

# The influence of sociodemographic and donation behaviour characteristics on blood donation motivations

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**Background** - The study of donation motivations is essential at blood transfusion centres, because of the impact of these motivations on an individual's decision to donate. The heterogeneity of donor behaviour and the overall lack of consensus on how to assess it (e.g. via terminology, grouping of items in categories) justify this research, which was conducted with the purpose of an integrated analysis of the influence of sociodemographic and donation behaviour characteristics on the prevalence of donation motivations.

**Materials and methods** - Twenty-five types of motivation were assessed, through an online self-administered questionnaire, in a sample of 5,353 active donors in the Canary Islands (Spain). A series of tests focused on the differences in means was performed in order to analyse how the donor profile affects donation motivations. As a preliminary step, the validity and reliability of the proposed motivation scale, holistic and integrative in nature, were demonstrated.

**Results** - Variations in donation motivations do exist. Blood transfusion centres should target their efforts on donors who are over 35 years old, highly educated, with a high income and longer careers as donors, given that these are the least motivated subjects in the donor pool.

**Discussion** - The fact that the prevalence of donation motivations varies according to the donor profile demonstrates the need to identify the most relevant motivations and, furthermore, which population groups are affected by these motivations. Blood transfusion centres should design differentiated marketing actions in order to achieve greater effectiveness and efficiency when using their budgets.

**Keywords:** *blood transfusion, motivation, surveys and questionnaires, marketing.*

## INTRODUCTION

For decades, healthcare systems have been facing a diminishing blood donor pool, resulting in an ever-widening gap between supply and demand<sup>1</sup>. This shortfall is due to a variety of factors, including an increase in medical and surgical interventions, an ageing population, stricter donor selection criteria, and the perishability of blood and blood products<sup>2</sup>. For these reasons, as blood cannot be artificially manufactured<sup>3</sup>, voluntary blood donors are the cornerstone of any blood donation system<sup>4</sup>.

In Spain, blood transfusion centres (BTC), which are institutes responsible for the collection of blood, its analysis and distribution, devote a great deal of effort to the

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promotion of continual, long-term blood donation among the population by using three complementary strategies: (i) retaining active donors, (ii) recruiting new donors, and (iii) recovering inactive and temporarily deferred donors<sup>5</sup>. While the last two strategies contribute to increasing the size of the donor pool, donor retention allows for a stable, safe blood supply. Additionally, active donors generally have a lower occurrence of adverse physical reactions (e.g. dizziness, physical weakness or fainting) and of contagious diseases<sup>6</sup>. Active donors also donate more frequently, as they are more committed to donating<sup>7</sup>.

To achieve donor retention, BTC must identify factors that positively or negatively affect the decision to donate. These include donation barriers and motivations. Barriers are all factors that prevent or hinder donation (e.g. fear of needles, lack of time, medical reasons), while motivations are those that encourage it (e.g. altruism, personal satisfaction, incentives). The relevance of analysing these two types of factors jointly lies in their interaction, because when motivations prevail over barriers, individuals are more prone to donate, and *vice versa*<sup>8</sup>. However, donation motivations are particularly relevant because of their importance in the adoption of a socially desirable behaviour, such as donating blood<sup>9</sup>. Nevertheless, the study of donation motivations is complex because donors might donate for multiple reasons at the same time<sup>10,11</sup>, and their motivations tend to change over time<sup>12,13</sup>.

Furthermore, since individuals do not behave homogeneously, the prevalence of donation motivations will not be homogeneous either. This prevalence will also depend on other donor-specific factors: their sociodemographic characteristics and their behaviour as a donor. According to the principles of social marketing, this requires the design of differentiated actions to encourage donors<sup>14-16</sup>, and thus achieve the much-needed balance between supply and demand<sup>17</sup>. However, BTC tend to design undifferentiated actions aimed at very broad targets, with homogeneous messages, which contribute to the difficulty in achieving the desired results<sup>18,19</sup>.

