

Problems evidenced by nursing care in blood transfusions: an integrative review

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Abstract

Objective: Analyse the primary studies that highlighted the problems related to Nursing assistance in the practice of blood transfusions. **Materials and Methods:** Integrative literature review with a search of journals indexed in SCOPUS; CINAHL; SCIENCE DIRECT; PUBMED and WEB of SCIENCE databases, with the descriptors blood transfusion; Exchange Transfusion; Hemotherapy Service; nursing care; Patient Care Planning; Evidence Based Nursing. **Results and Discussion:** The sample consisted of 12 primary articles. Two qualitative studies obtained a moderate and strong level on the COREQ scale. In the STROBE score assignment, ten articles were selected with scores above 12. As for the level of evidence, 91.6% have level 4 and 8.4% level 3. Regarding the professionals' knowledge about blood transfusion, although they have knowledge of the subject, they declare the need for continuous training for quality assurance and, also, those who know the process, but do not adequately perform the steps for patient safety, need training. Regarding patient safety, the knowledge deficit of professionals can be detrimental to patient safety, which can lead to potential harm and increased morbidity and mortality of patients in the process of hemodialysis. **Conclusion:** The transfusion practice requires qualified professionals to ensure quality care and patient safety. Therefore, there is a need for ongoing education programs that include training and capacity-building related to the subject, as well as the multiple factors arising from lack of quality and unhealthy forms of work that overload professionals and lead to error.

Keywords: Blood Transfusion; Hemotherapy; Hemotherapy Service; Nursing Care

1. Introduction

Hemotherapy has been recognized as an important treatment strategy for clinical cases that include genetic

diseases such as sickle cell disease, transplants, chemotherapy and various types of surgeries [1]. Blood transfusion therapies in Brazil are governed by rules and resolutions. Thus, the Federal Council of Nursing regulated the competencies and attributions of the Nurse in hemotherapy through Resolution n. 306, of April 25, 2006, which establishes the responsibility for planning, execution, coordination, supervision, and evaluation of hemotherapy procedures in health units [2].

The hemotherapy sector is complex and requires specific knowledge from professionals in order to improve the quality of care provided and patient safety [3]. Therefore, transfusion therapy should be clearly documented, as well as the nursing care provided in this process. The essential data such as date, time of beginning and end of the procedure, vital signs during transfusion therapy, clinical changes, blood component bags data, as well as the initial follow-up, ten minutes before or after the therapy, the annotation, the register, and the nursing interventions are essential elements for the patient's safety and the quality of the nursing service [4].

In view of the technological advance and the vigilance that the transfusion process requires, the patient is not exempt from risks, which may include, among others, transfusion reactions [5]. From this perspective, it is possible to understand the importance of the nurse's role in blood transfusion therapy, since the professional competence is aligned with the commitment to enforce all regulations and legislation in force that refer to the transfusion process [6].

This proposal comes from one of the objectives of an ongoing doctoral thesis entitled "Hemotherapy in people with sickle cell anemia in use or not of hydroxyurea". Patients with sickle cell disease need blood transfusions as a treatment, especially those with sickle cell anemia who at some point in their life needed a transfusion.

Therefore, this research has its relevance when summarizing the studies focused on the aspects related to Nursing care in relation to blood transfusion. In this way, it aims to provide more information to professionals, as well as subsidies that ensure effective patient safety. Therefore, the objective of this research was to analyze the primary studies that highlighted the problems related to Nursing assistance in the practice of blood transfusions.

2. Materials and methods

This is an integrative review, whose methodological approach is broad as it allows the inclusion of experimental and non-experimental studies [7].

In the first stage, the guiding question was built from the PVO strategy (Population, Variables and Results/*Outcomes*)(8) (Table 1). So, the guiding question was: "What are the problems with nursing care in blood transfusion?"

Table 1 - stratification of the research problem with the PVO strategy, 2019

P = Population	Blood Transfusion
V = Variables	Problems
O = Results (<i>Outcomes</i>)	Nursing assistance

In the second step, the inclusion criteria were: complete articles available in the databases listed, which

address the problems related to nursing care in blood transfusion in any language and with time clipping between 2009 and 2019. The exclusion criteria were review articles, editorials, letters to the editor, abstracts, expert opinions, reviews, books, book chapters, theses, dissertations, monographs and Course Conclusion Work.

