thematic discussion when held the association of keywords.

From the above, the following objectives were outlined:

- To analyze publications that focus on the mistakes in administration and conservation of vaccines.

METHOD

It is a study of integrative review for allowing knowledge synthesis and incorporation of the applicability of results of significant studies on practice⁸, in order to answer the research question << what is in the literature about mistakes in the conservation and administration of immunobiologicals? >>.

This type of method is elaborated by following the next steps: selection of thematic questions, establishing the criteria for the selection of samples, definition of the information to be extracted from selected studies through categorization, data analysis, interpretation of results and presentation of review.⁹

According to the technical procedure/type of instrument used was the bibliographical survey or bibliographical research, by cover scientific production drawn up about the subject of study until the present day.

In order to select the articles that answer the research question and the criteria for inclusion, a table for structuring the content found on the year, publication type, language, methods, techniques adopted in data collection, essence of content/production of knowledge and strength of the evidence has been elaborated.

For the articles selection the search in databases was used: LILACS (Latin American Literature and Caribbean Center on Health Sciences), MEDLINE (Medical Literature Analysis and Retrieval System Online) and virtual library SciELO (Scientific Electronic Library Online), during the period from 11/22/13 to 1/20/14.

The following keywords relevant to the theme through the DEC's and MeSH were identified: Vaccines; Refrigeration; Medical Treatment Behavior and Nursing. In this way, for the search of the articles these keywords were used in Portuguese, English and Spanish.

The selection of potential bibliographies was established by adopting as a criteria of inclusion articles available free of charge and in its entirety, in selected databases and SciELO virtual library with themes in Portuguese, English and Spanish, published between 2003 to 2013. The exclusion criteria adopted were articles that presented only the abstract; dissertations and theses; repetition of publications in databases; lack of adherence to questions of conservation and management errors in the area of nursing and immune-biological articles published more than ten years ago.

The selection of potential bibliographies was based on fundamental articles answering the prerequisites of research, conducting analysis of evidence levels.⁸ Later, it was performed the printing and reading the articles in their entirety for the purpose of discussing the subject in question.

RESULTS

Para descrever o caminhar metodológico para os resultados apresenta-se o fluxograma, vide figura 1 (um).

To describe the methodological way for the results, the flowchart is presented, see Figure 1 (one).