Based on the above, the aim of this work was to analyse how donor profile influences the prevalence of donation motivations. Given the lack of consensus on the measurement scales used for evaluation, as a preliminary step, we propose a holistic, integrative motivation scale. An exhaustive review of the literature on blood donor behaviour was performed, and each of the motivations identified was grouped in accordance with the reason for

the decision to donate, independently of any differences in terminology and expressions used to define them. In total, 25 motivations were finally chosen for inclusion in the scale. The multidimensionality, validity and reliability of the scale, which served as the base for analysing the influence of donor profile on the prevalence of donation motivations, was determined by principal component analysis.

### Theoretical framework and research questions

A wide variety of donation motivations have been reported in the literature. Among them, altruism stands out as a primary motivator<sup>20,21</sup>. However, studies investigating the Mechanism of Altruism<sup>22,23</sup> and the functionalist approach<sup>12,24</sup> propose that blood donors also donate for other reasons, such as emotional rewards, the analytical results of the donated blood or social reputation-building. The naming of these motivations differs substantially among studies, with different terminology often used to refer to the same motivation<sup>25</sup>. For instance, when analysing the act of giving without expecting anything in return as a reason to donate, authors have used various terms such as "for altruistic reasons"<sup>26,27</sup>, "to help others"<sup>28,29</sup> or "feeling that donating is the right thing to do"<sup>20,30</sup>, among others. Likewise, when motivations are grouped into categories, both their number and content also differ substantially. For instance, Karacan *et al.*<sup>10</sup> differentiated between self-benefit and external reasons (e.g. "I donate blood for the recompense of goodness to me", "I feel forced because of social pressures"), values and moral duty (e.g. "by donating blood, I realised I might be saving a life") and positive feelings and self-esteem (e.g. "donating blood makes me feel needed"). In contrast, Zaller *et al.*<sup>31</sup> grouped donation motivations into two categories: individual motivating factors, which include such different motivations as getting time off work, feeling proud of one's self and potentially saving someone's life, and peer motivating factors (e.g. peer pressure from a family member or having a friend in need). In short, it is a complex problem to compare results between studies, if there is no consensus<sup>32</sup>.

To overcome this problem, the present work proposes a holistic, integrative scale of donation motivations. As stated earlier, after extensively reviewing the literature available, 25 motivations were identified (see *Online Supplementary Content, Table S1*). These 25 motivations are the condensed result obtained from grouping all

motivations identified in an exhaustive review of the literature on blood donor behaviour according to the reason to donate that they represent.

The presence of motivations is not homogeneous among donors, as sociodemographic and donation behaviour characteristics also play a part. In spite of this fact, in most studies that analyse donation motivations, the aforementioned sociodemographic and behavioural variables have only been analysed at a descriptive level<sup>11,25</sup>. There is a lack of research that has cross-analysed socio-demographic characteristics with self-reported donation motivations<sup>20,27,29</sup>.

### Motivations and donor profile

The donor profile may affect the prevalence of donation motivations. **Table SII** (*Online Supplementary Content*) shows the main results of the previous studies in which this relationship was studied. With regards to gender, it can be stated that, in general terms, women tend to donate more for altruistic and humanitarian reasons<sup>20,21</sup>, as well as the desire to help someone they know who needs blood<sup>8,33</sup>. Men are more likely to be motivated by reasons related to personal gain<sup>34</sup> such as medical incentives<sup>27,28,35</sup>, gift items and tokens of appreciation<sup>20,29,30</sup>. Reference groups also influence men<sup>20,33</sup>.

With regards to age, its impact on altruistic motivations is, so far, inconclusive. However, younger donors tend to be more motivated by donation incentives such as medical benefits<sup>29,36</sup>, gifts<sup>20,30</sup> and time off work<sup>37</sup>. At the same time, peer influence is also an important motivation for this age group<sup>20,29</sup>. In turn, older donors are more responsive to direct marketing actions carried out by BTC<sup>20,33,34</sup> as well as their previous blood transfusion experiences<sup>33</sup>.

