(RESEARCH ARTICLE)

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Blood Donation: Beliefs And Perceptions in Western Cameroon

DJOKO Ernest [1,*], KAPCHE Belviane [2], SIMO Josué [2] and FOTSING KWETCHE Pierre Réné [3]

[1] Laboratory of Galenic pharmacy, Faculty of pharmacy, Université des Montagnes –Bangangté, Republic.of Cameroon.
[2] Laboratory of Hematology, Faculty of pharmacy, Université des Montagnes –Bangangté, Republic of Cameroon.
[3] Laboratory of Bacteriology, Faculty of pharmacy, Université des Montagnes –Bangangté, Republic of Cameroon.

Abstract

The need for blood and blood products is universal, but access to them is a major public health issue, particularly in low- and middle-income countries such as Cameroon, where demand far exceeds supply. Blood donation practices vary around the world, which affects the availability of blood when needed. These differences are partly due to the different beliefs and perceptions that populations have about blood donation. This study was initiated with the aim of contributing to improving the availability of blood in health facilities in western Cameroon by assessing the beliefs and perceptions that people in this region have about blood donation. This was a descriptive cross-sectional study conducted from November 20, 2023, to June 7, 2024, in five selected health facilities and among the population of the city of Bangangté. It included people aged 18 to 65 who were encountered at the time of the survey and who gave their free and informed consent. Data were collected using a pre-established questionnaire. Statistical analysis was performed using statistical tools provided by Excel 2016. 400 participants were recruited, and the results show that: the predominant gender was female (55.2%); 72.3% of participants were between 18 and 35 years of age; 52.8% of them were single. University and secondary education levels were the most represented, with 47.8% and 46.8% respectively. The assessment of knowledge, perceptions, and beliefs showed that in the study population, 34% had good knowledge about blood, 49% had good knowledge about blood donation; 71% had good beliefs, as they believed that blood donation saves lives, and 74.5% had good perceptions and believed that it is a humanitarian or civic act. The main barriers to blood donation identified were the misconception that blood is sold after donation (23%), fear of needles (20.5%), and fear of disease transmission (16.2%). Taking into account these different beliefs, perceptions, and barriers to blood donation provides advantage for implementing a policy to improve voluntary blood donation.

Keywords: Blood donation; Beliefs; Perceptions; Barriers

1. Introduction

Blood donation is the voluntary transfer of blood or blood components by a person for therapeutic purposes [1]. This activity therefore depends on voluntary, unpaid donors; it is based on the principles of anonymity, voluntariness, and altruism. There are three types of blood donation: voluntary unpaid donation, family donation (which may be replacement or directed), and paid donation [2]. The type of donation is an important factor because of its direct impact on the transfusion safety of the recipient and even the safety of the donor.

Blood donations are used in many emergency medical procedures, and an adequate blood supply is an essential part of any health service. In addition, hospital blood banks responsible for maintaining an adequate blood supply rely on the voluntary and active participation of the public in blood donation. However, in the literature, most studies on blood donation practices report that it is mostly family-oriented in developing countries and anonymous in developed countries [3]; this situation influences, first, the timely availability of blood and, second, transfusion safety. This

* Corresponding author: DJOKO Ernest

difference could be due in part to the different beliefs and perceptions that populations have about blood donation. Indeed, in the literature, blood is considered in some communities as an object of socio-cultural representations [4]. Some authors report that in Africa, blood has a paradoxical dimension in that it carries the soul, personality, or character of the individual; it symbolizes the feeling of belonging to a family or community [5]. According to other authors, blood retains symbolic aspects despite scientific treatment and medical use. In Cameroon in particular, cultural and religious diversity could lead to perceptions, representations, and beliefs that may influence the availability of blood in hospitals.

Cameroon has only 10% voluntary donors, compared to 90% family or directed donors [6]. Furthermore, between 2016 and 2022, the number of blood bags collected annually rose from 70,000 to 147,000 according to the National Blood Transfusion Program, which remains insufficient as the number of blood bags needed annually is estimated at 400,000 [7]. The result is multiple deaths each year, with pregnant women, children, and road accident victims being the most affected. In West Cameroon in particular, blood needs were estimated at 34,756.19 bags in 2016, compared to 2,961 bags collected in the same year, resulting in a significant difference; Coverage of needs was only 8.41% [8]. Thus, in 91.59% of cases, the lives of people requiring blood transfusions were put at risk in this region [9]. Given the increase in life expectancy, which will be followed by an increase in demand, it is therefore imperative and necessary to anticipate future situations in the field of blood transfusion, and this requires the recruitment and retention of a sufficient number of donors. It is necessary to understand the beliefs and perceptions that influence the behavior of adult voluntary and unpaid blood donors. The purpose of this study is to contribute to improving the availability of blood in health facilities in western Cameroon by assessing the beliefs and perceptions that the populations of western Cameroon have about blood donation through their experience and lived reality, which will enable the implementation of effective strategies to motivate donors and reduce barriers to blood donation.

