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REVISTA IBERO-AMERICANA DE SAÚDE E ENVELHECIMENTO  
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## **FACTORS INFLUENCING THE BLOOD DONATION SYSTEMATIC REVIEW OF LITERATURE**

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## ABSTRACT

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**Context:** Recent studies have shown that in Portugal the number of units of data released and the number of units of blood have been reduced considerably.

**Objective:** To synthesize primary scientific evidence on the main factors influencing blood donation through a systematic review of the literature.

**Methods:** Systematic review of the literature according to the Joanna Briggs Institute model. SciELO®, B-On® and Pubmed® databases were used with the key-words of blood, blood donation, factors, blood donation and factors. Articles in Portuguese and English were included between 2013 and 2017, with text and bibliographical references fully available, in scientific journals with *peer-review* and relevant to a thematic in research. Of a total of 72.790 articles found, 6 were included.

**Results:** The results indicate that the factors that influence blood donation are related to fear; insufficient and ineffective campaigns; concealment of information at the time of screening; non-remuneration; bureaucracy; my answer is an acquaintance; reinforcement of social gain; gaining a justified absence from service; altruism; cognitive level; social structure; age; sex; marital status; history of blood debits and risk behaviors.

**Conclusions:** It has been shown that there are factors that influence positively and negatively the donation of blood, however, it is necessary to conduct new studies that analyze the factors that influence blood donation in Portugal in order to define the strategies that increase blood donation in our country.

**Key-words:** Blood donation; factors; systematic literature review; nursing investigation.

## INTRODUCTION

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Blood giving is a process from which a giver gives part of his/her blood without causing harm to his/her health and gives it to a storehouse that uses the blood to transfusion use. Blood giving can save some people's lives which lost a great quantity of blood due to an accident, or a surgery, civil wars or some people who have anaemia and need blood transfusion regularly<sup>(1)</sup>.

Nowadays blood giving is a worldwide problem, since most of the countries faces some difficulty in suppressing of demand of this and its components, because there is no other substance capable of substituting it<sup>(2)</sup>.

In Portugal, the number of new blood donors has been reducing over the last years, which constitutes the problem that motivates the elaboration of this article. The definition of the problem in investigation assumes the primordial importance, since it is about it that the investigation process adopts it's starting point.

Quoting Fortin<sup>(3)</sup>, each and any investigation has a starting point regarded as problematic, this is, something that causes an ill-being, an irritation, a restlessness and therefore requires an explanation, or at least, a better comprehension about the observed phenomenon.

After a starting research about the necessity of understanding the phenomenon above mentioned, we formulated the starting question with the aid of the anagram PICO (Patient, Intervention, Comparison and Outcome)<sup>(4,5)</sup>. The guiding question is: "Which factors influence the blood donation?"

The elaboration of a systematic literature review, according to the thematic in study appears to be relevant, because it can identify the studies about the subject matter, through the application of explicit methods and systematized method of research, critical appraisal and information synthesis<sup>(6)</sup>.

With this article we want to synthetize primary scientific evidences about the major factors that influence the blood giving, through a systematic literature review, fulfilling the protocol steps of the Joanna Briggs Institute (JBI).

### *Framework*

Our blood is a precious commodity that cannot be obtained through other means other than blood donation. In Portugal, and according to the first paragraph of the third article from the Law number 37/2012 from August 27th<sup>(7)</sup>, a blood donor is defined as any individual who, "after being clinically accepted, can give willingly and voluntarily part of his/her blood for therapeutic ends". The blood donation is defined by the first paragraph of the fourth article from the same law above mentioned, as "a civic, voluntary, benevolent and unpaid act". It is, therefore, a process by which a donor abdicates part of his/her blood, without harming his/her health, to a storage unit, that has a purpose of giving it to blood transfusions<sup>(1)</sup>.

For Campos<sup>(8)</sup>, the main purpose and importance of blood donation, resides in the possibility of being able to save the lives of people who has lost a significant amount of blood. Blood transfusions are a fundamental element when we are providing healthcare, since it allows to help people in life-threatening situations, the execution of surgical interventions and increasingly complex medical procedures, in addition to increase the life quality of patients with several acute and chronic health problems.

According to a report from World Health Organization (WHO) dated 2011, about blood safety, about 9 million persons received a blood transfusion. This way, it is essential that blood stocks remain stable to meet the current demand for blood transfusions. With the increase in number of blood transfusions, there was a need to increase blood stocks and therefore, blood donations have become a concern for developed societies<sup>(1)</sup>.

