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RESEARCH ARTICLE

SOCIO-DEMOGRAPHIC PROFILE AND FACTORS RELATED TO BLOOD DONOR RETENTION: THE CASE OF THE OMAR BONGO ONDIMBA REGIONAL HOSPITAL OF MAKOKOU (CHROBOM), IN THE NORTH-EAST, GABON

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Abstract

Objective: In order to implement a targeted strategy during communication campaigns, this study defines the socio-demographic profile of blood donors and the factors that can promote their loyalty to blood donation in the northeast region of Gabon.

Material And Methods: This descriptive cross-sectional study was conducted from March to September 2021 and enrolled 252 blood donors with a mean age of 29.6 ± 7 years, ranging from 19 to 51 years. After an interview based on a pre-established pre-donation questionnaire, each donor deemed suitable underwent a sampling that was then analyzed through an infectious workup and a blood count (CBC). Data collected from the questionnaire were entered into a spreadsheet in Excel 2016 and processed with R software in its R Commander interface and results were considered significant if $p < 0.05$.

Results: Using Pearson's Chi-square test of independence, this study indicated an association between blood donation and many sociodemographic parameters. Thus, being a former donor was statistically associated with firstly male gender, secondly being a parent, thirdly having a job, and finally being 30 years or older. Multinomial logistic regression analysis was able to establish that: Being a parent, Having a job and Being male, increased the probability of being a faithful blood donor.

Conclusion:. The profile of the blood donor at the Omar Bongo Ondimba Regional Hospital of Makokou corresponds to; A man of about 30 years old, single, unemployed, with at least one child coming for a family type donation and the factors of loyalty to blood donation are; the male sex, the status of worker and that of being a family member.

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Introduction:-

Blood donation is considered an expression of solidarity and a civic duty of the (healthy) donor towards the (sick) recipient and contributes to saving lives. The WHO recognizes three types of blood donors: voluntary unpaid donors, donors for a family member/compensation and paid donors [1]. Some countries determine by law the ethical principles on which blood donation is based; these are voluntary, unpaid and anonymous [2]. Thus, the notion of "donation" and "remuneration" cannot be compatible because, since blood is an integral part of the body, its trade would constitute an ethical problem and would undermine human dignity [3]. Blood donation must therefore be carried out according to well-defined strategies and criteria, aimed at recruiting voluntary and unpaid donors, giving them all the necessary information they may need, and finally, being able to retain them [4].

In some regions of the world, there is still a low participation (10%) of women in blood donation. This gives a male character to blood donation. In contrast to older people, there is a high participation of young people (under 35 years) in blood donation campaigns [1]. In order to increase the number of blood donors and to increase their loyalty, some countries in the world encourage studies based on a better understanding and capture of donor motivations [5-6]. Unfortunately, these types of studies are very little conducted in sub-Saharan Africa, hence the lack of reliable data and information in our countries. However, it has been established that a better knowledge of blood donors contributes to their loyalty [7]. However, the concepts of blood transfusion and donation are known in more than half of the population and many people would even be willing to donate if they were more aware of this [8,9], hence the need to communicate.

In Gabon, blood donation is an act that is most often voluntary, made in the interest of the recipient, even if it is not always voluntary, it remains anonymous in some parts of the country, and is mostly practiced in a family setting. In an activity report, the National Blood Transfusion Center (CNTS) indicated that of all donations made in 2019, 70% of blood donations were family donations and 30% were voluntary. This difference explains the difficulty of supplying blood products at the national level [10]. The problem of recruiting and retaining voluntary donors is a problem that sometimes leads to stock-outs in certain remote areas of the country such as Makokou, the capital of the Ogooué-Ivindo province. The consequences of this shortage are often disastrous, and are the cause of many deaths among applicants [11]. This is the case of postpartum delivery hemorrhage, which is the leading cause of maternal mortality [12]. In order to save lives, an immediate blood supply is necessary. This is not often the case, justifying the deaths [13]. In order to increase the recruitment and retention rate of blood donors, a census and a better awareness of blood donors are necessary. It is therefore important to study the socio-demographic characteristics and motivations of voluntary, anonymous blood donors in order to implement targeted communication campaigns if this goal is to be achieved. It is in this context that this study was undertaken to define the profile and socio-demographic characteristics associated with blood donors in the North-East region of Gabon, mainly in the city of Makokou, and to identify factors that may make them more loyal to donating when solicited or not.

Materials and Methods:-

Study Location

This descriptive cross-sectional study was conducted from March to September 2021 at the Omar Bongo Ondimba Regional Hospital of Makokou. This service handles all aspects inherent to transfusion, from blood donor recruitment to the distribution of safe blood. We used mixed methods including qualitative and quantitative tools.

