



FÉDÉRATION ALGERIENNE DE PHARMACIE

Disponible en ligne sur

ASJP
 Algerian Scientific Journal Platform

<https://www.asjp.cerist.dz/en/PresentationRevue/436>


ORIGINAL ARTICLE

Factors influencing blood donation among Algiers citizens

Les facteurs influençant le don de sang chez les habitants d'Alger

Oussama Tadjeddine DAHMANI^{1*}, Karima TERRAK¹,
Lilia FELLA¹, Djamel El Harb DJOGHLAF²

¹ Faculty of Pharmacy - University of Algiers 1

² Faculty of Medicine - University of Algiers 1

KEYWORDS

Blood donation;
The theory of planned
behaviour;
Intentions;
Motives and deterrents.

Abstract

Introduction: Since blood is essential to life, and the decision to donate blood can save lives, the spontaneous and periodic donation is critical. In contrast, traditional methods of recruitment have a trivial effect on attracting and retaining donors. The enduring need for an adequate and reliable supply of safe blood has led to the exploration of psychosocial factors that may predict the probability of blood donation behaviour. The main goal of our study is determining Algiers citizens' motives and deterrents for blood donation and assessing their intentions towards donating.

Methods: This study is an ambidirectional qualitative study. A survey using a multi-section anonymous questionnaire based on The Extended Theory of Planned Behaviour was conducted during the period ranging from February 2022 to June 2022. Data was processed using a statistical software.

Results: The total sample consisted of 385 respondents with a sex ratio of 35:100 (M/F) and ages ranging from 16 to 69 years old.

30.1% of the population have already donated blood at least once. The most frequently reported motive for blood donation was altruism, whereas the most frequently stated deterrents were fears, lack of time, lack of information, lack of possibilities and health issues. 64.7% of the participants had positive intentions towards blood donation.

Conclusion: This study provided valuable insights into the psychosocial factors influencing blood donation behaviour among the population of Algiers.

© 2023 Algerian Federation of Pharmacy. All rights reserved.

MOTS CLÉS

Don de sang ;
Théorie du
comportement
planifié ;
Intentions ;

Résumé

Introduction : Le sang est essentiel à la vie et peut sauver des vies. Les dons spontanés et réguliers sont d'une importance cruciale. En revanche, les méthodes traditionnelles de recrutement ont un effet négligeable pour attirer et fidéliser les donneurs. Le besoin constant d'un approvisionnement adéquat et fiable en sang sûr a conduit à l'exploration des facteurs psychosociaux pouvant prédire le comportement envers le don de sang.

L'objectif principal de notre étude est de déterminer les motivations et les freins des habitants d'Alger envers le don de sang.

Motifs et facteurs de dissuasion.

Méthodes : Cette étude est une étude qualitative ambidirectionnelle. Une enquête basée sur la théorie étendue du comportement planifié a été menée à l'aide d'un questionnaire anonyme à plusieurs sections entre février 2022 et juin 2022. Les données ont été traitées à l'aide d'un logiciel statistique.

Résultats : L'échantillon total était composé de 385 répondants, avec un ratio hommes/femmes de 35/100. Les participants avaient entre 16 et 69 ans. 30,1 % de la population avaient déjà donné du sang au moins une fois. La motivation la plus fréquemment rapportée pour le don de sang était l'altruisme, tandis que les freins les plus souvent cités étaient la peur, le manque de temps, le manque d'information, le manque de possibilités et les problèmes de santé. Environ 64,7 % des participants avaient des intentions positives envers le don de sang.

Conclusion : Notre étude nous a permis d'obtenir des informations détaillées et précieuses sur les aspects psychosociaux de notre population et leurs intentions positives envers le don de sang.

© 2023 Fédération Algérienne de Pharmacie. Tous droits réservés.

* Auteur correspondant : O.T DAHMANI
Adresse e-mail : oussama.tadjeddine@gmail.com

Introduction

A blood transfusion is a procedure that can help replace blood lost due to surgery or injury. A blood transfusion also can help if an illness prevents your body from making blood or some of your blood's components correctly. This potentially life-saving procedure is made possible by the individuals donating their blood (whole blood or separated components) either voluntarily (unpaid by altruistic individuals), for a friend or a family member (replacement donors) or for a remuneration (paid donors) in some countries [1]. An adequate and reliable supply of safe blood can be assured by a stable base of regular, voluntary, unpaid blood donors; these donors are also the safest group of donors as the prevalence of blood-borne infections is lowest among this group [2]. The world has known a considerable rise in the demand for blood and blood products during the last decade and with it rose the shortage of said materials especially in low and limited-income countries just like Algeria [3]; due to the increased life expectancy [4] and the increasing complexity of surgical, haematological and oncological therapies. Several studies have concluded that the global demand for blood transfusions will continue to rise in the upcoming years [2,5,6] with only a small percentage of the population responding to the appeal for blood donation. Based on samples of 1000 people, the blood donation rate is 31.5 donations in high-income countries, 16.4 donations in upper-middle-income countries, 6.6 donations in lower-middle-income countries and 5.0 donations in low-income countries [2] and that rate is at 13.5 in Algeria [7]. Additionally, most new donors tend not to repeat this behaviour [8].