According to Henriques<sup>(4)</sup>, since 1993 to 2009, the number of blood donations has increased, however, in the last years, the quantity of new blood donors is decreasing, which contributes to the risk of shortage of this resource so central to human life. Although no post 2009 vales were included, they are expected to have substantially decreased, because the decreasing in economic benefits, such as the exemption of moderating fees and the economic environment, which relegates community aid. While on one hand the number of blood donors has increased, blood transfusions are also expected to increase due to better health care and greater accessibility health services, increased surgeries and organ transplants, and the aging of the population, although of less importance, causes diseases that increase the blood transfusions. The same author refers that this potential problem of blood scarcity in the future, and the progressive decreasing in the number of donors in Portugal, researchers are increasingly concerned about solutions to this adversity, which must be fought by regular donations as well as by the recruitment of new donors.

## SYSTEMATIC REVIEW METHOD

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It was decided to carry out a Systematic literature review, since it is a type of investigation that provides a set of evidences related to the subject in study, through the application of explicit and systematized methods of research selection of evidence, its analysis criticism and synthesis of the content of the various studies selected<sup>(6)</sup>. In addition, systematic review studies represent an added value for nursing research, as they aim to improve the quality in nursing care and the development of evidence-based clinical nursing practice<sup>(9)</sup>.

The systematic review took place between February 1st and April 21st of 2018, and began by formulating the investigation question, according to PICO - Population, Intervention, Comparison and Outcome.

According to Fortin<sup>(3)</sup>, the research question will guide the type of research to be carried out and give meaning to the problematic situation previously identified. For Craig & Smyth<sup>(10)</sup>, both the investigation and the evidence-based process derived from the question formulated. Considering a useful method, PICO guides the construction of the research question and the definition of keywords, allowing the clinical and research professionals to quickly find and select the best available scientific information<sup>(11)</sup>.

In this way, we defined the question of investigation by means of the anagram PICO: P of Population (population with ages between 18 and 65 years); I of Intervention (blood giving); C of Comparison and O of Outcome/Results (influencing factors).

The definition of the including criteria had the purpose of guiding the research and selecting the literature in function of the desired results and the question formulated. These are: (1) Articles in English or Portuguese; (2) Articles published between 2013 and 2017; (3) Articles with full text available; (4) Articles published in peer-review scientific journals; (5) Articles with available bibliography references; and (6) Articles relevant to the research topic.

#### *Research strategy and study identification*

Once the research question and its inclusion and exclusion criteria were identified, we proceeded to the identification of the studies. The first stage of selection of the studies to be included in the Systematic literature review was carried out during the month of February and March of 2018. The research was done via internet in the SciELO® (Scientific Electronic Library Online), B-On® (Online Knowledge Library) and PubMed®, with the following keywords: Dádiva de sangue; Doação de Sangue, fatores, Blood donation and factors. In each database the selected keywords were used, isolated or at the same time, in English and Portuguese. The research strategy searched for a logical structure that combined the search terms and sentences in order to get the expected results. The terms and sentences were as follows: (Doação de sangue) and (Fatores); (Dádiva de sangue) and (Fatores); (Doação de sangue); (Blood donation) and (Factors). In an initial phase of the identification of the studies, 72.790 records were obtained. Subsequently, the research was refined using the search filters and the first three inclusion criteria were applied. Then, the documents were first sorted by the title they presented and then by the summary. It was also investigated whether these sources had bibliographic references and whether they were completed and published studies. In a final phase, for the articles selected taking in account the title and summary, the full text was read and its relevance to the research topic was used as the last inclusion criterion. All duplicated articles were removed. After identifying the studies, removing the duplicate articles, applying the inclusion criteria and refining the research were selected 6 studies.

### *Evaluation of the methodological quality of the studies*

At a time prior to the completion of the study, it was defined by all reviewers that only studies demonstrating methodological quality would be included, considering the instruments advocated by Joanna Briggs Institute. In this review, two independent reviewers assessed the methodological quality of each study considering the “JBI Critical Appraisal Checklist for Qualitative Research” and “JBI Data Extraction Form for Quasi-Experimental Studies (non-randomized experimental studies)”<sup>(5)</sup>. In case of disagreement between the two independent reviewers, the inclusion of the study was resolved by discussing the pertinence of that study or including a third independent reviewer.