2. Methodology

2.1. Study population

This cross-sectional, descriptive study targeted the population of the town of Bangangté and patients admitted to five health facilities in the West Region: Bangoua Protestant Hospital, Bangangté District Hospital, "Cliniques Universitaires des Montagnes", Kouekong Regional Hospital Center, and Foumban Regional Annex Hospital. These health centers were chosen for their accessibility, location, attendance, quality of care, and the good reputation and renown they enjoy among the populations of West Cameroon.

The study covered the general population aged between 18 and 65 who attended the selected hospitals between November 20, 2023, and June 7, 2024. It also included all people in the same age group encountered during the same period in the town of Bangangté.

The study included individuals aged 18 to 65 encountered at the time of the survey who agreed to cooperate by signing the informed consent form in the city of Bangangté and in the targeted health facilities. Individuals who were unable to complete the questionnaire were excluded from the study.

2.2. Data collection tool

The informations was collected using a questionnaire containing 34 questions on: sociodemographic characteristics, knowledge about blood, knowledge about blood donation, perceptions of blood donation, beliefs about blood donation, factors preventing blood donation, and personal recommendations regarding blood donation.

Other studies were used as a basis for the design of this survey form, notably those by Aoulou in 2013[10], Salaudeen et al in 2011[11], and Doumbia in 2021[12], supplemented by a few questions specific to the current context.

2.3. Data collection procedure

- -Within hospitals

After obtaining ethical clearance from the institutional ethics committee of the "Université des Montagnes" and research authorizations from the management of the recruiting institutions, the study followed the following procedure:

- o Contacting participants;
- o Presentation of the study and its purpose by the principal investigator;
- o Distribution of the survey and consent form;

- o Signing of the consent form and completion of the survey form by each participant;
- o Registration of each participant with the assignment of an anonymous code number;
- o Return of the questionnaires in person.
- o The meeting with participants took place in various hospital departments; a presentation of the study was given before participants were asked to take part.
- • -Within the community of the town of Bangangté

After obtaining ethical clearance from the institutional ethics committee of the Université des Montagnes and research authorization from the prefect of the department of Ndé, the study proceeded as follows:

- o Contacting participants;
- o Distributing the survey and consent form;
- o Signing of the consent form and completion of the survey form by each participant;
- o Registration of each participant with assignment of an anonymous code number;

Meetings with participants took place in gathering places such as markets and places of worship.

2.4. Ethical considerations

The study did not involve any human manipulation; the dignity of the interviewees was protected by the anonymity of their responses. The questionnaires were kept secret to ensure confidentiality. In accordance with medical ethics, the various research authorizations were obtained before the start of the work; they were made available to the Ethics Committee of the University of the Mountains with a copy of the research protocol and then to the management of the hospitals concerned with letters requesting consent.

2.4.1. Data processing and analysis

Software used

Data management (compilation, quality control, and coding) and graphing were performed using Microsoft Excel 2016 software. Categorical variables were described using frequencies. A 95% confidence level was accepted for statistical analyses, and significance was set at P values less than 0.05.

Data rating

- • -Definition of operational terms

Knowledge: this refers to having a relevant idea or being informed about something, knowing that it exists. It constitutes all the information acquired by individuals on a given subject.

Beliefs: This refers to adherence to ideas, opinions, and values without rational, empirical, or theoretical evidence leading to the development and adoption of the beliefs in question [13].

Representations: These could be defined in general terms as "the idea we have of...", also referred to as common sense or naive knowledge. This form of knowledge is distinguished, among other things, from scientific knowledge [13].

- • -Knowledge rating grid on blood

The data was rated by assigning scores based on variables. Table 1 specifies the scores based on the variables.

Table1 Data rating

		Points	**Percentages**
Blood knowledge	Insufficient	0 à 3,4	0 à 49
	Sufficient	3,5 à 4,9	50 à 75
	good	5 à 7	76 à 100
	Insufficient	0 à 2,9	0 à 49

Knowledge bout Blood donation	Sufficient	3 à 4,9	50 à 75
	good	5 à 6	76 à 100
Representations	Insufficient	0 à 1,9	0 à 49
	Sufficient	2 à 2,9	50 à 75
	good	3 à 4	76 à 100
Beliefs	Insufficient	0 à 1,9	0 à 49
	Sufficient	2 à 2,9	50 à 75
	good	3 à 4	76 à 100

The questionnaire consisted of seven questions about blood. Each correct answer was worth one point and each incorrect answer was worth zero points. The maximum number of points was seven, corresponding to 100%. There were six questions about blood donation, with one point for each correct answer and zero points for each incorrect answer; six points corresponded to 100%. For representations, there were four questions, each worth one point; thus, four points corresponded to 100%. For beliefs, there were also four questions, each worth one point, so that four points corresponded to 100%.