Since blood is essential to life, and the decision to donate blood can save lives, the spontaneous and periodic donation is critical [2]. In contrast, traditional methods – such as reminders and incentives – have only a small effect on retention [9]. The retention and motivation of active donors have thus been described as one of the major challenges for Blood Donor Services to secure the estimated demand for transfusions [10,11]. To enhance the recruitment and retention of blood donors using marketing strategies, it is also fundamental for collection centres to understand the aspects that stimulate individuals to donate blood, in addition to the ones that discourage them. This enduring need has led to the exploration of psychosocial factors that may predict the probability of blood donation behaviour [12]. The Theory of planned behaviour (TPB)[13] is a widely used theory of the proximal determinants of behaviour. The theory has proven to be efficient for explaining intentions, perceived behavioural control and attitude across health-related behaviour categories [14]. By the end of 2021, the key paper on the TPB [13] had received over 99k citations on Google Scholar. It has been widely applied in relation to a range of behaviours as evidenced by several meta-analyses in this area [15-17].

Blood donation appears as an important research topic in the area of social marketing since its strategies can contribute to attract and retain donors. In line with previous studies that have examined the relationship between personality and blood donation [18,19], the main goal of our study is to determine Algiers citizens' motives and deterrents for blood and assess their intentions towards that behaviour.

Materials and Methods

This is an ambidirectional qualitative study follows the normal distribution law.

Study Population and Recruitment Procedure

The study population included all those willing to answer all the questions in the survey's self-administered questionnaire (see annexe 1) presented to them either directly (paper format) or online (web format via Google form) who met the following criteria:

-Age: 16 or older.

-Territory: The study included the residents of Algiers exclusively.

Ethical consideration

Each participant was asked to participate voluntarily after they had been informed about the objective of the study. They had also been informed that the participation was voluntary in which the participants had full right to withdraw at any time. Confidentiality of the participants' information was kept throughout the research processes.

Sample size calculations

We chose the "Simple random sampling" as a sampling method. To ensure representativeness we calculated the sample size using the Cochran's formula [20] with a maximum error required of 5% and a level of confidence of 95%:

$$n = P (100-P) Z^2 / E^2$$

n is the required sample size

P is the percentage occurrence of a state or condition

E is the percentage maximum error required

Z is the value corresponding to the level of confidence required

Due to the fact that the 2008 General Census of Population and Housing (GCPH)[21] is the most recent GCPH available, we resorted to calculate an estimate size of the recent population using the average of Natural Growth Rates from 2008 to 2018: 2% [4]. The estimated number of the citizens of Algiers in 2021 is 3864210 citizens.

Using this formula, the required sample size was 385 participants.

Constructing the questionnaire

The questionnaire used in this study is a multi-section anonymous questionnaire based on a fusion of multiple versions of The Extended Theory of Planned Behaviour following the manual for health service researchers [22]. Also parts of it were inspired from previous researches [23,24]. The questionnaire was made in English and then translated to Arabic and French. The translation was approved by a translator.

The participants of the survey were asked to respond to the multiple choice questions (MCQs)

by indicating the alternatives that they believed were right and sometimes to give short explanations to their answers. The participants were also required to answer few open questions. The choice of the language was up to them.

The questionnaire was designed to assess:

- A. Socio-demographic information;
- B. Medical history and health habits;
- C. Prior donation history;
- D. Knowledge about blood donation, and transfusion safety;
- E. Blood donation behaviour and intentions, which were presented in 2 sections: non-donors only section and donor's only section;
- F. Personal reasons (benefits, motives and obstacles).

Data processing and analysis

During the period from February 2022 to June 2022, the self-administered questionnaire was published in all major Algiers city's Facebook groups using Google forms and distributed hand to hand to respondents in public spaces, blood centres, mosques, universities, and some national and private companies; along with an introduction and data security statement. To avoid an increased recall bias, we published it only once in each group and we only visited the same place once.

This procedure resulted in 474 valid answers to our survey from which we excluded 89 for not meeting the initial criteria hence we finally ended up with 385 fully valid answers.