### *Data Extraction*

The data extraction should follow a systematized process, well defined, to ensure the scientific rigor and to avoid bias. The data collection is a bridge between the report of the authors of the primary studies and the final report of the authors of the review<sup>(12)</sup>.

For the present study, a data extraction and documentation table were developed, and it includes the following information: title, authors, year, place of the study, methodical orientation, study purposes, participant characteristics, main results and authors' conclusions. This strategy of systematization of the process, recommended by JBI (2017), has the purpose of proceeding to the summary narrative and summarized data and ensure the reproducibility of the review. The data was extracted by two independent reviewers between March and April of 2018, being subsequently discussed by the reviewers until a consensus was reached.

### *Data Synthesis*

Six scientific articles that met the previously established inclusion criteria were analyzed. According to the application of the JBI instrument for extracting data from each article and for objectively describing the results and relevant aspects for each study included in the systematic literature review, it was considered that the most adequate synthesis methodology, was the descriptive synthesis of the scientific evidences selected with the accomplishment of a table constructed jointly by the researchers. That table includes the names, authors, objectives, participants and the main results of the studies included in the systematic literature review, relevant to the subject under study. The data was synthesized in April of 2018 by two researchers, independently.

# RESULTS PRESENTATION

Through the article’s analysis for the accomplishment of the present RSL, only those that responded to the initial question of the investigation project were included, having been obtained 6 articles for the purpose. Figure 1 shows the flowchart of the selection process of the articles and Table 1 the description of the selected articles.

