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Motivators, barriers and communication channels for blood donation in relation to students at a university in Spain

Nuria Padilla-Garrido [a,*], María Dolores Fernández-Herrera [b], Francisco Aguado-Correa [c], Inmaculada Rabadán-Martín [c]

[a] Department of Economics, University of Huelva, Huelva, Spain
[b] Transfusion, Tissue and Cell Centre of Huelva, Huelva, Spain
[c] Department of Business Administration, University of Huelva, Huelva, Spain

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ABSTRACT

Background: Targeting young people to donate blood is a particularly promising option. The aim of this work was to know the motivators, barriers and preferred communication channels for blood donation among university students, and to determine the factors that explain why donors give blood.

Materials and methods: A questionnaire was distributed to 420 students (response rate: 88.3 %) attending the University of Huelva (Spain). Data were gathered on sociodemographic variables, blood donation history, motivators and barriers to donation, and communication channels. Non-parametric contrasts were used to determine possible differences in the sociodemographic characteristics or donation history, and logistic regression to determine the factors associated to donation.

Results: 67.38 % of the students surveyed were non-donors, 12.94 % were first-time donors, 11.05 % were infrequent donors and 8.63 % were frequent donors. "Solidarity" was the main motivator for donating blood (40 %). "Lack of information on where and how to give blood" was the main barrier for non-donors (26.4 %), with "medical reasons" cited by first-time donors (22.2 %). 93.8 % of donors wished to be notified about their next donation appointment. The majority of those surveyed preferred e-mail to receive alerts and information on donation campaigns. The factors that explained blood donation were over 26 years of age and place of residence.

Conclusion: The study identified differences in the motivators, barriers and choice of communication channel among the university students in terms of blood donation, and the factors that explain blood donation. This knowledge is a useful source of information when designing blood donation campaigns that target young people.

1. Introduction

Blood transfusion is an essential service for healthcare systems worldwide that struggle daily to achieve a balance between population needs and the quantity of donated blood available. Prior to the COVID-19 pandemic, healthcare systems in developed nations were already seeing an alarming drop in blood donations [1–3], which was exacerbated by lockdown, social distancing and cancellation of blood collections and new exclusion criteria [4–8].

Recruiting new donors is more urgently needed than ever, as well as retaining existing donors, in order to maintain sufficient blood supply [9], especially as no case of coronavirus, or SARS-CoV-2, has been registered by blood transfusion anywhere in the world. Thus, targeting recruitment drives at young people is a particularly attractive option [10].

University students are a promising source of blood donations in the long term, representing a bigger potential donor segment than the population at large [11–13]. Young students also possess a set of characteristics that could make them receptive to frequent altruistic blood donation campaigns [14]. To help blood transfusion centers design donor recruitment and retention programs that target this group, it is important to understand the motivators, barriers, communication media, and the factors that explain blood donation among young people.

There are numerous studies in the literature on the various motivators and barriers to blood donation [9,15–28]. Initial research focused on suitable siting for blood collection centers, pro-social motivation, personal values, the reputation of the blood donation center, the perceived need to donate, reciprocity and intrinsic motivation. There is

* Corresponding author at: Department of Economics, Faculty of Business Studies and Tourism, University of Huelva, Plaza de la Merced, 11, 21071, Huelva, Spain.
E-mail address: padilla@uhu.es (N. Padilla-Garrido).

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less research on the factors that dissuade potential donors, which include low self-efficacy, lack of interest, unsuitable location and / or collection schedule, lack of resources to promote the donation drive, lack of knowledge on about the blood donation process, anxiety and previous adverse experiences. Studies on university students show that altruism is their main motivation, with anxiety representing the most significant barrier [9,16,17,29].

Strategies for recruiting and retaining donors must select the most efficient communication medium to notify and inform donors. Three communication channels are indicated in the research as the most promising for interventions designed to boost blood donation: in person, by telephone, by e-mail [30]. However, research is lacking on the use of new technologies to promote donations, especially among the young. E-mail is indicated as the preferred medium for contact among university student donors [9], and some researchers have demonstrated the efficacy of this medium to reach new donors and increase donations [31].