Findings related to the educational level of the donor indicate that donors with a university education are more pro-socially motivated<sup>20,30,34</sup>, while donors who have completed only primary education have more individualistic motivations such as reciprocity<sup>33,34</sup> or obtaining incentives<sup>26,28</sup>.

Finally, the few studies available on donor income level show that donors who are perceived as having a higher income are motivated mainly by pro-social reasons<sup>34</sup>, while those with a lower income are more likely to seek some form of personal gain<sup>30,34,36</sup>.

Based upon the above, it is evident that the prevalence of certain types of motivation does truly depend on the

sociodemographic characteristics of the individual. However, donation motivations have been assessed with diverse terminologies and categorisations, which hinder the establishment of sufficiently justified hypotheses about the relationships between sociodemographic characteristics and the prevalence of motivations. For this reason, the present study poses research questions, instead of research hypotheses.

The previously described literature review led to the following research question:

- **Research question 1.** *From an integrative perspective, how do sociodemographic characteristics affect the prevalence of donation motivations?*

Results referring to the relationship between donation frequency and the prevalence of donation motivations do not enable a conclusion to be drawn. Nevertheless, it can be deduced that, as the number of donations per year tends to increase, the motivations become more intrinsic, since among recurring donors who donate at least once a year there are both intrinsic and extrinsic motivations, whereas those who donate at least twice a year are solely intrinsically motivated.

In comparison, more literature is available on the relationship between the donor experience and the prevalence of donation motivations. The literature review indicates that less experienced donors (i.e. non-donors and first-time donors) are more motivated by extrinsic reasons such as gifts<sup>11,30</sup>, health benefits<sup>14,20</sup>, time off work<sup>11,14</sup>, peer pressure<sup>20,28</sup> or BTC marketing efforts<sup>14</sup>. As an exception, Ferguson *et al.*<sup>38</sup> detected the prevalence of altruism in less experienced donors, although in less pure forms (i.e. impure altruism, reluctant altruism). In contrast, more intrinsic motivations such as pure altruism and assuming one's social responsibility<sup>20,34</sup> or emotional consequences, e.g. warm-glow<sup>38</sup> or self esteem<sup>39</sup> are more prevalent in more experienced donors. Similarly, this latter group is more sensitive to explicit requests for donations<sup>20,34,40</sup>.

In congruence with the aforementioned reasoning, two other research questions have been posed:

- **Research question 2.** *From an integrative perspective, how does donation frequency affect the prevalence of donation motivations?*

- **Research question 3.** *From an integrative perspective, how does the donor experience affect the prevalence of donation motivations?*

**MATERIALS AND METHODS**

**Study population and data collection**

Data were collected through an online, self-administered questionnaire from March to September 2018. The study population was comprised of active donors (individuals who had donated blood at least once in the preceding 2 years) registered in the database of the Canary Institute of Haemodonation and Haemotherapy (ICHH), which is the institution responsible for blood donations in the Canary Islands (Spain). All active donors were older than 18 years, could be male or female, and lived in the Canary Islands. The ICHH sent registered active donors an e-mail with the URL of the questionnaire. An initial sample of 5,443 active donors was gathered. However, 90 questionnaires

remained unfinished, thus the final sample was reduced to 5,353 active donors (questionnaire completion rate: 98.4%).

**Study variables**

Besides sample profile questions, such as sex, age, education, total monthly income, donation frequency and donor experience, the questionnaire included a scale assessing blood donation motivations which consisted of 25 dichotomous items (see *Online Supplementary Content, Table SI*). In this scale, respondents answered the following question, "Please note whether each of the following causes might motivate you to increase the number of donations you make per year".