The third step occurred with the search of the articles in the databases: SCOPUS; *Cumulative Index to Nursing and Allied Health Literature* (CINAHL); SCIENCE DIRECT; *National Library of Medicine National Institutes of Health* (PubMed); Web of Science and was held in January 2019 by two independent reviewers.

It was used the descriptors indexed in *Medical Subject Headings - MeSH*: “*blood transfusion*”; “*Exchange Transfusion*”; “*Hemotherapy Service*”; “*nursing care*”; “*Patient Care Planning*”; “*Evidence Based Nursing*”. There was a crossover between them to ensure a broad search on all bases with the OR and AND Boolean operators.

In the fourth stage, the pre-selection of studies was carried out by two independent researchers to read the titles and abstracts. 10,266 articles were found, 7893 were excluded for duplicity. With the application of the relevance test (inclusion and exclusion criteria), 5,520 records were removed. After reading, 187 articles were selected.

During the fifth stage, the articles were selected and read in full and 12 primary studies that addressed the thematic. For better understanding, a flowchart was developed that follows the *PRISMA Statement* recommendation [9] (Figure 1).

To extract the data, we used a tool previously elaborated with the variables: Database; Authors; Periodical, Year and Country; Delineation and level of evidence and Results/Conclusions (Table 2).

In steps six and seven, to critically evaluate the studies and identify the level of evidence, three protocols were used, evaluated by two independent reviewers. For quantitative studies at scale *Strengthening the Reporting of Observational Studies in Epidemiology - STROBE* [10]. In qualitative studies to *Consolidated Criteria for Reporting Qualitative Research – COREQ*(11) and the protocol of *Agency for Health care Research and Quality* (AHRQ), which ranks the level of evidence in hierarchy: 1 - Systematic reviews; 2 - evidence obtained in individual studies with experimental design; 3 - evidence from almost-experimental studies; 4 - evidence from descriptive studies or of a qualitative nature; 5 - derived from case reports or experience; 6 - based on expert judgement.

The contradictions between the researchers were analyzed and discussed until there was a consensus [12]. The COREQ quality rating was attributed as follows: "strong" where 66% or more of the quality assessment criteria were met; "moderate" if 33% to 65.9% of the questions were answered and "weak" if 32% or less of the criteria were answered. For the STROBE quality classification, studies that obtained more than 11 points (50%) were considered included.

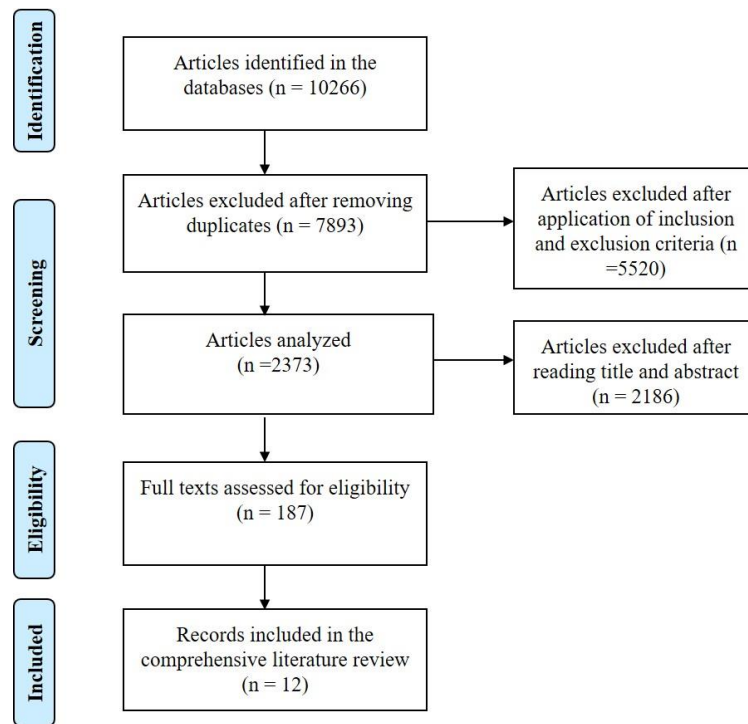


Figure 1. Selection flow of primary studies from the integrative review on Nursing Care in blood transfusion, 2019

3. Results and discussion

The sample consisted of 12 studies, which were submitted to analysis and described in Table 2.

