

**Clinical screening and donation experience from the blood donor's perspective***Experiencia clínica de detección y donación desde la perspectiva del donante de sangre**A triagem clínica e a experiência na doação na perspectiva do doador de sangue***Abstract**

The aim was to describe the experience of donation and clinical screening from the donor's perspective. This is a cross-sectional descriptive and analytical study, with non-probabilistic sampling, between November 2018 and March 2020. The scenario was a hemotherapy service in Rio de Janeiro. A self-administered questionnaire with 32 questions was used for blood donation candidates. Univariate and bivariate analyzes were performed, a chi-square test was applied, considering a significance level of 5%, using IBM's SPSS software. Of the 400 respondents, 54.8% were donating spontaneously; 71.5% declared to be repeat donors; 36% reported having an interest in the results of serological tests; 88.3% admitted to fully trusting the results of such exams; 65.8% declared they had no knowledge about the health units where they could be carried out; and 59.8% considered transmission of infections possible through transfusion. About repeat donors; 66.4% reported having been asked about vulnerabilities and risk situations in clinical screening; for 38.8%, the opportunity for self-exclusion was not clear. In this context, the nurse has a role both in approaching the donor in clinical screening, as well as in explaining the donation process, to allow conscious decision-making by self-exclusion, based on adequate guidance regarding their vulnerability.

**Descriptors:** Blood Donors; Donor Selection; Serological Tests; Communicable Diseases; Risk Factors.

**Resumen**

El objetivo fue describir la experiencia de la donación y el cribado clínico desde la perspectiva del donante. Se trata de un estudio transversal, descriptivo y analítico, con muestreo no probabilístico, entre noviembre de 2018 y marzo de 2020. El escenario fue un servicio de hemoterapia en Río de Janeiro. Se utilizó un cuestionario autoadministrado con 32 preguntas para candidatos a donación de sangre. Se realizaron análisis univariados y bivariados, se aplicó una prueba de chi-cuadrado, considerando un nivel de significancia del 5%, utilizando el software SPSS de IBM. De los 400 encuestados, el 54,8% estaba donando espontáneamente; 71,5% declaró ser donante reincidente; El 36% informó tener interés en los resultados de las pruebas serológicas; El 88,3% admitió confiar plenamente en los resultados de dichos exámenes; El 65,8% declaró no tener conocimiento sobre las unidades de salud donde se podrían realizar; y el 59,8% consideró posible la transmisión de infecciones por transfusión. Sobre donantes repetidos; 66,4% informó haber sido preguntado sobre vulnerabilidades y situaciones de riesgo en el cribado clínico; para el 38,8%, la oportunidad de autoexclusión no estaba clara. En este contexto, el enfermero tiene un papel tanto en el acercamiento al donante en el cribado clínico, como en la explicación del proceso de donación, a fin de permitir la toma consciente de decisiones por autoexclusión, basada en una adecuada orientación sobre su vulnerabilidad.

**Descriptores:** Donantes de Sangre; Selección de Donantes; Pruebas Serológicas; Enfermedades Contagiosas; Factores de Riesgo.

**Resumo**

Objetivou-se descrever a experiência da doação e da triagem clínica na perspectiva do doador. Trata-se de estudo transversal descritivo e analítico, com amostragem não probabilística, entre novembro de 2018 e março de 2020. O cenário foi um serviço de hemoterapia no Rio de Janeiro. Utilizou-se um questionário autoaplicável com 32 perguntas para os candidatos à doação de sangue. Foram feitas análises univariadas e bivariadas, aplicou-se teste do qui-quadrado, considerando-se um nível de significância de 5%, através do software SPSS, da IBM. Dos 400 respondentes, 54,8% estavam doando espontaneamente; 71,5% declararam serem doadores de repetição; 36% referiram ter interesse em resultados de exames sorológicos; 88,3% admitiram confiar plenamente nos resultados de tais exames; 65,8% declararam não ter conhecimento acerca das unidades de saúde onde poderiam realizá-los; e 59,8% consideravam possível a transmissão de infecções por meio transfusional. Sobre os doadores de repetição; 66,4% referiram terem sido questionados sobre vulnerabilidades e situações de risco na triagem clínica; para 38,8%, não ficou clara a oportunidade de autoexclusão. Nesse contexto, o enfermeiro tem papel tanto na abordagem ao doador na triagem clínica, quanto na explicação sobre o processo de doação, de modo a permitir uma tomada de decisão consciente pela autoexclusão, embasada na orientação adequada quanto à sua vulnerabilidade.