The aim of this work was to know the motivators, barriers and preferred communication channels for blood donation among university students, assessing whether these factors differ according to sociodemographic characteristics or donation history, and to define the factors that explain why donors give blood.

2. Material and methods

2.1. Participants

This research was based on data from a survey on blood donation among students attending the University of Huelva (Spain). This university, located in the city of Huelva, had 10,444 students (4,312 men, 6,132 women) enrolled in 2019/2020. Convenience sampling was used to select the participants, both for faculties and individuals, to yield a sample of 420 people.

2.2. Instruments

The questionnaire contained 4 groups of variables. The first (5 items) related to sociodemographic data (sex, age, place of residence in term time and during the rest of the year [urban or rural location], and faculty). The distinction between places of residence during the academic year was to determine whether the participant lived near a permanent blood donation site in either location, which in the case of Huelva was the city's Transfusion, Tissue and Cell Center.

The second group (4 items) referred to donation history, and included an opening question on status based on a previous study [18]: non-donor (no record of any prior donation); first-time donor (a single donation); frequent donor (at least one donation per year); infrequent donor (not registered in any of the previous categories). There were three other questions, on number of donations per year (targeting frequent donors), intention to donate again (aimed at first-time and infrequent donors) and date of last donation (for all donors).

The third group (3 items), on motivators and barriers to blood donation, was based on a review of the literature [9,15–28]. Motivating factors was covered by a single question for all donors, while there were two questions on barriers according to whether the participant was a non-donor or first-time donor.

Group 4 (4 items) asked questions on which communication media the participants used in their daily lives, whether they would like to receive next donation notification (if they had donated previously), their favorite communication medium and the one they would prefer to receive information on future donation campaigns. A range of bibliographical sources was used to draw up the list of communication channels [9,12,30–32].

The questionnaire consisted of closed single-choice questions, except in the case of the communication channels used in everyday life, from which the participants could choose from a list.

2.3. Procedure

Before delivering the questionnaire to the participants, a healthcare professional working in blood donation reviewed the questions and added recommendations. Later, two survey takers with experience in procedure standardization piloted the questionnaire with a sample of 30 students, who were excluded from the final sample. Later, students were recruited from the various university faculties at random periods between December 2019 and February 2020. The study received no financial support. Participation was voluntary and each participant was given a written detailed explanation of the study and, after consent was given, they answered the questions, anonymously and without payment.

2.4. Data analysis

SPSS version 20.0 (IBM Corp., Armonk, N.Y., USA) was used for the statistical analysis. The participants were classified in different age groups according to quartile, and whether they belonged, or not, to the Faculty of Nursing, the only institution that teaches health-related studies at the University of Huelva. The frequencies and percentages for each variable were calculated; the $\chi 2$ test for association or, if necessary, Fisher's exact test were used to contrast the relation, if one existed, of motivators, barriers and communication channels to the sociodemographic characteristics and donation history. Finally, a binary logistic regression was applied to determine the factors associated to blood donation. P values less than 0.05 were considered statistically significant.

3. Results

3.1. Sociodemographic data

A total of 371 questionnaires were answered (response rate 88.3 %). Participants' age range was 18–55 (Mean = 22.67; DT = 5.1), and 60.11 % of those surveyed were women, representing a proportion very close to that of the study population (58.71 %). Although 66.04 % of participants resided during term time in the city of Huelva, where the Transfusion, Tissue and Cell Center is located, most came from rural towns and villages (64.69 %). In terms of faculty membership, the majority of respondents (22.9 %) belonged to the Faculty of Education, Psychology and Sports Sciences, which has the highest number of students of the university's 9 faculties (Table 1).

3.2. Donation history

67.38 % of those surveyed were non-donors (Table 1). 12.94 % were first-time donors, 11.05 % were infrequent donors, while 8.63 % were frequent donors. More than half of all donors had made their last donation between 2 and 6 months before the survey, with an average of 3 donations per year in the case of frequent donors. Regarding intention to donate blood again, only 2.25 % of first-time and infrequent donors stated that they would not repeat the experience, versus 37.08 % who would possibly repeat, and 60.67 % who would definitely repeat.