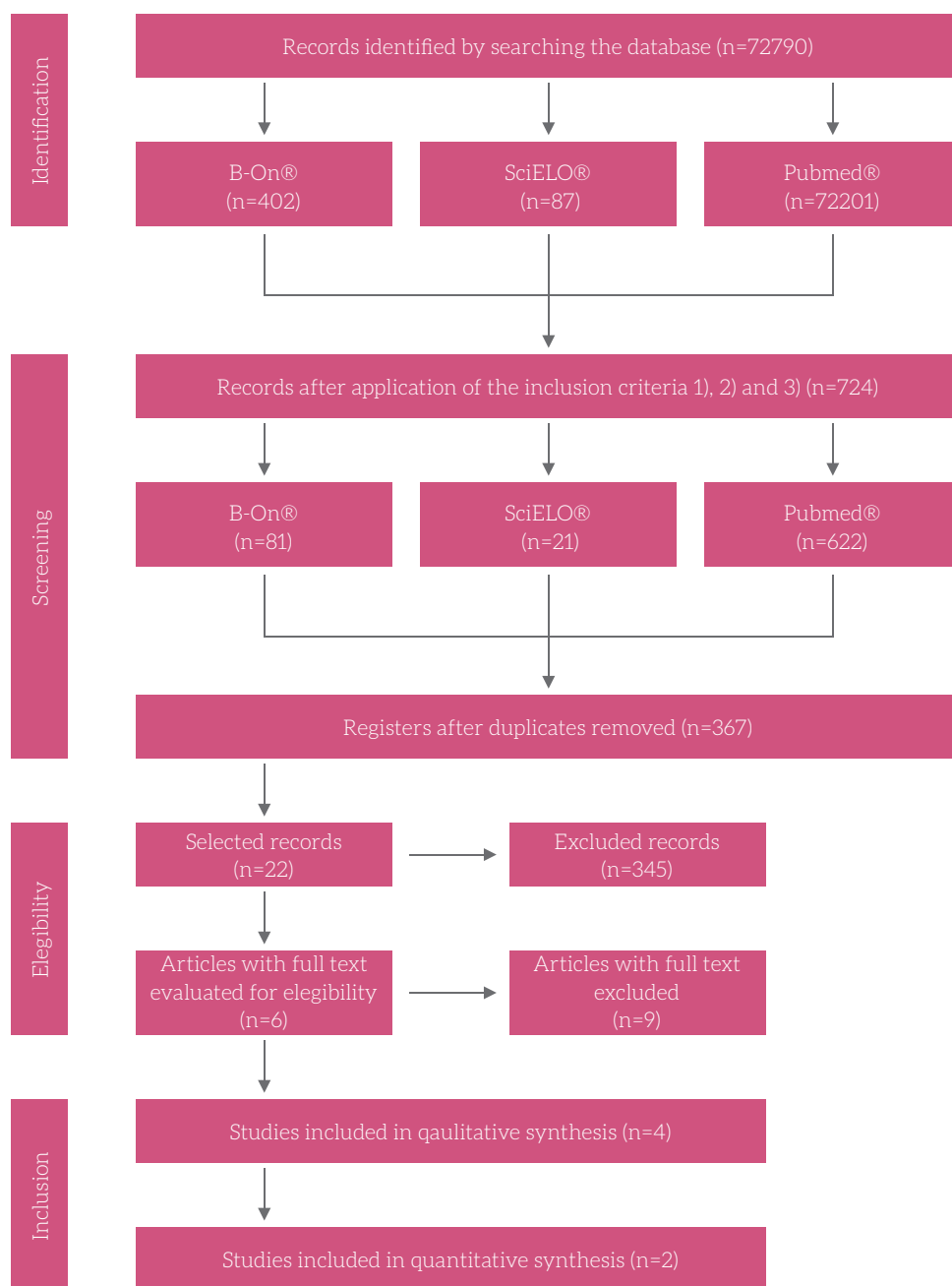


Figure 1 - Flowchart of the article selection process.

Table 1 – Selected articles description.

Code	Author(s)	Article Title	Data Base	Publication Data
E1	BARBOZA, Stephanie Ingrid Souza; COSTA, Francisco José da	"Marketing social para doação de sangue: análise da predisposição de novos doadores"	SciELO®	Cad. Saúde Pública, 2014 30(7):1463-1474
E2	ALDAMIZ-ECHEVARRI, Covadonga; AGUIRRE-GARCIA, Maria Soledad	"A behavior model for blood donors and marketing strategies to retain and attract them"	SciELO®	Rev Lat Am Enfermagem. 2014 22(3): 467-475.
E3	KASRAIAN, Leila; NEGARESTANI, Neda Negarestani	"Rates and reasons for blood donor deferral, Shiraz, Iran. A retrospective study"	B-On®	Sao Paulo Med J. 2015 133(1):36-42.
E4	PEREIRA, Jefferson Rodrigues [et al.]	"Doar ou não doar, eis a questão: uma análise dos fatores críticos da doação de sangue"	B-On®	Ciência & Saúde Coletiva. 2016. 21(8):2475-2484
E5	TT, Gonzalez [et al.]	"Motivation and social capital among prospective blood donors in three large blood centers in Brazil"	Pubmed®	Transfusion. 2013. 53(6):1291-301.
E6	ABRIL, Eulália P.	"Explaining voluntary blood donation from a communication perspective"	SciELO®	Cuadernos.info. 2016. (38), 17-33.



Several factors influencing blood donation have been identified, which can be subdivided into positive and negative factors.

Article E1 focuses on motivational factors that influence individuals to donate blood. Conditions such as information, altruism, empathy and social responsibility arise as determinants of motivation and maintenance, but not for predisposition to blood donation. In the study by Barboza & Costa<sup>(13)</sup>, there are two crucial factors regarding the influence of people's predisposition to blood donation: fear, which negatively influences blood donation, and social group, which has a negative influence on the process. As for the fear factor, in addition to the physical barriers related to the donation procedure, there is the possibility of influencing previous traumatic experiences, such as pain and fatigue during the procedure, generating fear and anxiety in the case of occasional donors. As for the social group factor, it was verified that family and friends influence, in part, the motivation for the predisposition of the individual to donate blood, since they overcome existing barriers that had a negative influence from the moment a family member or friend of the individual donates blood and informs him about the benefits of such behavior.

Article E2 proposes a model with different internal and external factors that can influence blood donation, as well as different phases of decision-making in relation to donation or non-donation of blood. Aldamiz-Echevarri & Aguirre-Garcia<sup>(14)</sup> conclude that the external factors influencing the decision-making process regarding blood donation are legal processes, educational programs, blood need information, social standards, reference groups and social networks, while the internal factors are the personal characteristics of each donor, the experiences of each person, their motivations, attitudes, situations and risk perception. They also concluded that the main reasons for the blood donation are altruism, and solidarity, followed by the need for a family member or friend.

Article E3 by Kasraian & Negarestani<sup>(15)</sup> relates the postponement of blood donation to some factors that compromise it, namely the lack of knowledge among donors regarding donation criteria and greater caution among physicians in the selection of donors. Of the 43839 participants in this study, 30.9% had their donation deferred, being 1973 permanently. The postponement rate was significantly higher among women, single and first-time donors, and in the 17-30-year-old group, compared to men who were married and had a history of donation ( $P < .0001$ ). Factors for deferral or postponement of blood donation relate to (1) risk factors that may be related to HIV or hepatitis infections; (2) underlying diseases; (3) medication used; (4) general condition ineligible; and (5) risk factors that may be related to viral or bacterial infections other than HIV and hepatitis.