3. Results

The survey analyzed information obtained from 400 people who met the inclusion criteria. The results were presented sequentially.

3.1. Socio-Demographic Characteristics Of Participants

The analysis of the questionnaires highlighted gender, age group, educational level, marital status, religion, department of residence, religion, and profession. The results obtained are presented in Tables II.

Table 2 Distribution of participants according to their sociodemographic characteristics

	Modalities	Number (n)	Frequency (%)
Gender	Female	221	55,2
	Male	179	44,8
Age	18-25 years	167	41,8
	26-35 years	122	30,5
	36-45 years	67	18,8
	46-65 years	44	11
Educational level	Primary	21	5,2
	Secondary	187	46,8
	University	191	47,8
	No Level	1	0,2
Marital status	Single	211	52,8
	married	184	46
	widowed	5	1,2
Religion	Christian	338	84,5
	Muslim	25	6,2
	Jehovah's Witness	18	4,5

	Animist	19	4,8
Occupation	Housewife	35	8,8
	Worker	133	33,2
	Civil Servant	44	11
	Student	134	33,5
	Medical Staff	54	12,6
Division of residence	Mifi	95	23,8
	Ndé	215	53,8
	Noun	90	22,3

Participants were aged between 18 and 65. Women predominated, accounting for 52.2% of participants; more than half of participants (72.3%) were aged between 18 and 35. The majority of participants had a university education (47.8%) and were single (52.8%). The department with the highest representation was Ndé. Christian participants were the most represented in terms of religion; in terms of socio-professional status, students and pupils were the most represented.

3.2. Assessment of levels of knowledge, perceptions, and beliefs.

3.2.1. Assessment of knowledge levels

Table 3 presents the results of the assessment of knowledge levels about blood, blood donation, beliefs, and perceptions about blood donation.

Table 3 Assessment of levels

		Number (n)	Frequency (%)
Level of Knowledge about blood	Insufficient	91	22,8
	Sufficient	173	43,2
	Good	136	34
Level of knowledge about blood donation	Insufficient	19	4,8
	Sufficient	185	46,2
	Good	192	49
Level of beliefs about blood donation	Insufficient	11	2,8
	Sufficient	105	26,2
	Good	284	71
Level of perceptions about blood donation	Insufficient	42	10,05
	Sufficient	60	15
	Good	298	74,5

In accordance with the rating procedure described above, the number of points awarded was grouped into three levels (insufficient, sufficient, and good).

In terms of participants' knowledge of blood, only 34% had a good level of knowledge. However, only 4.8% had an insufficient level of knowledge about blood donation. 71% of participants had good beliefs about blood donation, and 74.5% had good representations.

3.2.2. Knowledge about blood

Data relating to participants' knowledge about blood are summarized in Figure 1.
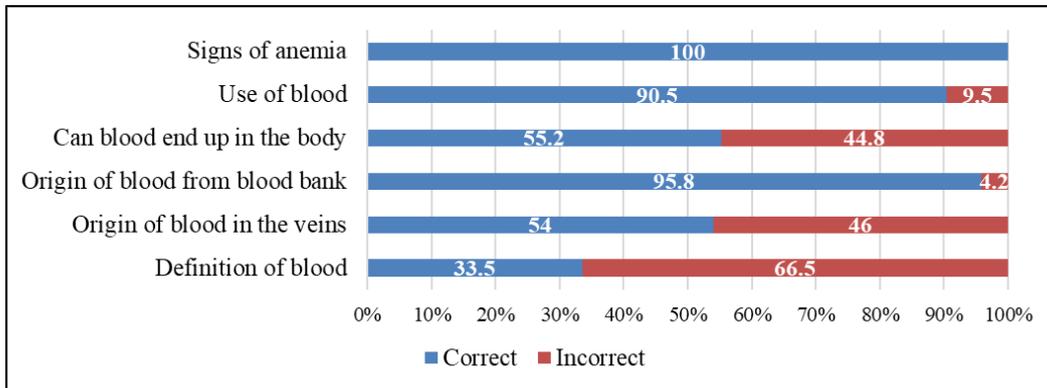
Figure 1 Distribution of participants according to their knowledge about blood

The data from Figure 1 show that:

- -Knowledge about the definition of blood is incorrect among 66.5% of participants;

However:

- -Knowledge about the origin of blood in the body is correct among 54% of participants;
- -Knowledge of the origin of blood in blood banks is correct among 95.8% of participants;
- -Knowledge of the uses of blood in general is correct among 90.5% of participants;
- -Knowledge of the signs of anemia is correct among all participants.