**Scale validation**

The proposed scale was validated by means of principal

**Table I - Principal component analysis results for the motivation scale**

Motivations	COM.	F1	F2	F3	F4	F5
<b>Solidarity</b>						
MOT4	0.712	<b>0.803</b>	0.195	-0.034	0.160	0.061
MOT1	0.808	<b>0.796</b>	0.098	0.009	0.405	0.020
MOT5	0.826	<b>0.786</b>	0.222	0.080	0.269	0.284
MOT2	0.678	<b>0.773</b>	0.075	0.094	0.172	0.192
MOT3	0.589	<b>0.738</b>	-0.035	-0.030	0.018	-0.207
MOT7	0.622	<b>0.585</b>	0.254	0.149	0.117	0.423
MOT9	0.484	<b>0.405</b>	0.443	0.097	0.325	0.092
<b>Health benefits</b>						
MOT11	0.901	0.089	<b>0.908</b>	0.229	0.116	0.059
MOT10	0.875	0.099	<b>0.883</b>	0.265	0.123	0.011
MOT12	0.841	0.135	<b>0.868</b>	0.205	0.132	0.103
MOT6	0.491	0.221	<b>0.566</b>	0.047	0.016	0.346
<b>Appreciation</b>						
MOT15	0.913	0.038	0.169	<b>0.937</b>	0.050	0.044
MOT14	0.894	0.011	0.198	<b>0.921</b>	0.051	0.060
MOT13	0.816	0.054	0.302	<b>0.811</b>	0.015	0.252
MOT16	0.458	-0.052	0.170	<b>0.614</b>	0.221	0.003
<b>Marketing stimuli</b>						
MOT18	0.686	0.290	0.093	0.030	<b>0.768</b>	0.052
MOT19	0.719	0.234	0.190	0.156	<b>0.760</b>	0.164
MOT20	0.628	0.204	0.102	-0.041	<b>0.751</b>	0.097
MOT22	0.477	0.270	0.204	0.109	<b>0.591</b>	-0.031
MOT21	0.511	0.265	0.167	0.232	<b>0.564</b>	0.202
<b>Social approval</b>						
MOT23	0.637	0.164	0.100	0.168	0.258	<b>0.711</b>
MOT24	0.531	0.081	0.075	0.186	0.107	<b>0.688</b>
MOT8	0.749	0.256	0.480	0.439	-0.013	<b>0.511</b>
Eigenvalue		8.207	3.405	1.456	1.167	1.159
Explained variance (partial, %)		17.64	15.64	12.99	14.46	8.15
Explained variance (total, %)				68.89		
KR-20 (factor)		0.640	0.778	0.745	0.634	0.480
KR-20 (scale)				0.804		

COM: communalities; F: dimensions; F1: Solidarity; F2: Health benefits; F3: Appreciation; F4: Marketing stimuli; F5: Social approval; KR-20: Kuder-Richardson Formula 20.

component analysis (PCA), for which the tetrachoric correlation matrix was used due to the dichotomous nature of the variables in the scale<sup>41</sup> (Table I). Additionally, the reliability of the scale, as well as the reliability of each resulting factor, was determined by calculating the coefficient of the Kuder-Richardson Formula 20 (KR-20), which is equivalent to Cronbach's alpha for dichotomous variables<sup>42</sup>.

The results in Table I show that: (i) the motivation scale comprised 23 items. MOT17 and MOT25 were removed during the validation process; (ii) the PCA may be considered satisfactory, since its results explained 70.03% of the total variance; (iii) factor loadings were very significant because they were higher than 0.5 (except MOT9); (iv) communalities of MOT9, MOT6, MOT16 and MOT22, although not higher than 0.5, were very close to this value; and (v) the scale is reliable, because KR-20 values were higher than or very close to 0.7, with the only exception of F10.

Multidimensionality was detected in the motivation scale. The five dimensions were called "Solidarity" (F1), "Health benefits" (F2), "Appreciation" (F3), "Marketing stimuli" (F4) and "Social approval" (F5). "Solidarity" comprised intrinsic motivations to help others, whether the beneficiaries happened to be strangers or acquaintances. "Health benefits" included motivations related to health improvement and monitoring through blood donation. "Appreciation" comprised tangible and intangible incentives provided by the BTC as an expression of gratitude. "Marketing stimuli" included promotional actions carried out by the BTC. Lastly, "Social approval" referred to seeking acceptance from one's peers and reputation-building motivations.