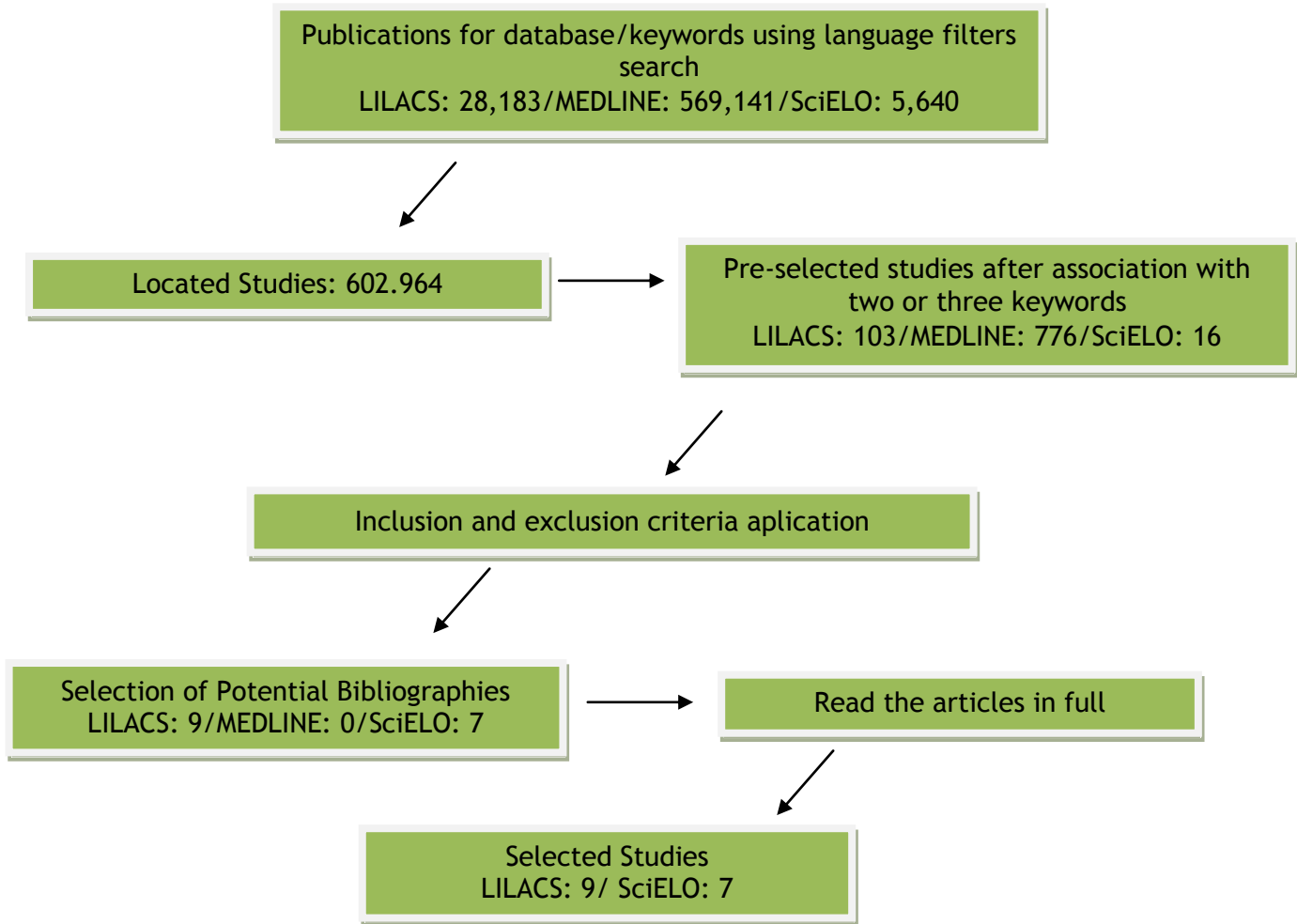


Figure 1. Flowchart descrebing the methodological way for the results

When performing the selection of the references 16 articles, were found, being 56.25% of the database LILACS and 47.75%SciELO Library. For analysis of the information, the content was organized about the year, publication type, language, methods, techniques adopted in data collection, essence of content/production of knowledge and strength of the evidence.

On the references per year, we have the following results: in the period from 2003 to

2005 and the year of 2008 were not found references that favored the criteria established. Through this, from the 16 selected articles, 31.25% of publications occurred in 2011, followed by 18.75% in 2012, 12.50% for 2009, 2010 and 2013 and 6.25% in 2006 and 2007. This statement leads us to state that 2011 is the year that most published about conservation and administration of immune-biologicals.

On the publication type 87.50% are original articles and 12.50% are related to the integrative review. Analyzing the languages in which occurred the publications, we obtained 93.75% of publications in Portuguese, 6.25% in Spanish and the absence of references in the English language since one of the criteria adopted for inclusion in the research is to articles available free of charge and in its entirety.

Analyzing the method adopted in the selected research, we found 43.75% of the references of descriptive exploratory type; 18.75% adopted normative methodology; 18.75% descriptive cross-sectional type; 12.50% of the references chose integrative review and 6.25% the method named by the authors as observational, cross-sectional and descriptive.

Regarding the technique adopted in the collection of data by the authors surveyed, 81.25% of the references had their data collected in the area; 12.50% conducted literature review and 6.25% used the documental analysis technique.

As for the essence of the essence of content and production of knowledge, we found 50% of articles addressing in their discussions the operating conditions and conservation of vaccines through the Cold Chain; 25% approach on the administration of vaccines and 18.75% bring in their content issues relating to adverse events after the vaccines. We also observed that 12.50% of selected articles focused on the issue of drug administration by nursing professionals; 6.25% discuss the ignorance of vaccine coverage rates and abandonment by the professionals working on immunization; 6.25% report the lack of knowledge of the professionals in the occurrence of immune-preventable diseases and 6.25% indicate the importance of supervision, monitoring and evaluation in vaccines as to compliance with the standards recommended in the NIP.

Concerning the essence of the essence of content and production of knowledge we found 18.75% of references of emphasizing the importance to have guidelines after vaccines through health promotion measures; 18.75% reporting the importance of immunization and

its possible implications in professional activity; 12.50% pointing the importance of work of health professionals facing the immunizations; 6.25% focusing on the importance of the notification of Adverse Reactions to the National System for Monitoring of Post-Vaccination Adverse Events.