3.2.3. Knowledge about blood donation

The level of knowledge of the data relating to participants' knowledge about blood donation is presented in Figure 2.
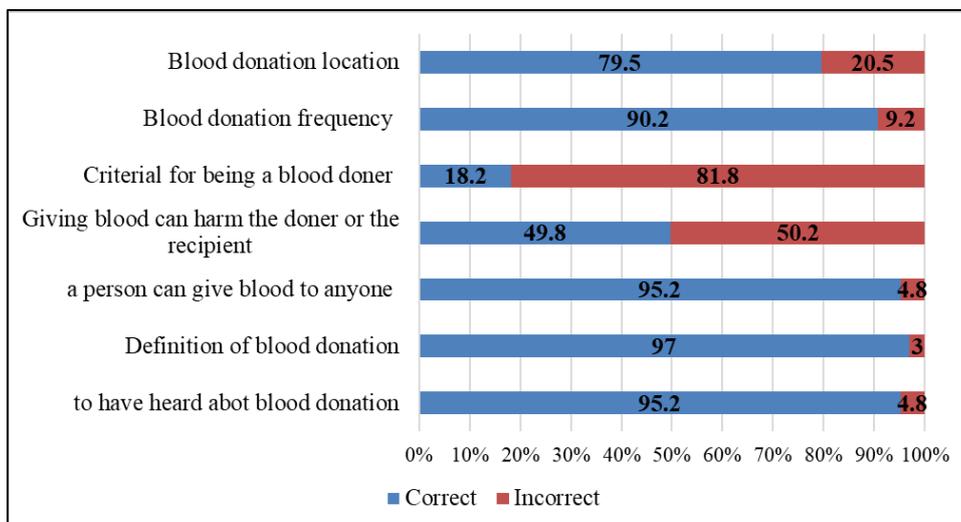

Figure 2 Distribution of participants according to their knowledge of blood donation

Figure 2 shows that:

- 95.2% of participants have heard of blood donation;

- 97% of participants know what blood donation is;
- 95.2% know who receives blood donations;
- 90.2% of participants know how often blood donations are made;
- 79.2% of participants know where to donate blood;

However:

- 50.2% of participants believe that blood donation can harm the recipient or the donor;
- 81.8% are unaware of the criteria for becoming a blood donor

3.2.4. Beliefs about blood donation

Data on participants' beliefs about blood donation are summarized in Figure 3.
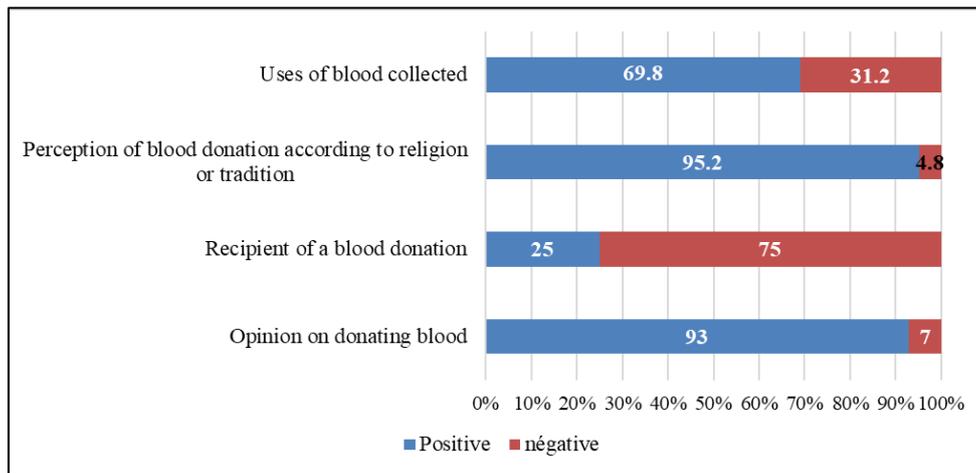

Figure 3 Distribution of participants based on their beliefs about blood donation

Figure 3 shows that 75% of participants do not have a positive belief about the destination of the collected blood;

On the other hand:

- 93% have a positive belief about donating blood
- Beliefs about donating blood are positive among 93% of participants;
- Beliefs about the perception of blood donation according to religion or tradition are positive among 95.2% of participants;
- Beliefs about the use of donated blood are positive among 69.8% of participants.