3.3. Motivational factors for donating blood

"Solidarity" was the most prominent motivator for blood donation (40 %), followed by "the satisfaction of helping others" (22.5 %) (Table 2). Significant features were: "family members or friends who are

Table 1
Sociodemographic data and donation history.

Variables		N	%
Sex	Men	148	39.89
	Women	223	60.11
Age	18–19	99	26.68
	20–21	109	29.38
	22–25	93	25.07
	26–55	70	18.87
Residence in term time	Urban	245	66.04
	Rural	126	33.96
Residence during rest of the year	Urban	131	35.31
	Rural	240	64.69
Faculty	Higher Technical School of Engineering	46	12.4
	Faculty of Education, Psychology and Sports Sciences	85	22.9
	Faculty of Nursing	28	7.5
	Faculty of Labor Sciences	16	4.3
	Faculty of Business and Tourism	61	16.4
	Faculty of Experimental Sciences	36	9.7
	Faculty of Law	32	8.6
	Faculty of Humanities	36	9.7
	Faculty of Social Work	31	8.4
Donor status	Non-donor	250	67.38
	First-time donor	48	12.94
	Infrequent donor	41	11.05
	Frequent donor	32	8.63
Number of donations per year—frequent donors (n = 32)	Once a year	0	0.00
	Twice a year	7	21.87
	Three times a year	17	53.13
	Four times a year	8	25.00
Intention to repeat donation—infrequent and first-time donors (n = 89)	Definitely	54	60.67
	Possibly	33	37.08
	No	2	2.25
Last donation (n = 121)	2–6 months ago	62	51.24
	6–12 months ago	33	27.27
	12–24 months ago	8	6.61
	More than 24 months ago	18	14.88

donors" and living in an urban setting during term time (p = 0.034); becoming a donor following "an information or promotion campaign" and being male (p = 0.007); having "a family member or friend who needed a transfusion" and being an older donor (p = 0.04) or frequent donor (p = 0.023); "satisfaction of helping others" and being non-Nursing students (p = 0.026).

3.4. Barriers that inhibit first-time donors

"Medical reasons" (22.2 %) was given as the main barrier to repeating blood donation by first-time donors (Table 3), followed by "I don't have time" and "I didn't receive any notification about repeating donation" (17.8 %).

A link was found between intention to donate again and "I had a reaction to the donation" (p = 0.019), "for medical reasons" (p = 0.042) and "I don't have time" (p = 0.014). All those who selected "I had a reaction to the donation" indicated they might consider repeating donation in the future, and the majority of those who selected "I don't have time" said they would certainly repeat donation in the future.

3.5. Barriers that inhibit non-donors

"Lack of information on how and where to donate blood" was cited as the main barrier (26.4 %) for non-donors, followed by "medical reasons" (19.6 %) (Table 4). "Lack of information on how and where to donate blood" was more important for the younger participants in the survey (p = 0.025) and for non-Nursing students (p = 0.0045) while "medical reasons" was cited by women (p = 0.004) and non-Nursing students (p = 0.005), and "I don't have time" (p = 0.013) and "fear of blood extraction by an unskilled healthcare operative" (p = 0.043) were important inhibitors for men.

3.6. Communication channels

20.95 % of those surveyed used WhatsApp as a communication medium on a daily basis, followed by e-mail (19.16 %).

93.8 % of donors stated that they would like to be notified about repeat donations. The respondents' preferred means of contact was e-

Table 2
Motivators for blood donors (%).