The data was cleaned, edited and checked for completeness. Data was entered into Excel® 2013 software for data processing and analysis.

Results

Socio-demographic information

The total sample consisted of 385 respondents and was representative of the residents of Algiers. The participants mean age was 28.8 years (SD = 10.53), with ages ranging from 16 to 69 years. Slightly more than two thirds of the participants were females (74.0%) with a conventional sex ratio of 35:100 (M/F). The mean weight of the participants was 67.51 kg, with it extending from 37kg to 140kg and only 10.9% under 50kg. The average height 167.59cm shifting from 78cm to 196cm. Only 2.1% of the participants had no or the lowest formal education (Primary school), 4.4% had middle school education, 11.7% had a high school education, and 81.8% had higher education.

Approximately 57.4% of the participants were not employed mostly students 81.36% (N=207). From the employed participants (42.6%): 76.3% had a full time job, 23.7% had a part time job with most of them working a day time shift (79.8% day shift, 12% evening shift, 8.2% night shift). 75.8% of the

respondents reported that they were single, 22.1% were married, 1.6% divorced and 0.5% widowed.

Medical history and health habits

More than half of the participants reported no health issues or minor illnesses (60.8%). The rest of them reported various diseases Mainly Anaemia (13.5%), Asthma (8.9%).

Prior donation history

69.9% of our population never donated before and 30.1% have donated at least once in their lives. More results are detailed in (table1) and (figure1).

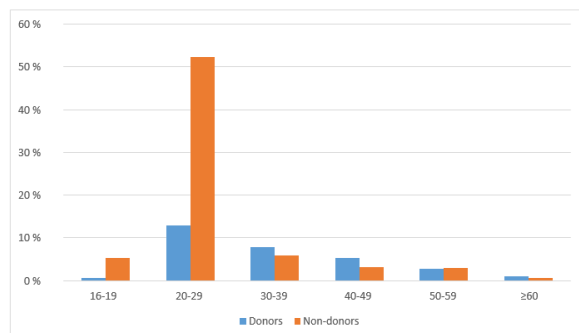


Figure 1: Donor to non-donor ratio by age group

Knowledge about blood donation, and transfusion safety

Responding to the question about the participants' blood type only one person (0.3%) did not know his blood type.

In order to assess the knowledge of the respondents, we asked them about the frequency of blood donations, volume collected in each donation, how long the whole process takes contraindications of blood donation and finally the journey of the donated blood in blood banks. Then we processed the results and calculated the percentage of correct answers. The results were the following: only 38.1% responded correctly to the questions, further examination showed that 37.4% of the non-donors and 39.8% of the donors had the correct answers.

Blood donation behaviour and intentions

Non-donor section

Roughly, half of the non-donors respondents (50.2%) reported that they are eligible to donate

blood, the rest of them either were not eligible (32.0%) from which 67.4% think that their health condition and habits is what makes them not eligible. The rest of the non-donor respondents (17.8%) did not know either way.

For the sake of determining the mouth to ear effect on non-donors, we asked them about knowing donors and what kind of experience they had (good or bad) but essentially if they think that they can be influenced by other people's experiences. What we established was only 34.9% feel that they could be influenced by it despite knowing donors or not. In addition, the majority of them anticipated that blood donation would be beneficial to their health (54.6%) and would have a positive psychological effect on them (58%).

The relationship between the anticipated effects of blood donations and intentions / conditions to donate and intentions are shown in (table 2).

After further analysis, we found out that the principal reason for the respondents not donating was because there was not an occasion to do so (47.6%) or because no one asked them to (6.3%). Their fears and aversions scored 24.2% and not having a reason to donate scored an 8.2%. The rest of respondents (21.9%) reported that it was because of their ineligibility.

For more elaboration, respondents were asked to choose what fears and/or aversions that might prevent them from donating in the future, they also were free to state any other fear that was not mentioned; the results were the following:

- 37.5% stated that none of the stated fears and aversions can prevent them from donating;
- 28.0% were worried about the asepsis at the collection centres and feared getting an infection;
- 21.6% feared needles;
- 13.1% feared pain;
- 10.8% feared blood;
- 5.2% were afraid of donating;
- 8.9% of them thought that their aversions to needles and blood are preventing them from donating.

Table 1: Self-reported retrospective (lifetime) blood donation behaviour according to gender and age.