## RESULTS

### Sample profile

Table II shows the profile of sample, whose participants were predominantly characterised by individuals older than 36 years old (62.1%), who had completed either secondary (39.1%) or university-level (47.7%) education and received a monthly income between 1,000 and 2,000 euros (45.1%). With regards to sex, the sample consisted of nearly even proportions of men (49.3%) and women (50.7%). Most respondents usually donated blood once (38.5%) or twice (38.2%) a year. Last but not least, most donors had been

Table II - Sample profile

Characteristics	N.	%
<b>Sex</b>		
Male	2,640	49.3
Female	2,713	50.7
<b>Age (years)</b>		
18-25	782	14.6
26-35	1,243	23.2
36-45	1,613	30.1
46-55	1,350	25.2
>55	365	6.8
<b>Education</b>		
No formal education or Primary	705	13.2
Secondary	2,092	39.1
University	2,556	47.7
<b>Total monthly income (euros)</b>		
<1,000	1,204	22.5
1,001-2,000	2,412	45.1
2,001-4,000	1,392	26.0
>4,000	343	6.4
<b>Donation frequency (per year)</b>		
One	2,062	38.5
Twice	2,044	38.2
Three or four times	1,247	23.3
<b>Donor experience (years)</b>		
<4	1,998	37.3
5-10	1,636	30.6
>15	1,719	32.1
<b>TOTAL</b>	5,353	100.0

regularly donating blood for a period of less than 4 years (37.3%).

### Descriptive analysis of the motivation dimensions

In order to analyse the relationship of the donor profile with the prevalence of donation motivations, five variables were created, using the PCA dimensions as a foundation ("Solidarity", "Health benefits", "Appreciation", "Marketing stimuli", and "Social approval"). Each of these variables corresponded to the sum of the affirmative responses given by the respondents in relation to the motivations that comprised each dimension. Bear in mind that an affirmative response was awarded a value of 1 and a negative response a value of 0. As described above, "Solidarity" consisted of intrinsic motivations to help others (e.g. "Human solidarity", "helping others" or "saving lives", "Fulfilling social duties or moral obligation of helping other people"). "Health benefits" included motivations related to one's own health improvement (e.g. "It can be good for my health") and monitoring through blood donation (e.g. "Getting blood test results", "Knowing if I have an infectious disease"). "Appreciation"

**Table III - Descriptive statistics of motivations**

Dimensions	Min	Max	Mean	SD	Mean (%)	Q1 (%)	Q2 (%)	Q3 (%)
<b>Motivations</b>								
Solidarity	0.00	7.00	6.20	1.22	88.57	85.71	100.00	100.00
Health benefits	0.00	4.00	2.70	1.45	67.43	50.00	75.00	100.00
Appreciation	0.00	4.00	1.03	1.29	25.64	0.00	25.00	50.00
Marketing stimuli	0.00	5.00	3.92	1.25	78.43	60.00	80.00	100.00
Social approval	0.00	3.00	0.61	0.84	20.22	0.00	0.00	33.33

Min: minimum; Max: maximum; SD: standard deviation, Q: quartile.