**Descritores:** Doadores de Sangue; Seleção do Doador; Testes Sorológicos; Doenças Transmissíveis; Fatores de Risco.

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**How to cite this article:**

Costa LSL, Eleuterio TA, Menezes RA, Conceição MMB, Pereira SS, Bandeira FMGC. Clinical screening and donation experience from the blood donor's perspective. Glob Acad Nurs. 2020;1(3):e38.

<https://dx.doi.org/10.5935/2675-5602.20200038>

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Chief Editor: Caroliny dos Santos  
Guimarães da Fonseca  
Executive Editor: Kátia dos Santos  
Armada de Oliveira

**Submission:** 09-16-2020**Approval:** 09-22-2020

## Introduction

Clinical screening aims to ensure safety of the transfusion process, which begins with blood donation, through the investigation and evaluation of the previous and current history of the donation candidate, aiming at the quality and protection of blood, related to possible reactions that occur during and after the donation, while it is considered a health education and care process with donors<sup>1</sup>. From the 1980s, with the emergence of the Acquired Immunodeficiency Syndrome (AIDS), there was an increase in social pressure in the country requiring the safety of the blood to be transfused<sup>2</sup>. In the 1988 Constitution, the sale of blood and blood components was forbidden, and, in the same year, Federal Law 7,649 was enacted, which made the registration of blood donors and laboratory tests mandatory<sup>3</sup>. In 1989, Ordinance No. 721 approved technical standards designed to regulate the collection, processing and transfusion of whole blood, its components and derivatives<sup>4</sup>.

The Ministry of Health regulated, through Resolution of the Collegiate Directorate (RDC) No. 153/2004, the entire clinical screening process and blood therapy procedures and at the time of writing this manuscript, RDC No. 34/2014 is in force. The blood cycle comprises the stages of donor collection, collection, processing, testing, quality control and protection for the donor and recipient, storage, distribution, transport, and transfusion. In screening, the objective is to detect any factor that may point to a possible disability, or a risky situation for the donor; thus, an interview is conducted with questions about current and past pathologies, risk factors for infectious diseases and sexual history of the individual<sup>5</sup>.

Consolidation Ordinance MS No. 05/2017 emphasizes that blood donation volunteers must undergo clinical, hematological, and serological / molecular screening processes to reduce the risk of disease transmission through the transfusion of the bag of blood to the recipient<sup>6</sup>. In this manuscript we will focus on the results of serological ineptitude, but we emphasize the obligation and carrying out molecular screening to detect the genetic material of the hepatitis B virus, hepatitis C and HIV, which reduces the immunological window for its detection.

In the process of serological screening, to ensure the safety of the transfused blood, it is mandatory, for each donation, to perform laboratory tests of high sensitivity, to detect markers for the following infections transmitted by blood: syphilis; Chagas disease; hepatitis B (HBV); hepatitis C (HCV); HIV / AIDS and HTLV I / II<sup>6</sup>. The voluntary donor who, for some reason has not informed the situation of risk or vulnerability for blood donation, may declare a self-exclusion vote and the inadequacy of their own blood to the hemotherapy service, in a confidential manner, for reasons of increased risk not informed or deliberately omitted during the screening, then the whole blood bag is discarded, but serological and molecular tests will be performed. Therefore, self-exclusion aims to increase the safety of transfused blood<sup>7</sup>.

In this context, with the possibility of transmitting infections through blood being one of the biggest concerns related to transfusion safety and considering the lack of studies on this topic in the literature, this study aims to describe and analyze the perspective of the voluntary donor's understanding of clinical screening.

## Methodology

This is a cross-sectional, descriptive, and analytical study with non-probabilistic, convenience sampling. The average donation candidates / year for the last 5 years (5032 candidates / year) was considered to perform the sample calculation. It was considered a finite and heterogeneous population (50% prevalence), a sampling error of 5% and a 95% confidence interval, which resulted in a minimum sample size of 357 individuals.

The study was carried out at the Herbert de Souza Hemotherapy Service, belonging to the Pedro Ernesto University Hospital, State University of Rio de Janeiro (HUPE / UERJ), located in the North Zone of the city of Rio de Janeiro, in the period from November 2018 to March 2020. The study included: all donation candidates who attended the blood bank on the occasions available for the team to collect data, and who agreed to participate in the research. The exclusion criterion was the refusal to participate in the research.