	Non-donors			Donors			Total
	Never thought of donating	Thought of donating (but never did)	Deferred donors	One-time donor	Occasional donor	Regular donor	
Effective N (%)	269 (69.9)			116 (30.1)			385 (100)
	50 (13.0)	113 (29.4)	106 (27.5)	58 (15.1)	42 (10.9)	16 (4.1)	
Male N (%)	47 (47.0)			53 (53.0)			100 (100)
	13 (13.0)	26 (26.0)	8 (8.0)	25 (25.0)	18 (18.0)	10 (10.0)	
Female N (%)	222 (77.9)			63 (22.1)			285 (100)
	37 (13.0)	87 (30.5)	98 (34.4)	33 (11.6)	24 (8.4)	6 (2.1)	
16-19 y.o N (%)	20 (91.0)			2 (9.0)			22 (100)
	0 (0.0)	10 (45.5)	10 (45.5)	2 (9.0)	0 (0.0)	0 (0.0)	
20-29 y.o N (%)	202 (80.5)			49 (19.5)			251 (100)
	36 (14.3)	89 (35.5)	77 (30.7)	26 (10.3)	18 (7.2)	5 (2.0)	
30-39 y.o N (%)	22 (42.3)			30 (57.7)			52 (100)
	5 (9.6)	7 (13.5)	10 (19.2)	14 (26.9)	8 (15.4)	8 (15.4)	
40-49 y.o N (%)	12 (37.5)			20 (62.5)			32 (100)
	5 (15.6)	2 (6.3)	5 (15.6)	10 (31.3)	9 (28.1)	1 (3.1)	
50-59 y.o N (%)	11 (50.0)			11 (50.0)			22 (100)
	3 (13.7)	5 (22.6)	3 (13.7)	3 (13.7)	7 (31.8)	1 (4.5)	
≥60 y.o N (%)	2 (33.4)			4 (66.6)			6 (100)
	1 (16.7)	0 (0.0)	1 (16.7)	3 (50.0)	0 (0.0)	1 (16.6)	

Donor section

To the extent of categorising our 116 donors, we dedicated 2 complementary questions that resulted in the following table (see table 3).

We should note that 64.6% of the donors had donated at least once in the last 4 years (from 2019 to 2022).

Donors also were asked to report about the reason for their first donation, we decided to summarise as follows:

- 61.4% for altruistic reasons;
- 16.9% as replacement donors;
- 16.8% because a collection was organized at their place of work or study and the last 4.9% because it was organized near their homes.

Table 2: The relationship between the anticipated effects of blood donations and intentions / conditions to donate and intentions.

	Definitively no	Probably no	Rather no	Rather yes	Probably yes	Definitively yes	Total
Anticipated effects							
It is beneficial for my health N (%)	16 (10.9)	28 (19.0)	12 (8.2)	21 (14.3)	57 (38.7)	11 (8.9)	147 (100)
It is bad for my health N (%)	2 (22.3)	4 (44.5)	2 (22.3)	0 (0.0)	1 (11.1)	0 (0.0)	9 (100)
It is risky for my health N (%)	6 (24.0)	11 (44.0)	2 (8.0)	1 (4.0)	4 (16.0)	1 (4.0)	25 (100)
It has positive psychological effects for me N (%)	18 (11.7)	27 (17.5)	13 (8.4)	22 (14.3)	62 (40.3)	12 (7.8)	154 (100)
It has negative psychological effects for me N (%)	1 (14.3)	4 (57.1)	1 (14.3)	0 (0.0)	1 (14.3)	0 (0.0)	7 (100)
Other N (%)	2 (33.3)	1 (16.7)	0 (0.0)	1 (16.7)	2 (33.3)	0 (0.0)	6 (100)
Conditions to donate							
For personal need only N (%)	1 (20.0)	2 (40.0)	0 (0.0)	0 (0.0)	2 (40.0)	0 (0.0)	5 (100)
Only for family or important others N (%)	5 (20.0)	7 (28.0)	4 (16.0)	2 (8.0)	7 (28.0)	0 (0.0)	25 (100)
Only in case of disasters/emergency N (%)	5 (15.2)	9 (27.3)	1 (3.0)	3 (9.1)	13 (39.4)	2 (6.1)	33 (100)
No specific condition N (%)	26 (12.7)	39 (19.1)	15 (7.4)	31 (15.2)	78 (38.2)	15 (7.4)	204 (100)
Other N (%)	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100)

Table 3: Retrospective blood donation behaviour and intentions of blood donors.