**Table IV - Relationships between sociodemographic characteristics and the prevalence of motivations**

Variables	Solidarity		Health benefits		Appreciation		Marketing stimuli		Social approval	
	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Sex</b>										
Male	6.05	1.37	2.79	1.40	1.12	1.34	3.73	1.34	0.63	0.86
Female	6.34	1.03	2.61	1.48	0.94	1.23	4.11	1.13	0.58	0.83
<i>t (p)</i>	<b>8.655 (0.000)</b>		<b>4.692 (0.000)</b>		<b>5.190 (0.000)</b>		<b>10.990 (0.000)</b>		1.925 (0.054)	
<i>Cohen's d (r)</i>	0.239 (0.119)		0.125 (0.062)		0.140 (0.070)		0.307 (0.152)		---	
<b>Age</b>										
(1) 18-25	6.35	0.98	2.78	1.34	1.37	1.40	4.15	1.13	0.66	0.88
(2) 26-35	6.26	1.11	2.78	1.39	1.21	1.34	4.04	1.19	0.63	0.85
(3) 36-45	6.15	1.24	2.73	1.44	0.96	1.26	3.89	1.25	0.58	0.84
(4) 46-55	6.15	1.37	2.59	1.52	0.83	1.19	3.80	1.32	0.60	0.82
(5) >55	6.09	1.31	2.45	1.55	0.69	1.11	3.61	1.34	0.56	0.84
<i>F(p)</i>	<b>5.567 (0.000)</b>		<b>6.275 (0.000)</b>		<b>35.792 (0.000)</b>		<b>18.283 (0.000)</b>		1.631 (0.164)	
<i>Tukey</i>	1-3 1-4 1-5		1-4 1-5 2-4 2-5 3-5		1-2 1-3 1-4 1-5 2-3 2-4 2-5 3-4 3-5		1-3 1-4 1-5 2-3 2-4 2-5 3-5		---	
<b>Education</b>										
(1) No formal education or Primary	6.24	1.07	3.10	1.32	1.20	1.42	4.00	1.23	0.80	0.98
(2) Secondary	6.21	1.21	2.88	1.36	1.07	1.32	3.94	1.25	0.60	0.84
(3) University	6.18	1.27	2.43	1.50	0.94	1.22	3.88	1.26	0.56	0.79
<i>F(p)</i>	1.004 (0.366)		<b>89.836 (0.000)</b>		<b>13.174 (0.000)</b>		<b>3.014 (0.049)</b>		<b>23.192 (0.000)</b>	
<i>Tukey</i>	---		1-2 1-3 2-3		1-3 2-3		---		1-2 1-3	
<b>Income</b>										
(1) <1,000	6.19	1.19	2.88	1.37	1.21	1.39	4.00	1.25	0.69	0.89
(2) 1,001-2,000	6.25	1.13	2.80	1.40	1.02	1.28	3.96	1.23	0.61	0.86
(3) 2,001-4,000	6.15	1.32	2.45	1.51	0.91	1.22	3.83	1.26	0.54	0.78
(4) >4,000	6.08	1.47	2.36	1.56	0.87	1.15	3.73	1.36	0.58	0.80
<i>F(p)</i>	<b>3.278 (0.020)</b>		<b>31.283 (0.000)</b>		<b>13.592 (0.000)</b>		<b>8.032 (0.000)</b>		<b>6.678 (0.000)</b>	
<i>Tukey</i>	---		1-3 1-4 2-3 2-4		1-2 1-3 1-4 2-3		1-3 1-4 2-3 2-4		1-2 1-3	
<b>Global sample</b>	6.20	1.21	2.70	1.45	1.03	1.29	3.92	1.25	0.61	0.84

The results of Tukey's test only show the differences between groups. M: mean; SD: standard deviation.

comprised both tangible (e.g. "Getting symbolic gifts for donating blood") and intangible (e.g. "Having 1-2 hours of free time at work to go to donate blood") incentives, which are provided by the BTC as an expression of gratitude. "Marketing stimuli" included promotional actions carried out by the BTC ("An urgent call for blood donations", "Getting a call or message from a blood donation centre"). Lastly, "Social approval" referred to seeking and receiving acceptance and reputation-building motivations (e.g. "Others will have a good opinion of me", "My religion or beliefs encourage me to donate blood").

**Table III** shows the descriptive statistics of these new variables. Since the number of items in each variable differed (between 3 and 7 items), the prevalence percentage that each respondent reported for each of them was calculated individually. Based on these percentages, means and quartiles were calculated for each variable. The results indicate that the most relevant dimension was "Solidarity", since it showed the highest average prevalence percentage (M=88.57%) and, besides, half of the sample population selected all the motivation items included in it (Q<sub>2</sub>=100.00%). "Marketing stimuli" (M=78.43%) and "Health benefits" (M=67.43%) were found to be in second and third place, respectively.

### Analysis of the relationship between donor profile and the prevalence of donation motivations

Based on an integrative perspective in this research, tests of differences in means were performed. The objective was

to explore how the donor profile affects the prevalence of donation motivations. The researchers implemented either the  $t$ -test or one-way analysis of variance (ANOVA), or Cohen's  $d$  statistic or Tukey's test, depending on the case (**Tables IV** and **V**).