In article E4, elaborated by Pereira et al.<sup>(16)</sup>, some of the negative factors that influence blood donation are evident, namely: (1) insufficient information about the whole donation process, which is considered a critical factor which influences the initial motivation for the donation of blood and its maintenance, from donors or potential donors. This insufficient information, extends to the stages of capture and gives rise to insecurity regarding the whole process and context in which a blood donation is made; (2) the insufficient social valorization of the blood donor is considered as a factor with some influence in the maintenance of the behavior; (3) the need to donate to acquaintances or, the request of acquaintance of gift to a close relative or friend; and (4) the bureaucratic dysfunction of clinical and hematological screening, as to the time required for all stages of the blood donation process.

Regarding Article E5, it is perceived that social capital relates to the motivation of donors through the concept that blood donation is a social phenomenon that is embedded in the community context. Although altruism is the main reason for donating blood in Brazil, the hypothesis is that the social context can be a contributor to this process. In the results of TT<sup>(17)</sup>, it is evident that personal interest is associated with average and high cognitive social capital, suggesting that the decision to donate blood is motivated by family, friends and networks, but it can also be motivated to satisfy the self-interest of the individual. This study confirms findings from previous studies demonstrating that different motivations lead people to blood donation. These motivations vary by sex, age, marital status, type of donors, and history of past donations. However, the study showed that cognitive social capital and, to a lesser extent, structural social capital, philanthropy and social altruism are factors that can lead people to donate blood.

Concerning Article E6, the results of this study indicate that past blood donations are influenced by the conversation, and other factors, such as altruism, convenience, fear and awareness of social need, do not influence the decision to give or not blood, which is contrary to what Articles E1, E2, E3 and E4 provide. The April study<sup>(18)</sup> states that in the future intention of blood donation there is a likelihood of being mediated by the conversation, with civic duty, the merging of roles, awareness of the need of people who need a blood transfusion blood, past volunteering and past blood donations are influenced by the conversation. Already, fear, altruism and awareness about social necessity are not. Referring to the intention to donate blood in emergencies, it cannot be mediated by the conversation, since there is no relation between the two, in which case the gift is influenced by altruism, civic duty and the fusion of roles.

## RESULTS INTERPRETATION

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From the analysis of the results extracted from each study, it is possible to verify that the blood donation is influenced by both positive factors and negative factors. In addition, it is possible to relate common factors existing in the six articles selected for this RSL.

The factor related to the insufficient information held by the citizens regarding the entire process of blood donation is considered by some studies to be determinant and with a great negative impact on the predisposition to blood donation or even on the motivation to maintain this behavior. According to Pereira et al.<sup>(16)</sup>, insufficient information about all the constituent stages of the blood donation process, as well as the conditions in which it occurs, generates insecurity that, in turn, triggers the construction of fears and myths which neutralize any existing interest or initiative. Fear about the blood donation process is identified as a negative factor in three different studies (E1, E2 and E6), and it is specifically described in E1 that fear, in addition to the physical barriers related to the donation procedure, is also expressed by the influence of previous traumatic experiences, such as pain and fatigue when performing the procedure<sup>(13)</sup>.

Accordingly, in E2, insufficient information on the part of the citizens is approached as to the importance and need of the existence of blood reserves. Many people are not aware that to have blood reserves, the number of donors and donations must increase. In this study, it is estimated that with a greater awareness of this need, the predisposition and motivation of citizens for blood donation increases and arises naturally and not in the form of a moral obligation<sup>(14)</sup>.

Still on the factor of insufficient information, the lack of knowledge regarding the requirements necessary to donate blood negatively influences the donation of blood<sup>(16)</sup>. This lack of knowledge means that citizens who have risk factors or who engage in risky behavior are turned down when they go to blood collection centers. The presence of risk factors related to bacterial infections, by HIV or hepatitis, underlying diseases, use of certain medications, and risk behaviors, temporarily or permanently condition the blood donation. This refusal felt by people negatively influences future gifts, by the presence of negative feelings about oneself or the gift process<sup>(15)</sup>.