3.2.5. Representations of Blood Donation

The analysis of data relating to participants' representations about blood donation yielded the results summarized in Figure 4.
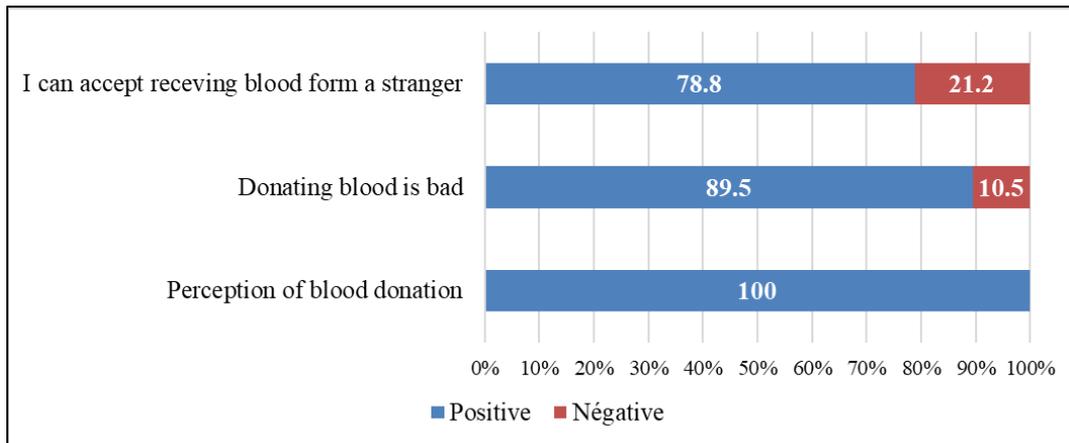
Figure 4 Distribution of participants according to their perceptions of blood donation

The data from Figure 4 allow to distinguish that among the participants' perceptions of blood donation:

- Perceptions of blood donation are positive among all participants;
- Perceptions of whether blood donation is bad or not are positive among 89.5% of participants;
- Perceptions of being able to accept blood from a stranger are positive among 78.8% of participants.

3.3. Barriers to blood donation

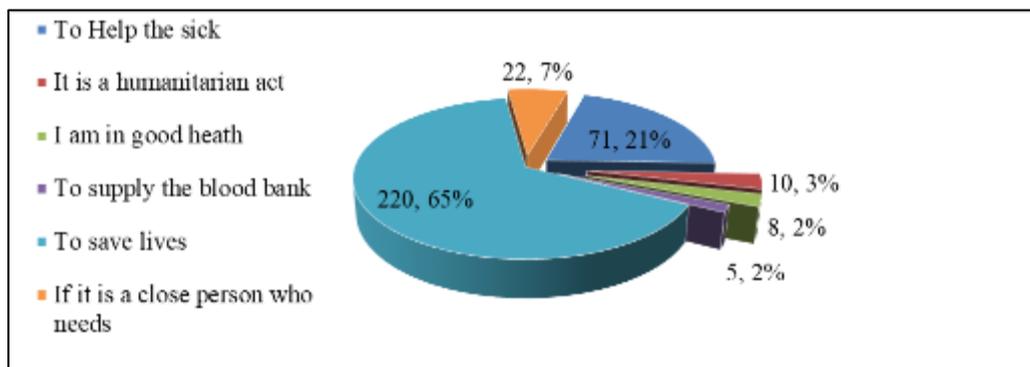Figure 5 summarizes the various reasons that may motivate people to donate blood.

Figure 5 Distribution of participants according to their motivation for donating blood

The data in this figure shows that the majority of participants (65%) justify their willingness to donate blood by the desire to save a life.

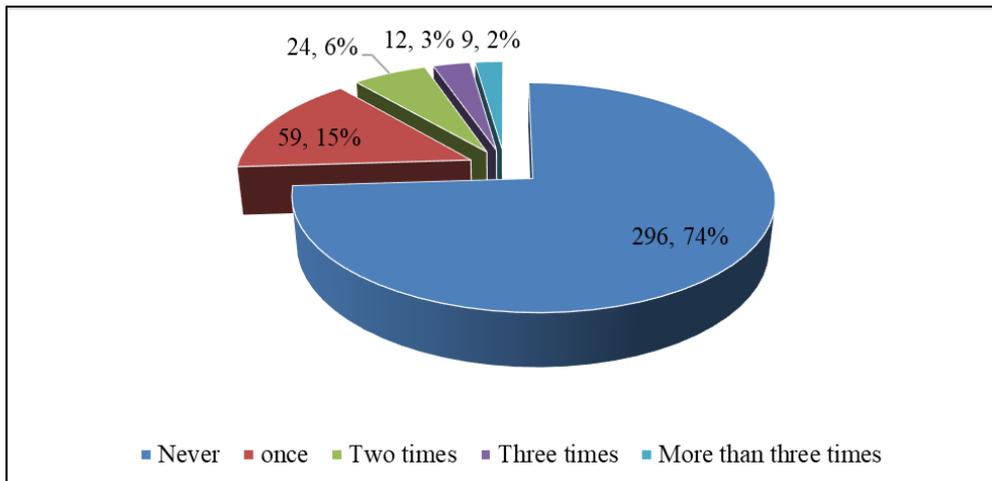The frequency of blood donations is shown in Figure 3.