Variables		Information or promotion campaign	Solidarity	Satisfaction of helping others	Family members or friends who are donors	Family member or friend who needed a transfusion	Because I know my blood group is rare	Because it is good for my health	Gifts for donating blood	To try a new experience	Because one day I might need a transfusion
n = 120	Total	8.33	40	22.5	9.17	5	5.83	1.67	0.83	0.83	5.83
Sex	Men	80	33.33	37.04	27.27	33.33	14.29	50	0	100	57.14
	Women	20	66.67	62.96	72.73	66.67	85.71	50	100	0	42.86
	p value	0.007a									
Age	18–19	0	18.75	25.93	18.18	16.67	0	0	0	0	28.57
	20–21	40	35.42	37.03	27.27	16.67	14.28	0	0	0	28.57
	22–25	50	20.83	25.93	45.46	0	42.86	50	100	0	42.86
	26–55	10	25	11.11	9.09	66.66	42.86	50	0	100	0
	p value					0.04a					
Residence in term time	Rural	30	33.33	33.33	0	33.33	28.57	0	100	0	0
	Urban	70	66.67	66.67	100	66.67	71.43	100	0	100	100
	p value				0.034a						
Residence rest of the year	Rural	60	25	81.48	90.91	66.67	57.14	0	100	100	42.86
	Urban	40	75	18.52	9.09	33.33	42.86	100	0	0	57.14
	p value										
Faculty	Nursing	0	10.4	22.2	0	0	0	0	0	0	14.3
	Non-Nursing	100	89.6	77.8	100	100	100	100	100	100	85.7
	p value			0.026a							
Donor status	First-time	70	39.58	48.15	9.09	0	42.86	0	100	100	42.86
	Infrequent	30	35.42	22.22	54.55	33.33	28.57	50	0	0	42.86
	Frequent	0	25	29.63	36.36	66.67	28.57	50	0	0	14.28
	p value					0.023a					

Table 3
Barriers to blood donation for first-time donors (%).

Variables		Because I had a reaction after donation (dizziness, nausea…	Because I had to wait too long to donate	Because needle injection was painful	Because the donation site was not easy to access	Because I received no notification on repeating donation	Because I donated less than two months ago	For medical reasons	I donate just to enjoy that experience	Because I have no time
n = 48	Total	15.6	2.22	6.67	2.22	17.8	11.1	22.2	4.44	17.8
	Men	14.29	0	66.67	100	37.5	0	30	100	25
Sex	Women	85.71	100	33.33	0	62.5	100	70	0	75
	p value									
	18–19	14.29	0	33.33	100	12.5	0	20	0	37.5
	20–21	14.29	100	33.33	0	62.5	80	20	0	12.5
Age	22–25	42.85	0	33.33	0	12.5	0	30	100	37.5
	26–55	28.57	0	0	0	12.5	20	30	0	12.5
	p value									
Residence in term time	Rural	14.29	0	33.33	0	12.5	60	10	50	50
	Urban	85.71	100	66.67	100	87.5	40	90	50	50
	p value									
Residence rest of the year	Rural	57.14	0	66.67	0	75	80	60	50	87.5
	Urban	42.86	100	33.33	100	25	20	40	50	12.5
	p value									
	Nursing	0	0	0	100	11.1	33.3	20	0	11.1
Faculty	Non-Nursing	100	100	100	0	88.9	66.7	80	100	88.9
	p value									
	First-time	0	100	33.33	0	44.44	83.33	30	0	88.89
Donor status	Infrequent	100	0	66.67	100	55.56	16.67	50	100	11.11
	Frequent	0	0	0	0	0	0	20	0	0
	p value	0.019a						0.042a		0.014a

[a]Fischer's exact test.

mail (50 %) and WhatsApp (34.12 %). Classroom chats on blood donation were of particular interest to students aged 22–25 (p = 0.004), for non-donors (p = 0.007) and for those who resided in the city during term time (p = 0.048) and all year round (p = 0.024) (Table 5).

The participants also selected e-mail (37.98 %) and WhatsApp (19.13 %) as preferred contact medium for receiving information on blood donation campaigns (Table 5). The older the participant, the less importance was given to e-mail communication (p = 0.038). WhatsApp was more prominent among students who lived in the city during term time (p = 0.035) and those who returned to their rural setting between terms (p = 0.033). Classroom chats and the presence of blood donation volunteers to provide information on campus were factors selected especially by non-donors (p = 0.01 and p = 0.013, respectively).

3.7. Multivariate analysis

The result showed that being 26 years of age or over, living in a city with a permanent donation center during term time, and in a village during the rest of the year, were factors that explained why donors gave blood (Table 6).