This study is an excerpt from a Scientific Initiation project of the Faculty of Nursing of the State University of Rio de Janeiro (UERJ) entitled "Epidemiological profile of the voluntary donor of the blood bank of the Pedro Ernesto University Hospital of the State University of Rio de Janeiro".

Data collection was conducted by four nursing students, one with a scholarship and three volunteers from the aforementioned project, through a pre-structured and self-administered questionnaire delivered to all donors who attended the service and who agreed to participate in the research. Donors were approached while they waited in the waiting room, after identification and before the call for clinical screening, carried out by a professional nurse or doctor.

The instrument contained 32 questions, among which, the following were addressed in this study: sex, age group, education, history of donation, reason for current donation, motivation due to serological tests (HIV, syphilis, hepatitis B, hepatitis C), confidence in serological tests, knowledge about places to perform serological tests and knowledge about disease transmission through transfusion.

Some specific questions were asked only for those who were repeat donors, considering their perceptions about prior clinical screening: questioning by the professional responsible for screening about risk behaviors and situations to which the candidate could have been exposed; omission of a possible vulnerability / risk condition by the candidate; reason for its omission (if the answer to the previous question was affirmative); whether the candidate identified the opportunity to make his self-exclusion confidential; and it was decided to self-exclude it



from previous clinical screening.

The collected data were tabulated and submitted to statistical analysis, using the Statistical Package for Social Science for Windows software (SPSS Statistics, version 19, from IBM). Univariate exploratory analyzes were performed, the results of which were expressed by means of tables, with absolute and relative frequencies for each variable, as well as synthesis measures (mean and standard deviation). Then, bivariate analyzes were performed, using Pearson's chi-square test to investigate dependency relationships between covariables, considering a significance level of 5%. In this way, it was possible to characterize the profile of the blood donor population of the Herbert de Souza Hemotherapy Service, HUPE / UERJ.

In compliance with Resolution No. 466/2012, which supports respect for human dignity and special protection for participants in scientific research involving human beings, the present study was submitted to and approved by the Research Ethics Committee of the Pedro Ernesto University Hospital, with opinion No. 1,813,949, in the year 2016. The donation candidates who accepted to participate

voluntarily in the research were duly clarified about their objectives and signed the Free and Informed Consent Form (ICF).

### Results and Discussion

Of the 400 respondents, 228 (57%) were female, 295 (73.8%) were under 39 years old and 233 (58.3%) of the participants had an education level from incomplete higher education. The mean age was 32.99 ( $\pm$  SD 12.09), with a median of 30.5, and range from 17 to 68 years. Most respondents were 286 repeat donors (71.5%). Regarding the motivation to donate, 219 (54.8%) considered themselves spontaneous donors. However, 144 (36.0%), a relevant number of participants, took an interest in the donation to obtain serological test results (HIV, syphilis and hepatitis B and C), with 353 (88.2%) declared that they fully trust their results, and 267 (66.8%) said they were unaware of which health units could perform them. As for knowledge about the transmission of blood transfusion infections, 239 (59.8%) considered it possible (Table 1).

**Table 1.** History, motivation for donations and knowledge of the voluntary donor about the risks of transmission of diseases by transfusion, from the Hemotherapy Service HUPE / UERJ. Rio de Janeiro, RJ, Brazil, 2018-2020

Variable	n=400	%
<b>Donation History</b>		
First time	114	28,5
Repetition	286	71,5
<b>Reason for Donation</b>		
Friend or family request	107	26,8
Summoned by the blood bank	13	3,2
Campaign driven	56	14,0
Being a voluntary donor	219	54,8
Did not answer	5	1,2
<b>Motivated to donate because of serological tests</b>		
Yes	144	36,0
No	250	62,5
Did not answer	6	1,5
<b>Full confidence in the results of serological tests</b>		
Yes	353	88,2
No	47	11,8
<b>Knowledge about units for exams</b>		
Yes	133	33,2
No	267	66,8
<b>Knowledge about transmission of transfusion infections</b>		
Yes	239	59,8
No	103	25,7
Do not know	58	14,5

Bivariate analyzes were performed between the dichotomous independent variables sex (female / male) and donation history (first-time donor / repeat donor), and the following outcomes: donation history, motivation for donation, motivation for interest in results of serology, confidence in serological tests, location of exams and knowledge about blood disease transmission. They presented differences with a significance level of 5% ( $p < 0.05$ ): motivation for donation and knowledge about units for testing (for the variable sex); and motivation for donation and full confidence in serological tests (for the donation

history variable - first time donor / repeat donor).