Figure 6 Distribution of participants according to frequency of blood donation

As shown in Figure 6, of the 400 participants, more than half had never donated blood, and the majority of those who had donated had done so only once.

Participants gave many reasons to justify their refusal to donate blood. The most salient of these reasons were extracted, grouped, and presented in Figure 7:
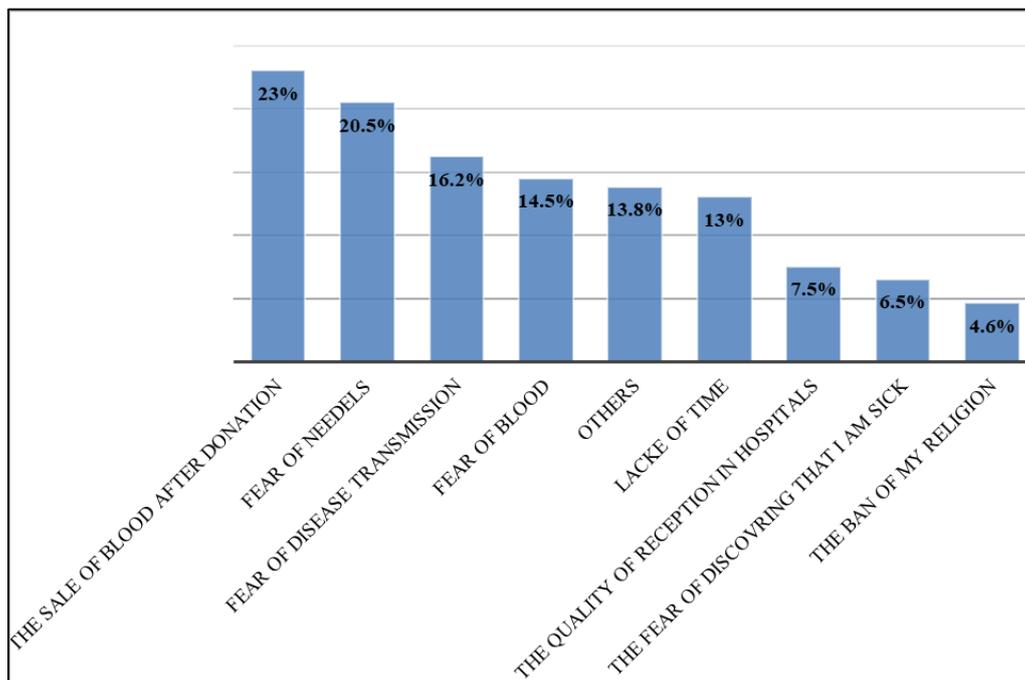

Figure 7 Barriers to blood donation

The data collected in Figure 7 show that six reasons are the main barriers to blood donation for at least 80% of participants. Among these, the sale of blood after collection, fear of needles, and fear of disease transmission were of concern to more than 50% of participants.

3.4. Analysis of socio-demographic characteristics associated with blood donation

The analysis of socio-demographic characteristics associated with blood donation is presented in Table 4.

Table 4 Analysis of socio-demographic characteristics associated with blood donation