4. Discussion

This study presents information on the motivators, barriers and communication channels regarding blood donation among university students, as well as the explanatory factors behind blood donation, data that can help transfusion centers design targeted donor recruitment and retention programs. The barriers to blood donation revealed in this study should be easily surmountable for transfusion center mangers, who should be equally encouraged by our finding that substantial numbers of infrequent and first-time donors would be willing to donate blood again. In terms of communication channels, social media are less important for notifying donors than e-mail and instant messaging services.

Almost one third of participants in our survey (32.62 %) had previously donated blood; in other studies of university students, donation rates ranged from 12.7 %–32.4 % [16,17,24,26,33]. Compared to studies on the general population, the donation rate in our study is slightly less than that for Spain (34 %) and Europe (37.9 %) [34]. Also worthy of note is intention to donate blood again, at 98.75 % among infrequent and first-time donors, which shows the donation potential of this collective.

Motivators such as "solidarity" or the "satisfaction of helping others" also figure in other studies on university students [9,16,17,29]. In our case, no link was found between such motivators and sex, age and donor type, just as in other studies of the general population [9,15,18,34,35].

On the other hand, and in line with Godin et al. [36], we found significant differences in other motivators such as "a family member or friend who needed a transfusion", "family members or friends who are donors" and "an information or promotion campaigns".

The barriers to blood donation indicated by our study were "lack of information on how and where to donate blood" among non-donors, and "I didn't receive any notification about repeating donation" among first-time donors. The former had been identified in previous studies [15] although it was of less importance. It would not only be advantageous to deliver information to this group, especially when studies show that 75 % of non-donors in Spain [34] and 80 % in Portugal [26] would be willing to donate blood in the future, but also to develop donor attendance programs at transfusion centers to accompany them in their inaugural donation, by creating the appropriate level of expectation and confidence in the extraction process [37,38]. Blood donation centers should make educational material available to potential donors [39,40], and enlist the help and experience of established donors, or promote blood donation on a frequent basis by attendance at general public events [18].

Receiving no notification about repeat donation, cited by first-time

Table 4
Barriers to blood donation for non-donors (%).

Variables		Medical reasons (low weight, anemia…)	Fear of needles	Fear of dizziness or nauseous	Potential contagion from infectious diseases	I don't like the sight of blood	I don't believe my blood will be used for the reasons stated	It could negatively affect my health	Lack of information on where and how to donate blood	I have no time	I can't fit donation into my schedule	I don't know what to do when I donate blood	Fear that my blood will be extracted by an unskilled healthcare operative	I take medication that prevents me from donating
n = 250	Total	19.6	15.6	12.8	0.8	2.8	0.4	0.4	26.4	10.8	3.6	2	2.4	2.4
	Men	22.45	38.46	37.5	50	42.86	100	0	45.45	17	62.96	60	83.33	50
Sex	Women	77.55	61.54	62.5	50	57.14	0	100	54.55	10	29.63	40	16.67	50
	p value	0.004								0.013			0.043a	
	18–19	28.57	28.2	21.88	0	0	0	100	43.94	37.04	0	60	33.33	16.67
	20–21	26.53	30.77	31.25	50	57.14	0	0	28.79	22.22	22.22	20	16.67	16.67
Age	22–25	22.45	23.08	34.37	50	0	100	0	18.18	18.52	44.45	20	16.67	33.33
	26–55	22.45	17.95	12.5	0	42.86	0	0	9.09	22.22	33.33	0	33.33	33.33
	p valor								0.025					
Residence	Rural	34.67	35.9	31.25	0	28.57	0	100	33.33	48.15	55.56	20	50	66.67
in term	Urban	65.3	64.1	68.75	100	71.43	100	0	66.67	51.85	44.44	80	50	33.33
time	p value													
Residence	Rural	59.18	58.97	62.5	0	42.86	0	100	60.61	66.67	77.78	40	66.67	8.33
rest of the	Urban	40.82	41.03	37.5	100	57.14	100	0	39.39	33.33	22.22	60	33.33	16.67
year	p value													
	Nursing	16.3	0	3.1	0	0	0	100	1.5	11.1	11.1	20	0	0
	Non-Nursing	83.7	100	96.9	100	100	100	0	98.5	88.9	88.9	80	100	100
Faculty	p value	0.005a							0.045a					

a. Fisher's exact test.

donors in our study, is a barrier to donation often mentioned by young people [17,19]. It would be a good idea to design campaigns to close this communication gap yet continue to emphasize the positive aspects of donation among this group, with awareness programs tailored to a positive and personal approach [41,42] that encourage them to donate again as soon as possible after their first donation [43], and reassuring those who are anxious about the extraction process [44,45].