It was found that, among the 219 people who declared spontaneous motivation, there is a predominance of women over men (61.6%,  $p = 0.04$ ) and repeat donors tend to have more spontaneous motivation compared to first-time donors (81.3%,  $p < 0.01$ ). Of the 133 who claim to know the units for testing for STIs, it is women who tend to have greater knowledge, compared to men (73.7%,  $p < 0.01$ ). Of the 353 who claim to have full confidence in the results of serological tests, repeat donors tend to be more confident than first-time donors (73.7%,  $p$ -value  $< 0.01$ ).



As for questions regarding the experience of clinical screening, answered only by the 286 candidates who were repeat donors, that is, only those who had already undergone previous clinical screening, 190 donors (66.4%) reported having been asked about possible situations of vulnerability or risk and only 16 (5.6%) admitted to having

omitted personal risks to make the donation; 13 (4.5%) did so because they fully trust the results of serology. Among these donors, 47 (16.4%) declared that they had observed the offer of confidential self-exclusion in screening, and 10 (3.5%) opted for the same (Table 2).

**Table 2.** Questions about the volunteer donor's perception of the experience of clinical screening, Hemotherapy Service HUPE / UERJ. Rio de Janeiro, RJ, Brazil, 2018-2020

Variable	n=286	%
<b>Questioning about behaviors and situations of vulnerability / risk in clinical screening</b>		
Yes	190	66,4
No	59	20,6
Do not remember	36	12,6
Did not answer	1	0,4
<b>Omission of personal risks in clinical screening</b>		
Yes	16	5,6
No	254	88,8
Do not remember	16	5,6
<b>Perception of the opportunity for self-exclusion in clinical screening</b>		
Yes	47	16,4
No	111	38,8
Do not remember	128	44,8

Among the participants, the majority were female, agreeing with a study carried out in Brasília, which also identified a higher prevalence of females<sup>8</sup>, however, contrasting another study on the profile of the blood center of Tubarão-SC, which pointed to a higher prevalence of males<sup>9</sup>. Regarding the age group, young people under 39 years old predominated; another research also agree with these findings<sup>10-12</sup>. Regarding the level of education, the highest percentage was from incomplete higher education, which can be justified because the blood bank in question is located close to a University pole; however, the literature opposes these results, since in most studies the highest percentage of candidates usually have completed high school. In the public blood center in Recife, 47.7% of respondents had completed high school<sup>13</sup>. In another study carried out with a group of people unable to undergo clinical screening in a blood center located in the city of Santo Ângelo / RS, of the 505 records analyzed, 48% of the respondents had completed high school<sup>14</sup>. The same finding was also found in the blood bank of Hospital Santa Cruz in Rio Grande do Sul<sup>15</sup>.

Most donors were repeated, in a blood center in São Paulo, in a sample of 407 donors, 56.0% repeat donors were observed<sup>16</sup>, other blood centers also agreed with these findings<sup>10,17</sup>. However, according to data from the National Health Surveillance Agency (ANVISA), considering that approximately 3.8 million donors were evaluated by hemotherapy services, a higher percentage of first-time donors was found (42.8%)<sup>18</sup>. It is believed that repeat donors have less vulnerability and risk for the transmission of infectious diseases, in addition to a lower percentage of refusal in clinical screening; since the candidate has already been approved previously, the chance of refusal tends to be less than in the first donation<sup>19</sup>.

Regarding the motivation to donate, most candidates were spontaneous donors, but when asked about their interest in results of serological tests, a large percentage admitted that this was a motivation to donate. In Ceará, in a survey of 50 loyal donors, 44% were motivated to donate out of solidarity<sup>20</sup>. In the same scenario, there was a qualitative research, in which 12 donors highlighted that, among the determining factors in the decision to donate blood, are solidarity, replacement, benefits and curiosity<sup>21</sup>.

In a study carried out in Santa Catarina, for those approved in pre-screening, hematological screening, and clinical screening, 80.4% were spontaneously motivated donors and no one reported donation due to the expectation of performing laboratory tests on their health status<sup>19</sup>. In another study, carried out in Portugal, on the reasons that would lead university students to donate blood, almost all stated that they would appear in cases of an urgent appeal (98%), or if a family member or friend needed it (68%)<sup>22</sup>.