	One time donor	Occasional donor	Regular donor	Total
I've donated before and I do not think I would donate again N (%)	13 (11.2)	3 (2.6)	0 (0.0)	16 (13.8)
I've donated before and I think I would donate again N (%)	45 (38.8)	21 (18.1)	3 (2.6)	68 (58.6)
I've donated regularly in the past but I have stopped N (%)	0 (0.0)	7 (6.0)	3 (2.6)	10 (8.6)
I've been donating regularly until now but I don't think I will continue doing so N (%)	0 (0.0)	3 (2.6)	1 (0.9)	4 (3.4)
I've been donating regularly until now and I think I will continue doing so N (%)	0 (0.0)	8 (6.9)	4 (3.4)	12 (10.3)
I am a loyal blood donor and a blood donor ambassador N (%)	0 (0.0)	0 (0.0)	6 (5.2)	6 (5.2)
Total N (%)	58 (50.0)	42 (36.2)	16 (13.8)	116 (100)

76.7% of the donors reported that they had a good experience and they recommended donation to other people. Although 15.5% had a good experience, they did not recommend donation. The remaining 7.8% had a bad experience, either because of fainting during the procedure or

because it was painful and took a long time for them but regardless, they did not recommend not donating.

At the end of this section, donors were asked if they were still eligible to donate, 71.3% responded affirmatively while 18.3% were not sure about

their situation and 10.4% believed that they were no longer eligible either for health reasons (9.5%) or because of their pregnancy (0.9%).

Intentions

Both non-donor and donor respondents were asked to score their intentions to donate in the next 12 months on a Likert Scale [25]. Results are presented in (table 4).

The personal reasons (benefits, motives and obstacles)

This final section presented questions designed to form an understanding of the mind-set of our

study population about the benefits, the motivating factors and the obstacles to blood donation. At the end of this section, we asked the respondents about their opinion about the measures taken by the government to promote blood donation. Results are presented in the following (table 5) and (table 6).

In addition to previous results, 89.2% of the non-donors and 82.8% of the donors believe that the measures taken by the government to promote blood donations are insufficient or even not existent.

Table 4: Self-reported blood donation intentions (12 months) in accordance with the retrospective blood donation behaviour.

donation behavior:

		Non-donors			Donors		
		Never thought of donating	Thought of donating (but never did)	Deferred donors	One-time donor	Occasional donor	Regular donor
Negative Intention	Definitively no N (%)	37 (13.8)			5 (4.3)		
		9 (3.3)	6 (2.2)	22 (8.2)	2 (1.7)	3 (2.6)	0 (0.0)
	Probably no N (%)	58 (21.6)			11(9.5)		
		14 (5.2)	25 (9.3)	19 (7.1)	9 (7.7)	1 (0.9)	1 (0.9)
	Rather no N (%)	21(7.8)			4 (3.4)		
5 (1.8)		10(3.8)	6 (2.2)	2 (1.7)	2 (1.7)	0 (0.0)	
Positive Intention	Rather yes N (%)	36 (13.4)			16 (13.8)		
		7 (2.6)	19 (7.1)	10 (3.7)	13 (11.2)	2 (1.7)	1 (0.9)
	Probably yes N (%)	100 (37.1)			54 (46.5)		
		12 (4.4)	50 (18.6)	38 (14.1)	27 (23.3)	25 (21.5)	2 (1.7)
	Definitively yes N (%)	17(6.3)			26 (22.5)		
3 (1.1)		3 (1.1)	11 (4.1)	5 (4.3)	9 (7.9)	12 (10.3)	
Total N (%)		269 (100)			116 (100)		

Table 5: Benefits of blood donation in accordance with the retrospective blood donation behaviour.

	Non-donors 269 (100)	Donors 116 (100)
Blood donor card N (%)	59 (21.9)	35 (30.2)
Financial compensation N (%)	5 (1.9)	1 (0.9)
Determination of the blood type N (%)	57 (21.2)	26 (22.4)
Health check/screening free of charge N (%)	116 (43.1)	53 (45.7)
Services or discount the donor receives N (%)	35 (13.0)	10 (8.6)
I don't know N (%)	114 (42.4)	40 (34.5)
Other N (%)	9 (3.3)	8 (6.9)

Table 6: Motivating factors, obstacles and benefits of blood donation in accordance with the intention to donate in the next 12 months / in accordance with past behaviour.