Table 2 - Description of the studies on the problems related to nursing care in blood transfusion, 2019.

Database	Author	Journal, Country and Year	Critical Assessment	Results/Conclusions
PUBMED	Graaf <i>et al.</i> [13]	Asian journal of transfusion Science, Uganda, 2009.	STROBE: 12 Level: 4	Bad practice plays a role in morbidity and mortality related to blood transfusions. There is a need for a transfusion policy and current practice guidelines.
PUBMED	Heddle <i>et al.</i> [14]	Transfusion, United States of America, 2012	COREQ: strong Level: 4	Multiple factors can contribute to errors during pre-transfusion verification. New research should be developed to improve safety.
PUBMED	Hijji <i>et al.</i> [15]	Journal Of Clinical nursing, Emirados Árabe, 2013	STROBE: 17 Level: 4	It highlighted knowledge deficits that could be detrimental to patient safety.
PUBMED	Murphy <i>et al.</i> [16]	Transfusion, United States of America, 2014	STROBE: 22 Level: 4	Many barriers to good transfusion practices: differences in knowledge, excessive optimism of current practice and heterogeneous practices.
SCOPUS	Tavares <i>et</i>	Latin American	STROBE:	Interventions, such as continuing education, as

	<i>al.</i> [6]	Journal of Nursing, Brazil, 2015.	17 Level: 4	well as periodic practice training should take place.
SCOPUS	Reis <i>et al.</i> [17]	Einstein-São Paulo, Brazil, 2016.	STROBE: 12 Level: 4	High percentage of inadequate completion of transfusion monitoring forms, which can lead to errors.
CINAHL	Amaral <i>et al.</i> [18]	UFPE Nursing Magazine on-line, Brazil, 2016.	STROBE: 13 Level: 4	Need for continuing education and in-service training for a more appropriate conduct through any intercurrent.
SCOPUS	Kavaklioglu <i>et al.</i> [19]	Northern Clinics of Istanbul, Turquia, 2017.	STROBE: 12 Level: 4	There should be additional training to ensure patient safety and avoid mistakes.
CINAHL	Cherem <i>et al.</i> [20]	Gaucha Nursing Magazine, Brazil, 2017.	COREQ: moderate Level: 4	The promotion of training for the quality and safety of care in neonatology is necessary.
PUBMED	Nunes <i>et al.</i> [21]	Advances in nursing. Colombia, 2017	STROBE: 19 Level: 4	Self-confidence, protocols, training programs and work in a single job are factors associated with increased knowledge and surveillance during procedures.
PUBMED	Vaghar[22]	Journal Of Medicine and Life, Irã, 2018	STROBE: 18 Level: 3	Educational programs can positively influence knowledge and performance, especially on inadvertent side effects.
SCOPUS	Khetan <i>et al.</i> [23]	Asian Journal of Transfusion Science, Índia, 2018.	STROBE: 16 Level: 4	Need for awareness of bedside blood transfusion policy and guidelines and regular audits.

As for the language, four articles were published in Portuguese and eight in English. The oldest publication was in 2009 and in 2018 the most current, but the periodicity was from the year 2012.

The country with the largest number of publications on the subject is Brazil (four studies), followed by the United States of America (two studies). Other publications came from countries such as Uganda, Colombia, United Arab Emirates, Turkey, Iran and India.

Of the studies analyzed a total of ten were quantitative outlines and two were qualitative in nature. Among the database searches, six were published in PUBMED, four in SCOPUS and two in CINAHL.

Regarding the objectives of the studies, seven proposed to evaluate the knowledge of professionals on hemotherapy, mainly focusing on transfusion practice; four to evaluate the aspects of nursing care in blood transfusion and one to analyze the procedure itself.

As for the critical evaluation, both qualitative studies were moderate and strong on the COREQ scale. Ten articles were also analyzed by STROBE with scattered scores ranging from 12 to 22 points and as for the level of evidence eleven publications have level 4 and one level 3.

