

Blood Donors Profile at the Blood Transfusion Regional Center Tulear, Madagascar

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Abstract

Introduction: One way to find solution to blood donation insufficiency to establish the profile of donors. No study has been performed on blood donors at the regional blood center of Tulear. Our aim is to determine their profile and their exclusion patterns to develop an action plan.

Materials and Methods: The new regional blood center is working since five years. We analyzed all record of blood donors in the center between February and August 2015. The data was processed on EPI data 7.

Results: The male gender accounted for 83.7% of donors against 16.4% for female with an average age of 31 years. Family or replacement donors were 96.4%. We excluded 21.5% of them during our study, because of low hemoglobin levels, health problems found during the donation, sexual risk behaviors, taking medications within 72 hours of donation, sexually transmitted diseases especially syphilis and non-compliance with the time interval between two blood donations respectively 11.5%, 6.5%, 1.6%, 0.8%, 0.5%, 0.3%.

Conclusion: Donors were essentially donor replacements. They have been excluded because of their low hemoglobins levels.

Keywords: Blood Donors; Transfusion; Exclusion; South West Madagascar

Introduction

Blood transfusion is a medical act involving two main actors, donors and recipients. Donors may be volunteers, family or replacement. The donations of these last ones

are destined to the needs of their family [1]. Donors take an important role in transfusion safety because they constitute a potential risk of transmitting infectious diseases to recipients. They must also be protected against possible adverse effects caused by donation that

could affect their health, such as anemia [2]. Therefore they must meet certain criteria before being selected [3]. On the one hand the blood transfusion center ensures the safety of the recipients / donors and on the other hand it must address the problem of insufficient donation in relation to the demand for blood. To meet these responsibilities, our objective is to determine the profile of blood donors in the regional blood transfusion center in the southwest region of Madagascar and their reasons for exclusion.

Materials and Methods

We carried out a prospective descriptive transversal study within the Regional Center of Blood Transfusion of Tulear. We included all blood donors from October 2018 to April 2019 during which the dosage of hemoglobin was performed systematically. Each donor has a record consisting of a screening questionnaire, a result of the clinical examination at the time of donation, results screening tests for sexually transmitted infections such as HIV, HBV, HCV, or syphilis and the result of capillary haemoglobin levels. The parameters analyzed were gender, age, type of donor (volunteer donors or replacements), capillary haemoglobin level, results of the clinical examination selection criteria and the four serologies. The apparatus for the determination of hemoglobin was Hemo Control (EKF - diagnostic GmbH). The tests used for HIV, HBV, HCV and syphilis were rapid diagnostic tests, represented respectively by DETERMINE, HEPA-SCAN, flavicheck and RPR. The specificity for the DETERMINE, HEPA-SCAN, flavicheck and RPR test is respectively 99.87%, 99.37%, 99.5%, 99%. The sensitivity for these four tests is 100% each. Donor exclusion criteria were hemoglobin less than or equal to 11g / l for both genders, risk behaviors, taking medication for 72 hours prior to donation, health problems present at the clinical examination and the positive serology at least to one of these four sexually transmitted infections. The data was analyzed on EPI info 7.

Results

We had 591 donors during our study period. Blood donors are represented mainly by male subjects with 83.7% (n = 493) versus 16.44% (n = 97) for female subjects. The sex ratio was 5.09. The average age was 31 years old. 65.7% (n = 388) of them were under 35 years old and 34.2% (n = 202) were between 36 and 60 years old. Volunteers accounted for 3.5% (n = 21) of the donors and 96.4% (n = 569) were replacement or family donors. After selection, 21.4% (n = 127) of donors were excluded,

where 89% of whom were. The main reason for exclusion of these donors was low hemoglobin. These different exclusion factors are shown in Table 1.

Exclusion reasons	Efficient	Percentage
Low hemoglobin level	68	11.5%
Health problem at the time of donation	39	6.5%
Sexual behavior at risk	10	1.6%
Drug taken during the 72 hours	5	0.8%
Sexually transmitted infections	3	0.5%
Blood donations too close	2	0.3%
TOTAL	127	21.4%

Table 1: The reasons for exclusion of blood donors.