Even about the content searched, 18.75% of the references related to the knowledge and performance of National Immunization Program; 6.25% indicated the factors which lead to mistakes in medication administration; 6.25% discussed questions submitted by technicians and nursing assistants to nurses about preparation and administration of medicines and 6.25% reported about mistakes in prescriptions that led to errors in the administration.

On the recommendations of the authors were found 43.75% of the references emphasized the need for permanent education and improvement to the working professionals in vaccination; 25% pointed the management of basic health units as paramount in the development of the service provided to the population; 18.75% underscored the absence of nurses in the room of vaccine and pointed the importance of this career as a supervisor in this sector; 6.25% highlighted the need of development of research on the practice of nursing in conservation of immune-biologicals and 6.25% highlighted the need of interdisciplinary with pharmacists to the search for knowledge about medications.

In relation to the strength of the evidence, 56.25% of the articles presented evidence level 5 and 43.75% level of evidence 4.⁸

DISCUSSION

When performing a selection of potential bibliographies with the reading of the articles in full, categories have emerged to discuss the topic in question. These categories are discussed below and related to mistakes in the conservation and administration of immune-biologicals.

In the category “**Mistakes on immune-biological conservation**” eight scientific productions are inserted, see Figure 2.

Author (s)	Year	Title	Database	Methodology	Level of Evidence	Publication type / Source
Araújo AC de M, Guimarães MJB, Frias PG de, Correia J de B. ¹⁰	2013	Evaluation of vaccination rooms in the State of Pernambuco in the year 2011.	LILACS	Cross-sectional study, with random sample of 318 rooms of vaccination.	Level 5	Original Article / Epidemiol health service; vol.22, no.2, p.255-64, jun.
Oliveira VC de, Guimarães EA de A, Cavalcante RB, Gallardo OS, Pinto IC. ¹¹	2013	Conservation of vaccine in public health units: an integrative review.	SciELO	Integrative review in the databases LILACS, SciELO, MEDLINE and BDNF database.	Level 5	Integrative Review Article/ Reference; serIII(9): 45-54, mar.
Vasconcelos KCE de, Rocha AS, Ayres JÁ. ⁶	2012	Normative evaluation of vaccines in the public health area in the city of Marília, São Paulo State, Brazil, 2008-2009.	LILACS	Exploratory, observational, cross-sectional and descriptive study, with a quantitative approach.	Level 4	Original Article/ Epidemiol health service; 21(1):167-76, jan-mar .
Luna GLM, Vieira LJE de S, Souza PF de, Lira SVG, Moreira DP, Pereira A de S. ¹²	2011	Aspects related to the management and conservation of vaccines at health centers in northeastern Brazil.	LILACS	Cross-sectional study, conducted in 11 (92%) of 12 Family Health Centers (CSF) Executive Secretariat Regional IV in Fortaleza, Ceará in 2007.	Level 5	Original Article/ Collective health science; 16(2): 513-21, fev.
Melo GKM de, Oliveira JV, Andrade MS. ¹⁴	2010	Aspects related to the conservation of vaccines in basic health units in the city of Recife-Pernambuco.	LILACS	Descriptive study, conducted during the period from November 2006 to March 2007, in vaccination of UBS of Recife-PE.	Level 4	Original Article/ Epidemiol health service; 19(1): 26-33, mar.
Araújo AC de M, Silva MRF da, Frias PG. ¹⁵	2009	Evaluation of Cold Chain of municipal district immunization program of Health district IV of the city of Recife.	LILACS	Evaluative study, normative type and descriptive characteristics and cross-sectional.	Level 5	Original Article/ Rev APS; 12(3):238-42, jul/set.
Oliveira VC de, Guimarães EA de A, Guimarães IA, Januário LH, Ponto IC. ¹	2009	Practice of nursing in conservation of vaccines.	SciELO	Descriptive cross-sectional study performed in 26 health basic units of a municipality of the Central-West region of Minas Gerais.	Level 4	Original Article/ Acta paul enferm; 22(6): 814-18, dez.
Aranda CMS de S, Moraes JC de. ¹⁷	2006	Cold Chain for preserving vaccines in public units of São Paulo: knowledge and practice.	SciELO	Nrmative study.	Level 5	Original Article/ Rev bras epidemiol; 9(2): 172-85, jun.