	In accordance with intentions		In accordance with past behaviour	
	Negative intentions	Positive intentions	Non-donors 269 (100)	Donors 116 (100)
Motivating factors for blood donation				
The possibility of needing blood donation in the future N (%)	44 (11.4)	96 (24.9)	101 (37.5)	39 (33.6)
Needing a blood donation in the past N (%)	14 (3.6)	21 (5.5)	18 (6.7)	17 (14.7)
A friend or a family member has received a blood donation in the past N (%)	26 (6.8)	51 (13.2)	54 (20.1)	23 (19.8)
Knowing that you could save human lives by donating N (%)	105 (27.3)	211 (54.9)	219 (81.7)	97 (83.6)
Being expected to donate blood by the community N (%)	12 (3.1)	32 (8.3)	25 (9.3)	19 (16.4)
Feeling the responsibility of donating blood N (%)	45 (11.7)	87 (22.6)	96 (35.7)	36 (31.0)
The importance of donating blood to you personally N (%)	30 (7.8)	62 (16.1)	59 (21.9)	33 (28.4)
Religious beliefs N (%)	33 (8.6)	69 (18.0)	67 (24.9)	35 (30.4)
Other N (%)	6 (1.6)	4 (1.0)	8 (3.0)	2 (1.7)
Obstacles and barriers to blood donation				
Lack of information about the how and the where N (%)	47 (12.2)	114 (29.6)	114 (42.4)	47 (40.5)
Lack of possibilities and opportunities N (%)	32 (8.3)	101 (26.2)	93 (34.6)	40 (34.5)
Lack of time N (%)	39 (10.1)	111 (28.8)	93 (34.6)	57 (49.1)
Too complicated and too much effort N (%)	7 (1.8)	9 (2.3)	11 (4.1)	5 (4.3)
Health issues N (%)	58 (15.1)	46 (11.9)	86 (32.0)	18 (15.5)
Other N (%)	10 (2.6)	12 (3.1)	12 (4.5)	10 (8.6)
Beliefs about blood donation related statements				
By donating blood I am supporting the health care system N (%)	82 (21.3)	171 (44.4)	175 (65.1)	78 (67.2)
By donating blood I am compensating the lack of blood in hospitals N (%)	109 (28.3)	205 (53.2)	216 (80.3)	98 (84.5)
There is no lack of blood in hospitals N (%)	4 (1.0)	7 (1.8)	7 (2.6)	4 (3.4)
Black marketeering and profiteering are the reasons of the lack of blood in hospitals N (%)	12 (3.1)	14 (3.6)	20 (7.4)	6 (5.2)
If you have a rare blood type you should donate blood regularly N (%)	79 (20.6)	142 (37.0)	158 (59.0)	63 (54.3)
Awareness-raising campaigns help informing people about the importance of blood donation N (%)	80 (20.8)	133 (34.5)	141 (52.4)	72 (62.1)
You could donate blood just out of curiosity N (%)	12 (3.1)	24 (6.2)	18 (6.7)	18 (15.5)
You could donate blood just because it doesn't hurt you N (%)	23 (6.0)	43 (11.2)	40 (14.9)	26 (22.4)

Discussion

The most often used approach to attract and retain donors worldwide is incentives either monetary or nonmonetary, though the existing literature comes short from determining the effectiveness of those incentives without having an impact on blood safety [26].

In order to plan effective marketing strategies to attract and retain blood donors, understanding the targeted population, responding to their fears and aversions and taking full advantage of their positive perceptions regarding blood donation seems of the utmost importance.

Our study offers such important information about Algiers citizens where we can say with a reasonable degree of certainty that:

- The male demographic demonstrates a higher increased propensity for blood donation (61%; 56.5% men and women respectively), and display a diminished likelihood of deferral (8%; 34.4%) (see table 1).
 - When considering numerical data alone, younger individuals present a greater representation in the donor pool compared to older counterparts. Upon analysing each age group individually, we can see clearly a pattern that indicate a higher prevalence of donors within the older generations (see table 1 and figure 1).
 - Full time workers are the least represented among the donors, which is justified by the lack of free time among this group.
 - The level of educational attainment does not appear to exert a significant influence on the probability of donating blood. These results seems only true in conservative, religion driven societies [27,28].
 - Past experiences seems to have a significant impact on changing the intentions towards blood donation (see table 4).
 - Algiers' population have positive intentions towards blood donation with a reasonable degree of strength and the decision to donate is up to them (see table 4 and 6).
 - Our population is mostly motivated by altruism: saving lives, feeling the responsibility of donating blood, compensating the lack of blood, supporting the health care system and religion.
- The possibility of needing blood in the future was also stated as a motivating factor.
- The lack of information, the lack of time, the lack of opportunities and health issues are regarded as the biggest barriers to blood donation.
 - To our surprise, the biggest deterrent for blood donation was the irrational fear of getting blood-transmitted diseases, which scored even higher than the fear of needles and the fear of pain.
 - The measures taken by the government to promote blood donation are highly insufficient as we established in our results.

Recommendations

The models of the TPB have proven useful to predict future donor behaviour, but they offer little guidance on designing effective interventions to change said behaviour. Regardless, the results of our study should be taken in consideration when planning a strategy to attract donors and retain them as it represents a stable foundation for conducting thorough researches. We should point out that in order to keep our results as less complicated as possible we avoided using advanced statistical analysis, these analysis should be made by statistical experts to give more value to our results. We also recommend broadening the sample to be more representative of the different groups.