Study population and inclusion criteria

The participants in this study were individuals, regardless of sex, nationality and ethnic origin, who were former donors or new donors, received for a blood test and donation at the medical analysis laboratory of the Omar Bongo Ondimba regional hospital in Makokou (CHROBOM), and who had given their verbal and written consent to participate in this study.

Exclusion criteria

Any donor who did not have a usable telephone contact or who did not correctly complete the questionnaire was excluded, as well as those whose names were on a laboratory blacklist, those who exhibited risky behavior, anemic

individuals, individuals under 18 years of age, individuals weighing less than 50 kg, pregnant, menstruating, or breastfeeding women were excluded from the study.

Different stages of blood donation

he first step, called pre-donation, consisted of a verification of the donor's identity in the "black list" database and the survey was carried out using a pre-donation questionnaire including different variables such as the socio-demographic characteristics of the donors (sex, age, marital status, profession, number of children, type of donation), recorded in a database. This survey generally lasted between 4 and 5 minutes, depending on the type of donation, which was either family donation, i.e., the donor was a relative of the recipient (patient), or voluntary donation, i.e., the donor was either a friend of the recipient's relative (patient), or a stranger who had been approached.

Blood collection and analysis

A small amount of venous blood was first collected for analysis by performing tests such as a complete blood count (CBC), microfilaria testing, and serological testing for HIV, Hepatitis B, Hepatitis C and BW. As described elsewhere [14]. Following a negative infectious workup and a normal blood count, the patient was sampled in the amount required.

Statistical analysis of the data

The data collected through the questionnaire forms were entered and processed in the Excel 2016 spreadsheet. The R software (version 4.1.1.) with the R commander interface was used for statistical analysis with Chi-square tests, one-factor Anova, multinomial logistic regression. Results were considered significant when $p < 0.05$.

Results:-

Socio-demographic characteristics of blood donors

A total of 252 blood donors, including 206 old donors (81.74%) and 46 new donors (18.26%), were collected for this study. With a sex ratio M/F of 8.69, women were poorly represented, almost 9 times less than men. The average age of the donors was 29.6 ± 7 years, ranging from 19 to 51 years. The majority of donors were under 30 years of age (51.2%). 79.4% of donors were single, 17% were cohabiting, 2% were engaged and 7% were married. 91% of donors were unemployed, followed by 86% students and 75% workers. 174 (69.1%) donors had more than one child and there were more family-type donations with 238 (94.4%), than voluntary-type donations with 14 (5.6%) (Table 1).

Table 1:- Sociodemographic characteristics of study blood donors (n=252).

Characteristics	Total Numbers (%)	Previous donors n (%)	New donors n(%)
Gender			
Male	226 (89.7)	189 (83.6)	37 (16.4)
Femal	26 (10.3)	17 (65.4)	9 (34.4)
Age			
< 30 years	129 (51.2)	96 (74.4)	33 (25.6)
≥ 30 years	123 (48,8)	110 (89,4)	13 (1.,6)
Marital status			
Single	200 (79,4)	161(80,5)	39 (19,5)
Cohabiting	43 (17,0)	37 (86)	6 (14)
Engaged	2 (0,9)	1 (50)	1 (50)
Married	7 (2,7)	7 (100)	0 (0)
Occupation			
Student	86 (34,1)	58 (67,4)	28 (32,6)
Unemployed	91 (36,1)	76 (83,5)	15 (16,5)
Working	75 (29,8)	72 (96)	3 (4)
Number of children			
No children	78 (30,9)	53 (68)	25 (32)
≥ 1 child	174 (69,1)	153 (88)	21 (12)
Type of donation			

Family	238 (94,4)	192 (80,6)	46 (19,4)
Voluntary	14 (5,6)	14 (100)	0 (0)

Correlation between blood donor status and some socio-demographic parameters

The chi-square test showed an association of the parameters age, sex, number of children and employment status with donor status with a p value < 0.05, unlike the other parameters where p > 0.05 (Table 2).

Table 2:- Parameters associated with blood donor status (n=252).

Parameters	**Modalities**	**Former donors (%)**	**New donors (%)**	**p-value**
Age	≥ 30 years	43.7	.,1	0,002
	< 30 years	38.1	13.1	
Number of children	No children	21.0	10.0	0.0001
	≥ 1 child	60.7	8.3	
Type of donation	Family	76.2	18.3	0.08
	Voluntary	5.5	0	
Gender	Male	75.0	14.7	0.02
	Female	6.7	3.6	
Marital status	Single	63.9	15.5	0.2
	Cohabiting	14.7	2.4	
	Engaged	0.4	0.4	
	Married	2.7	0.0	
Occupation	Student	23	11	10^{-5}
	Unemployed	30,2	6	
	Employed	28,6	1.2	

Correlation between blood donor status, number of children and age

The difference in age between old and new donors was significantly different (p < 0.05) unlike the number of children which showed no difference between the two groups (Table 3). Older donors were older in our population.