E1, E3, E4 and E6 show the social component as a factor that influences blood donation, and in each study the concept is referred to differently (social group, social gain, social responsibility and interpersonal communication). In E4, the social component expresses a positive influence on the blood donation and can be expressed as a reinforcement of a

social gain, since, being a practice of a good and altruistic act for someone close to us, it brings intrinsic and social value to the donor. In the same study, it is also noticed that for interviewed donors and potential donors, who have donated and do not currently donate, the main motivating factor for blood donation is the need for donation to known people or the request of acquaintances from donation to a relative or close friend<sup>(16)</sup>. In E6, and in a different analysis, the term interpersonal communication arises, which, based on the evidence used, is an important factor to consider. This communication flows and enables the family and friends of a person to be encouraged to donate blood for the first time<sup>(18)</sup>. In the E1 of Barboza & Costa<sup>(13)</sup> the term social group arises and it is verified that the relatives and friends, in part, influence the motivation for the predisposition of the individual to donate blood, since it allows and promotes the overcoming of existing barriers that influence negatively, from the moment that a relative or friend of the individual donates blood and informs him about the benefits of such behavior.

In E2, socially disclosing the donation of blood, between regular donors and non-donors, is considered a facilitating and contributory factor in the process of positive decision-making, recruitment of new donors, health literacy in procedure, and need to want to help other people in a caring and altruistic way. The behavior of donating blood can also be closely associated with people's concern to contribute to the well-being of society, which gives the donor a good visibility for the people who constitute their social circle<sup>(14)</sup>.

One of the factors addressed in four (E1, E2, E5, E6) of the six selected studies is the altruism, and in three of these articles it is mentioned positively and in relation to the donation of blood and in one the opposite occurs.

In E5, involving 7635 blood donors, altruism is the major motivator for blood donation and it is evident that higher levels of schooling and income, as well as donors with previous donations, are associated with a high level of altruism, in addition to other factors such as the medium to high cognitive level and social structure capital Gonzalez<sup>(17)</sup>.

E1 confirms altruism as a motivation for blood donation, but not for predisposition to blood donation. It is considered as behavior closely associated with people's concern to contribute, effectively, to the well-being of society<sup>(13)</sup>. In relation to this study, E5 also refers to altruism as a motivating factor for blood donation. In addition, the study by Aldamiz-Echevarri & Aguirre-Garcia<sup>(14)</sup> refers to altruism as a factor that can positively influence the decision-making process, since it is a facilitating and contributory factor for the recruitment, by the need to want to help other people in solidarity. To contradict this idea, E6 appears where altruism, which would be an important antecedent of blood

donations, had no relation to past blood donations, and altruism and blood donation gifts are presumed to be unrelated<sup>(18)</sup>.

In summary, and returning to the question of initial research: "What factors influence the blood donation?", the scientific evidence that we found after an exhaustive and systematized process of projection and implementation of the research process reveals fundamental contributions to the understanding of the existing problematic and allows us to have a broad and current perspective on the factors that influence the blood donation. In general, there are more negative than positive factors related to the influence on blood donation. These results have implications for Nursing practice and research, since they make it possible to understand the role of nurses in the definition and implementation of strategies to increase the number of new data and units of blood collected in the coming years, thus the current trend.

## CONCLUSION

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Based on current issues, including the significant decrease in the number of new donors and units of blood collected in recent years, and to synthesize existing evidence on the factors influencing blood donation, this Systematic Review wanted to answer the research question: "What factors influence blood donation?".

In order to answer the formulated investigation question, it is possible to conclude that there are several factors that influence the blood donation and that these can be subdivided into positives and negatives. Factors such as altruism, empathy, social responsibility, interpersonal communication, high levels of income and schooling, medium or high cognitive levels, previous donations, reinforcement of social gain, social disclosure of blood donation, health literacy among others, positively influence the blood donation. On the other hand, fear, lack of information, bureaucracy, risk behaviors to contract HIV or hepatitis, blood-related diseases, use of medications, general condition not eligible for blood donation, risk factors for contracting viral or bacterial infections constitute with factors that negatively influence blood donation. In addition, factors such as age, gender, marital status also had some influence on blood donation. It was also possible to show that both the presence of these factors and their influence on blood donation often depend on the personal, demographic and/or socioeconomic characteristics of the population.

Given the methodology used, the results of the present RSL on the factors influencing the blood donation allow a more current and enlightened view of this issue opening new opportunities for future investigations. However, the lack of any evidence regarding the Portuguese population constituted a limiting aspect of RSL, so it is necessary to develop studies that investigate this problem in Portugal to define strategies that increase the blood donation in our country.

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