Variables		Blood Donation			
		Yes (N = 104)	No (N = 296)	OR (IC$_{95\%}$)	P value
Gender	F	49 (47,1%)	172 (58,1%)	Ref	
	M	55 (52,9%)	124 (41,9%)	0,64 [0,41;1,01]	0,054
Age	18-25	24 (23,1%)	143 (48,3%)	Ref	
	26-35	36 (34,6%)	86 (29,1%)	0,40 [0,22;0,72]	0,002
	36-45	25 (24,0%)	42 (14,2%)	0,28 [0,15;0,54]	<0,001
	46-65	19 (18,3%)	25 (8,45%)	0,22 [0,11;0,46]	<0,001
Educational Level	Primary	8 (7,69%)	13 (4,39%)	Ref	Ref
	Secondary	45 (43,3%)	142 (48,0%)	1,94 [0,76;4,98]	0,182
	University	0 (0,00%)	140 (47,3%)	1,69 [0,66;4,31]	0,285
	No Level	8 (44,44)	1 (0,34%)	. [.;.]	0,636
Marital Status	Single	45 (43,3%)	166 (56,1%)	Ref	Ref
	Married	57 (54,8%)	127 (42,9%)	0,60 [0,38;0,95]	0,030
	Widowed	2 (1,92%)	3 (1,01%)	0,41 [0,07;2,51]	0,368
Department of residence	Mifi	32 (30,8%)	63 (21,3%)	Ref	Ref
	Ndé	46 (44,2%)	169 (57,1%)	1,87 [1,09;3,19]	0,025
	Noun	26 (25,0%)	64 (21,6%)	1,25 [0,67;2,33]	0,488
Religion	Catholic	41 (39,4%)	121 (40,9%)	Ref	Ref
	Protestant	40 (38,5%)	109 (36,8%)	0,92 [0,56;1,53]	0,759
	Pentecostal	10 (9,62%)	17 (5,74%)	0,58 [0,24;1,36]	0,219
	Muslim	3 (2,88%)	22 (7,43%)	2,48 [0,71;8,74]	0,145
	Jehovah's Witness	5 (4,81%)	13 (4,39%)	0,88 [0,30;2,62]	0,802
	Animist	3 (2,88%)	8 (2,70%)	0,90 [0,23;3,57]	0,858
	Others	2 (1,92%)	6 (2,03%)	1,02 [0,20;5,24]	0,973

Table 4 shows that:

- There is a significant link between the department of Ndé and blood donation (p value = 0.025; OR (95% CI = 1.87 [1.09; 3.19]). This value indicates that participants residing in the Ndé department are 1.87 times more likely not to donate blood.
- There is a significant link between secondary education level and blood donation (p value = 0.285; OR (95% CI = 1.94 [0.76; 4.78]). This value indicates that participants with a secondary education level are 1.94 times more likely not to donate blood;
- There is a significant link between the Muslim religion and blood donation (p value = 0.145; OR (95% CI = 2.48 [0.71;8.74]). This value indicates that participants who are Muslim are 2.48 times more likely not to donate blood.

4. Discussion

The aim of this study was to describe the socio-demographic characteristics of the people encountered during the survey, to assess their knowledge, perceptions, and beliefs about blood donation, and to identify barriers to blood donation.

The results show that women made up a relatively large majority of the population, with a participation rate of 55.2%. This could be explained by the high number of women visiting the hospitals included in the survey for various reasons, such as consultations or to care for sick relatives [14]. Furthermore, women represent more than 50% of Cameroon's population [15].

The predominant age group was 18 to 35 years old, with a frequency of 72.3%. This result reflects the Cameroonian population, which is predominantly young [20]. Furthermore, people in this age group are the most active, even outside the home (work or studies) [16]. This result is similar to that found by Aoulou in 2013 [10], where the most represented age group was 17 to 30 years old, with a frequency of 92.3%.

In terms of marital status, single people were the most numerous (52.8%). This correlates with the 18–35 age group.

47.8% of the population had a university education and 46.8% had a secondary education. The presence of several secondary schools and universities in the West Cameroon region could explain these rates.

Workers and students/pupils were the most represented, with 33.3% and 33.5% respectively. A similar study conducted by Doumbia in 2021 in Bamako [12] found 34.9% of workers and 19.51% of students and pupils.

In terms of knowledge about blood, the definition of blood was incorrect in 66.5% of cases; the origin of blood in the body and in blood banks was correct in 95.8% of cases; participants had a good understanding of the uses of blood in general and the signs of anemia. The level of knowledge about blood was good among 34% of participants. This result is lower than that of Aoulou, who in 2013 observed a good knowledge of blood among 59.71% of participants in Chad [10]. Overall, therefore, blood seems to be poorly understood despite its importance in medical practice.

Regarding the content of their knowledge levels about blood donation, 95.2% had already heard of blood donation; the definition of blood donation was correct among 97%. the recipient of a blood donation was known to 95.2% of participants; the frequency of blood donation was correct among 90.2%; the location for donating blood was correct for 79.2%; the fact that blood donation can harm the recipient or donor was incorrect for 50.2%; the criteria for being a blood donor were incorrect for 81.8%. Overall, the level of knowledge about blood donation was good for 49% of participants. This could be the result of various awareness campaigns already implemented among our populations, as given the difference between blood supply and demand, Cameroon makes it a point of honor to raise awareness among the population about blood donation. This result is lower than that of Salaudeen et al. in Nigeria, who observed that 61% of all respondents had a good knowledge of blood donation. This difference could be explained by the fact that the respondents in the other study were exclusively students.