A significant percentage of the respondents stated that they fully trust the results of the serological tests and reported that they do not know which health units could perform them. In a survey conducted in Ribeirão Preto / SP, among donors who admitted to having omitted facts in the interview, 36.6% justified the omission by fully trusting the results of serological tests. Regarding the knowledge about the health units available to carry out the tests, 68.9% of the donors declared they had no knowledge of where they could have access to them. This research highlighted the importance of reflecting on the need to develop more effective ways of disseminating such information, through short videos or even advice. As for the knowledge of the risks of transmission of diseases by transfusion, 87.7% said they knew this possibility<sup>23</sup>.

All donated blood must be rigorously tested for infections that can be transmitted through the blood,



however there is a period called the immunological window, which is the time it takes for the infected organism to produce antibodies that can be detected through tests; However, it is possible to transmit the infection through transfusion, even during this period<sup>24</sup>. Therefore, although donation candidates know that infections can be transmitted through transfusion, many have declared that they fully trust the results of serological tests, when in fact there is no guarantee that their results will bring total security to the transfusion process.

In the survey, most of the donation candidates identified having been asked about possible risk behaviors and situations that could lead the participant to be refused during the clinical screening. However, few participants claimed to have omitted some of their responses. A study carried out in the Blood Center of Fortaleza / CE, highlighted some of the main reasons for refusal of candidates for donation in clinical screening: sexual intercourse with more than three partners in the last 12 months and sexual intercourse with an unknown partner in the last 12 months<sup>1</sup>. Thus, it is understood that there was questioning about risk behaviors and situations, although the participants' perception of such questions was not addressed.

In another survey already mentioned, carried out in Ribeirão Preto / SP, 99 (93.4%) donors stated that they had been asked about situations of increased risk in the clinical screening interview and 41 (38.7%) admitted to having omitted personal risks during the interview<sup>23</sup>. For this reason, during clinical screening it is necessary for health professionals to be increasingly discerning and responsible for solving any doubts and identifying possible flaws in donor compression, so that they can understand when they are asked about vulnerabilities and situations that may bring risk to third parties with your donation and minimizing gaps in communication between professional and donor.

In this research, many candidates were unaware of the confidential self-exclusion process and few candidates opted for it, corroborating the study findings of a research that considered a 10-year period in Uberaba / MG, obtained 4,776 (2.72%) discarded blood bags due to the self-exclusion vote; an association between loyalty and self-exclusion was also observed, suggesting that greater loyalty contributes to a reduction in self-exclusion<sup>17</sup>. In a blood center located in Palmas / TO, 370 (3.5%) donors self-excluded<sup>7</sup>. In this sense, other studies have linked the issue of the self-exclusion vote as an important marker for possible serological changes, to reduce the risks inherent in blood transfusions, considering the possibility of the individual being in a period of immunological window and the error estimated in serological tests. However, there is still a lack of clarification from the donor about questions about the self-exclusion

vote. The service must be careful not to stigmatize the self-excluded donor for lack of understanding of the vote, in addition to understanding the reasons that lead some donors to self-exclude from specific donations<sup>25</sup>.

In Brazil, there is little literature available on donors' knowledge and perception about the clinical screening process. This study proposed to point out the deficits in knowledge and understanding about the clinical screening process and to expose the possible risks that may be caused to recipients, in relation to the transmission of infections through transfusion.

## Conclusion

From this study, it is concluded that most of the donation candidates considered themselves volunteers, however many stated interests in the results of serological tests; they fully trusted their results; they were unaware of health units where they could be carried out; but claimed to be aware that infections can be transmitted through transfused blood.

The study reveals deficits in the knowledge, clarification and understanding of the candidates on the issues addressed in the clinical screening, such as the identification of the questioning about risk behaviors and situations and the right to vote for confidential self-exclusion. It should be noted that health education actions on the topic are still necessary, so that the donor understands that he should not donate in search of the results of serological tests, with these being available in basic health units and anonymous testing centers, in addition to the need for further clarification about factors such as the immunological window and the estimated error for diagnostic tests.

For change to occur in the current scenario, one of the alternatives would be health education that spans elementary and high school, addressing the needs, reasons and importance of blood donation, in addition to the issues of vulnerability that pertain to the theme. It is necessary for health professionals to be trained and qualified and hemotherapy units to be effective in the entire donation process, considering clinical and serological screenings, and enabling a safer transfusion process. Nursing professionals are of paramount importance in the blood donation process, since they establish a closer relationship with the donors, and they must minimize all the gaps between what he guides and what the donor understands.

The relevance of understanding the donor's perception and understanding of the donation process and clinical screening is highlighted, these being subsidies for planning strategies and actions for better understanding, in addition to proposing new studies on the topic.

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