Figure 2. Distribution of the bibliographies of the category “mistakes in the conservation of immune-biologicals”

The inadequacy of cold chain is directly linked to mistakes in the conservation of immune-biologicals. This inadequacy is more related to flaws inherent in the process of work than the inexistence of equipment

necessary for the conservation of immune-biologicals.¹⁰ Problems in maintenance and internal organization of the refrigerators used in conservation of immune-biologicals lead to commitment of immunogenic characteristics

of vaccines, as well as in achieving the goals of reduction control of immune-preventable diseases.¹⁰

The mistakes related to the cold chain are: Organization of immune-biologicals by type, batch and validity; vaccines inadequate to its storage shelves due to temperature; measurement of the maximum and minimum thermometer not being held in all rooms.¹⁰

For the conservation of immune-biologicals occur properly, it is necessary to conduct training with the nursing professionals, as well as the monitoring and evaluation of the work process of these professionals working with vaccine rooms¹¹, because if they do not operate their actions according to the recommendations of the NIP, as well as the population is not oriented on the necessity of adherence to vaccination the safety and efficacy of immunebiologicals will not be sufficient.⁶

The vaccination room must be managed by a professional able to monitor the entire process, from acquisition to scientific and technological developments of the immunobiologicals¹³. Studies⁶⁻¹¹ show the nurse as professional qualified to perform this activity, and should this be aware of demands, difficulties and needs of auxiliary and technical level professionals.¹¹ To play the

role of supervisor, the nurse should contribute to the organization and improvement of the service provided through permanent education⁶⁻¹¹⁻¹⁴ and promote corrections/adjustments required for the performance of the function.¹⁴

The management of the vaccine by the nurse, the training of working professionals in these sectors and the monitoring process by the supervisors and managers of health units of the municipality promotes the maintenance of credibility earned in recent decades by immune-biologicals,¹⁴ provide a quality service to the client and consequently result in improving vaccination coverage.¹⁵

It is important to note that immunization is the best intervention cost-effectiveness of health programs, and it is necessary to preserve the refrigerator under appropriate conditions to ensure the effectiveness and safety of the vaccine, aiming at their quality to the receptor,¹⁵ the maintenance of cold chain allows us to ensure the immunogenic characteristics of immune-biologicals since the laboratory where the local instance producer will be administered the vaccine.¹⁻¹⁷

In the category “Mistakes in the administration of immune-biologicals” ten scientific productions are inserted, see Figure 3.

Author (s)	Year	Title	Database	Methodology	Level of Evidence	Publication type / Source
Araújo AC de M, Guimarães MJB, Frias PG de, Correia J de B. ¹⁰	2013	Evaluation of vaccination rooms in the State of Pernambuco in the year 2011.	LILACS	Cross-sectional study, with random sample of 318 rooms of vaccination.	Level 5	Original Article/ Epidemiol health service; vol. 22, no.2, p.255-64, jun.
Camacho ACLF, Oliveira BGRB, Silva RP, Tenório DM, Barreto BMF. ¹⁶	2012	Analysis of publications on drug delivery in nursing care: integrative review.	LILACS	Study of integrative review held in the databases of the Virtual Health Library (LILACS and SciELO)	Level 5	Integrative Review Article/ Online braz j nurs; 11 (1): , abr.
Wojciechowski M do C de C, Zepka LB, Riegert MB, Silva CF da C. ¹⁷	2012	Perception of nursing about protecting students against immune-previsible diseases.	SciELO	Exploratory qualitative study.	Level 4	Original Article/ Nursing Global; 11(25): 161-171, enero.
Luna GLM, Vieira LJE de S, Souza PF de, Lira SVG, Moreira DP, Pereira A de S. ¹²	2011	Aspects related to the management and conservation of vaccines at health centers in northeastern Brazil.	LILACS	Cross-sectional study, conducted in 11 (92%) of 12 Family Health Centers (FHC) Executive Secretary Regional IV in Fortaleza, Ceará in 2007.	Level 5	Original Article / Collective health science; 16(2): 513-521, fev.

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<http://pni.datasus.gov.br/apresentacao.asp>

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Corresponding Address

Alessandra Conceição Leite Funchal Camacho
 Universidade Federal Fluminense
 Escola de Enfermagem Aurora de Afonso Costa
 Rua Dr. Celestino, 74
 Bairro Centro
 CEP 24020-091 – Niterói (RJ), Brazil