The assessment of beliefs regarding blood donation revealed that 93% of the population believe that it is an act that saves lives and is perceived by 95.2% of them as a sign of generosity and sharing in their religion or tradition. This could be justified by their degree of altruism and their awareness of the importance of blood donation in medical practice. These results are similar to those obtained in a study conducted in Zimbabwe by Nyambiya et al in 2022[17], which reported that beliefs about blood donation were "donation saves lives," "it is a social and religious responsibility."

For 75% of participants, the recipient of a blood donation is a family member or close relative. Such beliefs reflect a lack of understanding of one of the fundamental principles of blood donation, which is anonymity between the donor and the recipient. This helps to explain the frequency of family donations in healthcare facilities [6].

The majority of participants (69.8%) believe that donated blood is used for blood transfusions. This positive belief could serve as a starting point for motivating potential donors to give blood [18]. However, 31.2% of them believe that donated blood is sold to patients or used for mystical rituals. This information is similar to that reported by Nyambiya et al. in 2022 [17], who found that certain cultural and religious beliefs discourage blood donation and that charging for donated blood is demotivating. This proves the existence of misconceptions about blood donation among the population.

The assessment of perceptions of blood donation shows that all participants had a positive view of blood donation, considering it a humanitarian and civic act. This information differs from that found by Mbang et al in 2023[4] in the locality of Kompina in Cameroon, where blood was symbolically associated with cultural affiliations within which it is not given to strangers. This difference could be explained by the fact that Cameroon is a country with great cultural diversity. Furthermore, according to Owona et al [8], the Grass Field region of Cameroon has a strong altruistic and humanitarian perception of blood donation.

The fact that blood donation is bad or not is positive for the majority of participants (89.5%), and the fact of being able to accept blood from a stranger is validated by 78.8% of participants. These results are similar to those found in a study conducted in France by Ambroise et al [19], where participants had a very broad understanding of blood donation. This could be explained by the fact that most participants believe that blood donation saves lives.

The main barriers to blood donation among the populations surveyed in this study were mainly the idea that their blood would be sold after donation (23%), fear of blood (14.5%), fear of needles (20.5%), and fear of disease transmission (16.2%). These findings are similar to those of a study conducted by Aoulou in 2013[10] on knowledge, attitudes, and practices regarding voluntary blood donation among the population of N'Djamena, where the barriers were fear of blood (30.4%), fear of needles (24.3%), fear of viral transmission (21.41%), and the sale of blood (9.9%). However, they differ from those found in a similar study conducted by Doumbia in 2021[12] on the population's perception of blood donation in Bamako, where the main barriers were lack of information (29.46%) and lack of time (22.22%). These results could be explained in our context by misconceptions about the blood donation process and misconceptions about how viral diseases are transmitted within the population. Although health facilities are public or private services with a budget, the collection, packaging, processing, and storage of blood donated free of charge has a cost that is entirely covered by the facility[6]. Blood collected free of charge from donors undergoes biological testing to ensure the safety of the donor, the blood bag, and the patient who will receive it. Regarding fears of disease transmission during collection, health facilities must reassure the population that sterile instruments are used for blood collection, which prevents the risk of viral transmission. Information on how blood is collected must also be provided to the population to ensure that they understand that professionals carry out the collection.

Other reasons, such as religious groups, were also a barrier to donation (4.6%). This result is similar to that found by Aoulou [10], where religion was a barrier to blood donation for 5.7% of participants. It would therefore be important to inform people about misconceptions they believe to have been derived from religion, because according to Garraud, 2009 [13], all religious denominations are in favor of blood donation except Jehovah's Witnesses, who base their beliefs on biblical passages that, according to them, prohibit them from consuming or spilling the blood of others because the soul of every being is found in the blood.

5. Conclusion

The present study aimed to assess the knowledge, perceptions, and beliefs of populations in western Cameroon about blood donation and to identify barriers to blood donation among these populations. The assessment of the knowledge, perceptions, and beliefs of the population revealed that among the 400 participants, 34% had good knowledge about blood, 49% had good knowledge about blood donation, 71% had good beliefs, and 74.5% had good perceptions. Participants to justify their refusal to donate blood voluntarily cited several barriers; participants' suspicion about the sale of blood bags after donation (23%), fear of needles (20.5%), and fear of disease transmission (16.2%) were the main barriers. This highlights the importance of including a module in educational programs for training in the field of blood to inform the population about the blood donation process (collection, processing, blood transfusion) and its health benefits. A large number of participants (84%) are willing to donate blood voluntarily. These individuals represent an opportunity for health facilities, which should consider approaches to transform their attitudes and perceptions into actual voluntary blood donation practices.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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