Table 3:- Differences in age and number of children according to donor status (n=252).

Parameters	Former donors **(**Mean±Ec-T)	(New donors (Mean±Ec-T)	**P-value**
Age	30,5 ± 7,2	25,4 ± 6,8	2.10^{-5}
Number of children	2,3 ± 2,4	1,6 ± 2,4	0.09

Factors that may influence the status of a former donor who can be retained

The parameters that influenced the blood donor in our study to return for a next donation, or factors predictive of blood donor retention, were identified through logistic regression analysis. Thus, male gender increased the likelihood of donor retention by 4 times (p=0.005). For the worker, this factor increased by about 8 times the possibility of retaining a donor (p=0.006). Being a parent increased the possibility of returning to donate by about 3 times (p=0.02). Age did not influence the possibility of returning to donate blood, despite being male with a child and a job. Table 4

Table 4:- Predictive factors for blood donor retention at the Omar BONGO Regional Hospital in Makokou (n=252).

Variables	**Category**	**Crude OR**	**Adjusted OR**	**IC95%**	**p-value**
Gender	Male	2,7	4,10	1,15 – 6,34	0.005
Occupation	Worker	7,7	7,95	2,7 – 21,9	0.006
Age	-	2,91	0,86	1,48 – 5,74	0.79
Number of children	≥ 1 child	3,44	2,77	1,82 – 6,51	0.02

Discussion:-

The study involved 252 blood donors who came to the Regional Hospital of Makokou between March and September 2021 with a high male prevalence and an average age of 29.6 ± 7 years. As reported elsewhere, the low representation of women in blood donation is frequent [15-16]. This result may be simply due to contraindications such as anemia, pregnancy, breastfeeding or menstrual period related to blood donation in women [6]. In our study, the age group under 30 years was representative of the population, this result is very similar to that reported by [16, 17,18]. This was explained by the high representation of youth in the local population of the city of Makokou. The frequency of family donors was 94.4% in our study, this result is very close to that reported by other studies which indicated 98% of the donor population [16,19]. This could be explained by various reasons, including lack of information about blood donation, fear of knowing one's HIV status [20], lack of conviction in voluntary blood donation, fear of needles or unavailability [7]. The authorities must work together with the different blood bank units to encourage voluntary donation. Indeed, many studies have reported that voluntary donors are less risky than family donors [20,21]. Our study is in agreement with another, which observed that the number of former donors was higher among the employed than among the unemployed and students, and that former donors were more numerous than new donors [22]. Performing a Pearson Chi-square test showed an association between former blood donor status and age range ≥ 30 years. This result, although different from that reported in other studies conducted in Africa [23,24], is probably related to the fact that donors in this age range were more available because they were no longer in school. The number of children and gender showed an association with being an ex-donor. An association was thus established between the characteristic of being a former donor and being a parent, or being male [9,10]. This result is justified by the fact that while there are many restrictions for blood donation in women, men are much more free and therefore eligible and being a parent increases the possibility of donating.

To define the different factors influencing a donor to return, a logistic regression analysis allowed us to observe a confirmation of the results obtained thanks to the Pearson Chi-square test. With the exception of age, which despite an association, had no influence on the possibility of the donor to return for a next donation. This can be explained by the fact that as long as the donor is in good health, his or her age has no influence on the quality of the elements that make up the blood. This result is different from that reported elsewhere [17,25]. In our study, male gender increases the likelihood of a donor returning for another donation by about 4 times, as reported in a study conducted in Nigeria [10], this result is different from work done elsewhere which indicated that the likelihood of returning to donate blood was not influenced by gender [26]. As has been shown by some studies elsewhere, the results of this study indicate that occupation greatly influences the likelihood of a donor returning to donate. Thus, people with a job are 8 times more likely to return to donate [17].

Conclusion:-

This study shows a clear evolution in blood donation, but much remains to be done. The people with a high probability of loyalty are men, parents, and workers. Thus, the profile of the blood donor at the Makokou regional hospital is "A man of about 30 years old, single and unemployed with at least one child, who comes for a family-type donation. This study gives us a better visibility on the populations to target in the framework of an information campaign to increase the loyalty of blood donors in order to solve, if not the entire shortage of blood products, at least part of the problem of the blood bank unit. There is a need to increase the donation rate among women, which is still almost 9 times lower than among men. Targeted awareness raising with students, the unemployed and those who do not yet have children. The results of this study will allow the Gabonese health authorities not only to increase donor awareness, but also to recruit new donors and build their loyalty through blood donation campaigns.

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Interests
The authors declare that they have no interests.

Authors' contribution
The data reported in the study were available to all authors who contributed equally to the preparation, writing, and proofreading of this manuscript.

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