Too busy to donate blood is a barrier that was particularly common among first-time donors. Some studies identify time pressure as an important inhibiting element among university students [9,24] and the population at large [19,46], especially among young people [42,47]. We understand that this does not refer to standing in a queue a long time to donate blood, cited by 2.22 % of first-time donors, as this situation has a specific solution, namely that donation campaigns should emphasize the importance of donating blood, in that the time taken to donate blood is an act of generosity and civic duty.

The anxiety surrounding blood donation (fear of needles, sight of blood, pain, physical reaction, contracting a disease…) is one of the main obstacles cited by other studies [19,34,48,49] and those specifically on university students [16,20,24,29]. However, this factor was not so pronounced in our study, likewise in another work on Portuguese university students [26]. It is encouraging to observe that this is not mentioned among the main barriers for non-donors and first-time donors, and that such anxiety is more common in those who have never donated blood than in those who have donated, which is consistent with the results of previous studies [17]. Nevertheless, it might be worthwhile making the first donations shorter, or designing awareness campaigns that focus on these issues and which help potential donors to overcome their anxiety.

In these times of rapid technological advances, donation centers must adapt and be constantly aware of the most popular communication channels for contacting potential donors which, in our study, were e-mail and WhatsApp. The potential of e-mail for donation drives is evident in the literature [9,30,31].

It would also be useful to promote the presence of blood transfusion centers via the university campus' own communication channels. 29.78 % of those surveyed selected one of the university's platforms as the best way to receive information on donation campaigns (publicity campaigns, classroom chats or volunteers to deliver donation information on campus).

Moreover, students aged 26 or more were more likely to be donors, which fits with the fact that in Spain the older the age group, the higher the percentage of active donors [3]. Place of residence was an explanatory factor of donation, in contrast to Raghuwanshi et al. [29]. Residing during term time in the city with a permanent donation center can explain why these students were more likely to donate blood than those who lived outside the city during term time. On the other hand, residing in a rural area during the rest of the year can also be explanatory factor because, perhaps, in the country there is a greater sense of solidarity, commitment and interest in the well-being of others in the community.

The limitations of this study are that is was carried out at only one university, thus the results cannot be generalized. Despite being an anonymous questionnaire that would seem to encourage honest responses, social convenience bias is common in questions related to blood donation. Piliavin and Callero [50] state that survey participants could be inclined to give socially acceptable responses.

5. Conclusion

The study identified differences in the motivators, barriers and choice of communication channel among the university students in terms of blood donation, as well as the factors that explain why donors give blood. Just over 67 % of the university students surveyed had never donated blood, with "lack of information on how and where to donate blood" being the most important barrier. This, and the fact that donations have fallen in the last five years in Spain, where payment for blood

Table 5
Communication channels for blood donations (%).