Health problems at the time of donation were: hypotension, dermatitis, colds, abdominal pain, urinary tract infection, dental abscess, fever. Sexually transmitted infections are represented exclusively by a positive RPR test.

Discussion

The profiling of blood donors allows to develop or to re-evaluate the action plan within the blood center to address insufficient blood donation compared to the demand and to adhere the WHO strategies on blood donation. In our study, the prevalence of male gender among replacement donors is consistent with national data [4] as well as with other literature data [5]. By contrast, donor women were less numerous compared to other countries [6]. Physiological factors such as the menstrual cycle, pregnancy, breastfeeding favored women's abstinence from blood donation despite women being more generous and more willing than men [7]. In addition to these physiological factors, women also had much more post-donation reaction such as fatigue, vagal reactions, or hematoma at the point of collection [8] but we had none of these post-donation reactions. To exploit this generosity, sensitization should be carried out to educate them and explain them that these physiological factors should not prevent them from donating blood. Donors are mainly represented by a young population under 35 years of age, there were 65.7% at the national level [4] and in African countries [9]. There are any paid donors in the center and the pool of volunteer donors is still low compared to other countries [10] hence the WHO goal is not fully achieved [11]. Replacement donors accounted for 96.4% of donors, yet they are more likely to expose infectious risks [12], while voluntary donors provide transfusion safety [13].

After subjecting them to selection criteria, 21.4% were excluded in which 89% were temporarily excluded. The exclusion rate is high compared to other countries [14]. It is related to the high number of replacement donors in our study. The temporary exclusion makes difficult for these potential donors to return for another donation after a certain period [15]. These replacement donors were considered lost. In front of their importance, they should be sensitized to be part of the pool of volunteer donors. This awareness is also to inform them of the selection criteria so that they do not come to the center as long as they have one of these exclusion criteria.

The main reason for exclusion is variable, as it is in other countries, mainly hemoglobin [16]. This low level of hemoglobin is common to all populations in developing countries because they are prone to parasitic diseases, malnutrition but also to hematological diseases including sickle cell disease which are factors of decrease in the rate of hemoglobin [17]. This low hemoglobin level necessitated an extension of the donation sensitization theme such as systematic deworming and systematic screening for certain hematologic diseases responsible for chronic anemia.

For the analysis, we used a precise recommended device with good sensitivity and a low coefficient of variation to avoid the falsely low hemoglobin to limit the elimination of donors [18]. Our national blood transfusion policy has set donors with a hemoglobin level of ≥ 11 g / dl. If we kept the hemoglobin level of the donors according to the French Blood Establishment, our exclusion rate for low hemoglobin level would have doubled. The hemoglobin level ≥ 11 g / dl is therefore justified for not to worsen the lack situation. Moreover, anemia only appears with a hemoglobin level of 9 - 10 g / dl in healthy people [19]. To reduce the risk of transmission of transfusion-transmissible infections, we have adopted blood quality control strategies using rapid diagnostic tests and strict selection of donors based on criteria established by the National Blood Transfusion Center and based on WHO recommendations [20]. From these criteria, we found that risk behavior was the third most important reason for excluding donors if for other authors it was in second place [16]. This variation may be related to the type of questionnaire applied in each transfusion center. With regard to transfusion-transmissible infections, the main infections found were syphilis, the seroprevalence of which was still low compared with other studies [21]. This may be related to the sensitivity of the reagent used for screening, which is

100% or, at best, pre-test questionnaires that may already eliminate potentially infected donors.

Conclusion

The knowledge of the donors profile may partly explains the lack of blood in the transfusion center. It also makes possible to mention that the resolution of this problem is still a long-term task and concerns not only the health system but also and above all the economic system because the main reason for exclusion found was the low hemoglobin level especially related to the poverty of the population, in this case it would be necessary to improve the standard of living of the population in general. Since replacement donors were an infectious risk, it is important to increase awareness among youth and men to become volunteer donors, but also to awaken the generosity of women.

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