We presume trying to change intentions unnecessary, instead directing efforts toward educating and informing people about blood donation; intensifying, promoting and organising collections especially on weekends; organising workplace blood drives in collaboration with large companies (collections at a workplace); and requesting the authorities to be more involved seems to be more beneficial and much less complicated.

Conclusion

This study provided valuable insights into the psychosocial factors influencing blood donation behaviour among the population of Algiers. The findings indicated positive intentions toward blood donation and shed light on the motivations and barriers experienced by potential donors. These findings can inform the development of effective strategies to promote and sustain blood donation in the region.

Declaration of interests

The authors declare that they have no ties of interest.

Acknowledgements

We acknowledge Miss RHOUATI Amira for validating the translation of the questionnaire. We also acknowledge the whole team of the National Blood Agency, mainly the staff of the statistics department; all the team of the Blood Transfusion Centre of Kouba doctors and nurses; Dr H.Bouhennache; Dr S.Mayouf; MRA.S.Azzougui; Dr M.Benzidoune; Dr H.Hocine; Dr F.Z.Bouchiba for contributing to this work.

References

- Charles KS, Harrilal R, Singh S, Gomez K, Hall R, Danielle Z, et al. Emotions and beliefs arising from replacement blood donation may hinder transitioning to exclusive voluntary non-remunerated blood donation. *ISBT Sci Ser.* 2021 Nov;16(4):2427.
- World Health Organization. Blood safety and availability. Report of the 2018 survey [Internet]. 2022 May. [cited 2022 Mar 13]. Available from: <https://www.who.int/news-room/fact-sheets/detail/blood-safety-and-availability>
- Allain J -P. Current approaches to increase blood donations in resource-limited countries. *Transfus Med.* 2019 Oct;29(5):297–310.
- National Office of Statistics. The Technical Directorate for Population and Employment Statistics. Algerian Demography 2018 N°853 . [Internet]. 2019 May. [cited 2022 Jan 13]. Available from: <https://www.ons.dz/IMG/pdf/demographie2018.pdf>.
- Roberts N, James S, Delaney M, Fitzmaurice C. The global need and availability of blood products: a modelling study. *Lancet Haematol.* 2019 Dec;6(12):e606–15.
- Greinacher A, Weitmann K, Lebsa A, Alpen U, Gloger D, Stangenberg W, et al. A population-based longitudinal study on the implications of demographics on future blood supply: DEMOGRAPHICS AND BLOOD SUPPLY. *Transfusion (Paris).* 2016 Dec;56(12):2986–94.
- World Health Organization, Regional Office for Africa. Current status on blood safety and availability in the WHO African Region: report of the 2013 survey. [Internet]. 2017 [cited 2022 Jan 15]. Available from: <http://apps.who.int/iris/bitstream/10665/254656/1/9789290233480-eng.pdf>
- Salazar-Concha C, Ramírez-Correa P. Predicting the Intention to Donate Blood among Blood Donors Using a Decision Tree Algorithm. *Symmetry.* 2021 Aug 10;13(8):1460.
- Bagot KL, Murray AL, Masser BM. How Can We Improve Retention of the First-Time Donor? A Systematic Review of the Current Evidence. *Transfus Med Rev.* 2016 Apr;30(2):81–91.
- Seifried E, Klueter H, Weidmann C, Staudenmaier T, Schrezenmeier H, Henschler R, et al. How much blood is needed?: How much blood is needed? *Vox Sang.* 2011 Jan;100(1):10–21.
- Ferguson E, France CR, Abraham C, Ditto B, Sheeran P. Improving blood donor recruitment and retention: integrating theoretical advances from social and behavioral science research agendas. *Transfusion (Paris).* 2007 Nov;47(11):1999–2010.
- Chell K, Mortimer G. Investigating online recognition for blood donor retention: an experiential donor value approach: Online recognition for blood donor retention. *Int J Nonprofit Volunt Sect Mark.* 2014 May;19(2):143–63.
- Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991 Dec;50(2):179–211.
- Godin G, Kok G. The Theory of Planned Behavior: A Review of its Applications to Health-Related Behaviors. *American Journal of Health Promotion.* 1996 Nov;11(2):87–98.
- Chell K, Davison TE, Masser B, Jensen K. A systematic review of incentives in blood donation: INCENTIVES IN BLOOD DONATION. *Transfusion (Paris).* 2018 Jan;58(1):242–54.
- Ferguson E, Lawrence C. Blood donation and altruism: the mechanisms of altruism approach. *ISBT Sci Ser.* 2016 Jan;11(S1):148–57.
- An introduction to simple random sampling [Internet]. Scribbr. 2020 [cited 2022 Jun 13]. Available from: <https://www.scribbr.com/methodology/simple-random-sampling/>
- Hossain Parash M, Suki NM, Shimmi SC, Hossain ABMT, Murthy KD. Examining students' intention to perform voluntary blood donation using a theory of planned behaviour: A structural equation modelling approach. *Transfus Clin Biol.* 2020 Apr;27(2):70–7.
- Rodrigues RG, Carlos VS. Attracting potential blood donors: The role of personality and social marketing. *J Philanthr Mark [Internet].* 2021 Aug [cited 2022 Jun 13];26(3). Available from: <https://onlinelibrary.wiley.com/doi/10.1002/nvsm.1694>
- Bartlett et al. - Organizational Research Determining Appropriate S.pdf [Internet]. [cited 2022 Jun 13]. Available from: <https://www.opalco.com/wp->