A. Best channel for notification of blood donation (n=340)

Channels		Sex			Age (years					Residence in term time			Residence rest of the year			Faculty			Donor or non-donor		
	Total	Men	Women	p value	18–19	20–21	22–25	26–55	p value	Rural	Urban	p value	Rural	Urban	p value	Nursing	Non-Nursing	p value	Non-donor	Donor	p value
E-mail	50.00	39.41	60.59		28.82	31.18	22.94	17.06		32.35	67.65		67.06	32.94		7.1	92.9		66.47	33.53	
WhatsApp	34.12	42.24	57.76		23.28	33.62	21.55	21.55		37.93	62.07		67.24	32.76		9.5	90.5		65.52	34.48	
Facebook	2.06	42.86	57.14		14.28	71.44	0	14.28		42.86	57.14		57.14	42.86		14.3	85.7		71.43	28.57	
Instagram	0.29	0	100		0	100	0	0		0	100		0	100		0	100		100	0	
YouTube	0.29	100	0		100	0	0	0		0	100		0	100		0	100		100	0	
On-campus publicity campaigns	3.82	30.77	69.23		53.84	0	23.08	23.08		53.85	46.15		84.62	16.58		7.7	92.3		61.54	38.46	
Classroom chats	6.18	38.09	61.90		19.05	14.29	57.14	9.52	0.004	14.29	85.71	0.048	42.86	57.14	0.024	9.5	90.5		95.24	4.76	0.007
Volunteers on campus	3.24	54.55	45.45		18.18	36.37	27.27	18.18		36.36	63.64		54.55	45.45		0	100		81.82	18.81	

B. Best channel for receiving information on blood donation campaigns (n=366)

Channels		Sex			Age (years					Residence in term time			Residence rest of the year			Faculty			Donor or non-donor		
	Total	Men	Women	p value	18–19	20–21	22–25	26–55	p value	Rural	Urban	p value	Rural	Urban	p value	Nursing	Non-Nursing	p value	Non-donor	Donor	p value
E-mail	37.98	40.29	59.71		33.81	29.50	23.74	12.95	0.038	30.22	69.78		65.47	34.53		10.8	89.2		64.75	32.25	
WhatsApp	19.13	34.29	65.71		22.86	32.86	20	24.28		44.29	55.71	0.035	75.71	24.29	0.033	11.4	88.6		62.86	37.14	
Facebook	9.84	44.44	55.56		13.88	25	30.56	30.56		25	75		55.56	44.44		2.8	97.2		52.78	47.22	0.043
Twitter	1.64	66.67	33.33		0	83.33	16.67	0	0.038a	50	50		66.67	33.33		0	100		83.33	16.67	
Instagram	0.82	33.33	66.67		66.67	0	33.33	0		25	75		33.33	66.67		0	100		66.67	33.33	
YouTube	0.82	100	0		33.33	33.33	33.33	0		66.67	33.33		66.67	33.33		0	100		100	0	
On-campus publicity campaigns	10.11	62.16	37.84		27.03	13.51	29.73	29.73		36.73	63.27		64.87	35.13		2.7	97.3		62.16	37.84	
Classroom chats	13.39	36.73	63.27		24.49	36.74	26.53	12.24		21.74	78.26		61.22	38.78		2	98		83.67	16.33	0.01
Volunteers on campus	6.28	52.17	47.83		21.73	26.09	26.09	26.09					52.17	47.83		8.7	91.3		91.30	8.70	0.013

a. Fisher's exact test.

Table 6
Multivariate logistic regression analysis of factors associated with donors.

Variables	OR	95 %CI	P-value
Sex			
Male			
Female (Reference)			
Age			0.012
18−19	0.336	0.162−0.700	
20−21	0.755	0.393−1.452	
22−25	0.905	0.465−1.761	
26−55 (Reference)	1.0		
Residence in term time			0.001
Urban	2.618	1.496−4.581	
Rural (Reference)	1.0		
Residence during rest of the year			0.000
Urban	0.353	0.202−0.618	
Rural (Reference)	1.0		
Faculty			
Nursing			
Non-Nursing (Reference)			

donation is prohibited, makes it essential to reverse this trend.

In the case of university students, donation centers should design information campaigns for e-mail distribution, among others, as the communication channel most favored by the students surveyed on our poll, and, because all students have a university e-mail account through which they can be regularly informed of the donation options available.

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CRediT authorship contribution statement

Nuria Padilla-Garrido: Conceptualization, Methodology, Writing - original draft, Supervision. **María Dolores Fernández-Herrera:** Conceptualization, Methodology, Writing - original draft. **Francisco Aguado-Correa:** Formal analysis, Writing - review & editing, Visualization. **Inmaculada Rabadán-Martín:** Formal analysis, Writing - review & editing, Visualization.

Declaration of Competing Interest

The authors report no declarations of interest.

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