The periodicity of the articles occurred after the year 2012, which shows the relevance and actuality of the proposed theme. There are few qualitative studies, this limitation can be justified by the fact that

hemotherapy is a still recent specialty in nursing [24].

For better discussion and understanding of the results that addressed the problems related to Nursing assistance in blood transfusion, the findings in the studies were structured in thematic nuclei.

3.1 Knowledge about blood transfusion

Regarding the knowledge of professionals about blood transfusion, some researches have shown that, although they have knowledge of the subject, they declare the need for continuous training for quality assurance and, also, those who know the process, but do not adequately perform the steps for patient safety, need training [19,2]. There is evidence that describes a large number of nurses as professionals who have no knowledge about transfusion practice, with levels of deficit in all aspects related to hemotransfusion [1,15].

When analyzed the knowledge and performance regarding transfusion practice before and after training intervention for Nurses and nursing staff, evidence showed that there was an increase in knowledge and performance of professionals [19,22,25]. Thus, it was observed that permanent education for nursing professionals on hemovigilance guidelines is the most assertive way to improve the quality of care provided [6,20].

The approach should be broad and emphasize from basic care, techniques, to care through intercurrents, adverse reactions, inadvertent side effects, in favor of increasing knowledge and surveillance during care [18, 21, 22].

It is worth mentioning that the implementation of procedures, training programs and awareness raising are not enough to guarantee the performance of professionals. There are several other related problems, such as distractions, interruptions, excessive workload, stress, familiarity or lack of this with the procedures and even with the patients, and also lack of knowledge of the policies and difficulties of access to information [14].

3.2 Patient safety and risk management

The evidence demonstrating that the knowledge deficit of professionals, with the risk of potential damage and increased morbidity and mortality of patients in the process of hemotransfusion is detrimental to patient safety is increasing [3, 13, 26].

A study performed in four hospitals with nurses asked about the follow-up and monitoring of the patient during blood transfusion, 58% responded that they followed up and monitored the patient during the transfusion process, against 8% who said they did not follow up the transfusion until the end and 33% responded that they only follow up [27].

In Brazil, the entire blood transfusion process should be monitored from beginning to end and followed for ten minutes at the bedside by the professional who installed it [28]. Nurses are professionals who are directly and constantly with the patients and thus involved in increasing safety, minimizing errors and ensuring good blood transfusion practices [17,19].

Many factors, which may induce human failure during nursing care in blood transfusion, range from ignorance of appropriate techniques to some critical points, such as: application of the patient identification bracelet; sample collection; sample testing; emission of the blood product, in addition to the process of

verification before blood transfusion [15,16,29].

There is fragility in both the transfusion practice and the problems related to the bureaucratic filling out of forms that carry information necessary to identify clients who are using this therapy [17]. It is necessary to control and increase the safety of the patient during transfusion practice and analysis of the main critical points that allow the error [14].

Therefore, the advancement of public policies, clinical guidelines and standard procedures with updated approaches in blood transfusion practices and internal audits are necessary to analyze the conditions of care and the implementation of standards [13,23]. These events direct the professionals to perform new researches which aim at improving evidence regarding patient safety and quality of care [14].

4. Conclusion

When analyzing primary studies which focused on problems related to nursing care in the practice of blood transfusions, by means of the integrative review method, failures pertinent to the nursing team's performance were evidenced, which contribute to incidents in transfusion practice, as well as to worsen patient safety. In view of this, the most frequent aspects in relation to the hemotherapeutic practice observed: The most studies show a deficiency in the theoretical and technical knowledge of the nursing professional. After interventions, such as training and capacity-building on transfusion, nursing professionals *score* above average.

The relevance of this integrative review for the practice of nursing care in hemotherapy is configured as an alert for the qualification of professionals, which aims to ensure quality care and safety to the patient. Thus, there is a need for on going education programs that aggregate training and capacity-building related to the theme, as well as the multiple factors arising from lack of quality and unhealthy forms of work that overload professionals and lead to error.

In view of the above, further research is needed by producing scientific articles in the field of hemotherapy and nursing care that employ research representations with a higher level of evidence, with a view to quality and the ideal margin of safety for the patient.

5. Acknowledgement

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