- content/uploads/2014/10/Reading-Sample-Size1.pdf
21. National Office of Statistics. Resident population by age, sex and state of residence. 2008. [Internet].2009. [cited 2022 Jul 17]. Available from: https://www.ons.dz/IMG/pdf/pop3_national.pdf
 22. Francis JJ, University of Newcastle upon Tyne, Centre for Health Services Research. Constructing questionnaires based on the theory of planned behaviour: a manual for health services researchers. Newcastle upon Tyne: Centre for Health Services Research, University of Newcastle; 2004.
 23. Greffin K, Schmidt S, Schönborn L, Muehlan H. "Blood for Blood"? Personal Motives and Deterrents for Blood Donation in the German Population. *Int J Environ Res Public Health*. 2021 Apr 16;18(8):4238.
 24. Melku M, Asrie F, Shiferaw E, Woldu B, Yihunew Y, Asmelash D, et al. Knowledge, Attitude and Practice Regarding Blood Donation among Graduating Undergraduate Health Science Students at the University of Gondar, Northwest Ethiopia. *Ethiop J Health Sci* [Internet]. 1970 Jan 1 [cited 2022 Jun 13];28(5). Available from: <https://www.ajol.info/index.php/ejhs/article/view/186344>
 25. Mcleod S. [Likert Scale Definition, Examples and Analysis]. 2008 [cited 2022 Jun 30]; Available from: <https://www.simplypsychology.org/likert-scale.html>
 26. Chell K, Davison TE, Masser B, Jensen K. A systematic review of incentives in blood donation: INCENTIVES IN BLOOD DONATION. *Transfusion (Paris)*. 2018 Jan;58(1):242–54.
 27. Romero-Domínguez L, Martín-Santana JD, Sánchez-Medina AJ, Beerli-Palacio A. Blood donation barriers: How does donor profile affect them? *Int Rev Public Nonprofit Mark*. 2022 Jun;19(2):247–64.
 28. Pule PI, Rachaba B, Magafu MGMD, Habte D. Factors Associated with Intention to Donate Blood: Sociodemographic and Past Experience Variables. *J Blood Transfus*. 2014 Nov 5;2014:1–7.

Annexes

Annexe 1: table shows the researched variable of each question

Questions
Age :
Gender :
Phone Number :
Address :
Level of education :
Family status
Occupation :
Work schedule :
Weight (kg)
Height (m)
Check the conditions that apply to you :
Do you have any drug allergies?
Do you use or do you have a history of using tobacco?
Do you use or do you have a history of using illegal drugs?
Do you use or do you have a history of drinking alcohol?
What is your blood type?
How frequently can an adult person donate blood?
The volume of blood collected during each blood donation
How long does it take to donate blood? (approximately)
Which condition makes someone ineligible to donate blood?
What happens to donated blood after being tested?
Have you ever donated blood before?
Are you eligible to donate blood?
Do you think your health conditions / habits might prevent you from donating?
Do you know someone who has donated blood before?
What was their experience like?
Do you feel that the experience of others might influence your decision about donating blood?
What are the anticipated impacts or effects of donating blood?
Why haven't you donated blood before?
What is preventing you from donating blood?
In which condition would you donate your blood?
What type of donor are you?
Which statement best describes your situation?
When was your last donation?
How would you describe your personal blood donation experience?
If you had a bad experience can you share the reasons?
What were the impacts or effects of your donation?
What was the reason(s) for your first donation?
Are you still eligible to donate blood?
If not, Reasons why you are no longer eligible to donate blood?
Do you intend to donate blood in the next 12 months?
What are the benefits of blood donation?
What might encourage you to donate blood?
What are the obstacles and barriers to blood donation?
Choose the statements that you believe are true
What do you think about the measures taken by the government to promote blood donations?
Comments and recommendations