**Table IV** shows how the prevalence of the five motivation dimensions is related to sociodemographic characteristics. Thus, sex influenced all motivation dimensions, except for "Social approval". The results show that women were more motivated by "Solidarity" and "Marketing stimuli", while men were more motivated by "Health benefits" and "Appreciation". However, the low values of the Cohen's  $d$  statistic indicate that the quantity of these effects was not very high.

The results indicate that the older the donor, the lower the prevalence of motivations. The only exception was "Social approval", for which a significant relationship was not observed. The most pronounced differences were found in the youngest donors (between 18 and 36 years old) compared to the other age groups, with the latter showing a higher prevalence of motivations.

With regards to education, this factor affected the prevalence of all motivation dimensions, except "Solidarity". The higher the education level, the lower the prevalence of motivations, with the greatest differences being noted between uneducated donors and donors with primary and secondary education *versus* donors with a university education.

**Table V** -Relationships between donor behaviour characteristics and the prevalence of motivations

Variables	Solidarity		Health benefits		Appreciation		Marketing stimuli		Social approval	
	M	SD	M	SD	M	SD	M	SD	M	SD
<b>Donation frequency</b>										
(1) Once	6.18	1.19	2.69	1.43	1.02	1.28	3.93	1.24	0.56	0.82
(2) Twice	6.25	1.17	2.70	1.43	0.99	1.25	3.95	1.24	0.60	0.84
(3) 3 or 4 times	6.15	1.34	2.71	1.49	1.10	1.36	3.86	1.31	0.69	0.88
<i>F(p)</i>	2.808 (0.060)		0.069 (0.934)		2.768 (0.063)		2.081 (0.125)		8.788 (0.000)	
<i>Tukey</i>	---		---		---		---		1-3 2-3	
<b>Donor experience</b>										
(1) <4	6.26	1.07	2.74	1.41	1.13	1.34	4.04	1.19	0.63	0.85
(2) 5-10	6.22	1.21	2.75	1.42	0.98	1.25	3.94	1.25	0.56	0.81
(3) >10	6.12	1.38	2.59	1.50	0.95	1.25	3.76	1.31	0.63	0.86
<i>F(p)</i>	6.595 (0.001)		6.549 (0.001)		10.655 (0.000)		24.806 (0.000)		3.354 (0.035)	
<i>Tukey</i>	1-3 2-3		1-3 2-3		1-2 2-3		1-2 1-3 2-3		---	
<b>Global sample</b>	6.20	1.21	2.70	1.45	1.03	1.29	3.92	1.25	0.61	0.84

The results of Tukey's test only show the differences between groups. M: mean; SD: standard deviation.

Lastly, income affected all motivation dimensions inversely, with the most pronounced differences detected in donors receiving less than 2,000 euros per month, who provided the highest prevalence.

**Table V** shows the relationships between donation behaviour characteristics and the prevalence of motivations. The results indicate that the donation frequency only affected "Social approval", with a direct and positive relationship. Donors who donated three or four times a year had the highest prevalence values. On the other hand, the data show an inverse relationship between donor experience and the prevalence of all motivation dimensions, except for "Social approval", for which the data do not show a clear trend. With regards to the remaining motivation dimensions, the main differences were observed between donors with fewer than 10 years of blood donation experience and those who had been donating for much longer.

## **DISCUSSION**

Donor retention is the chief strategy employed by BTC in their attempts to meet the ongoing demand for blood. This strategy involves a significant cost savings for the BTC, which correctly reason that it is more cost-efficient to retain an active donor than to recruit a non-donor<sup>6</sup>. To ensure that the marketing efforts achieve their objectives, it is critical that the BTC are aware of the most prevalent donation motivations within their donor pool, as these factors strongly influence donor behaviour. Likewise, prior to designing marketing efforts, a close understanding of donor profiles is required<sup>20</sup>, since sociodemographic and donation behaviour characteristics might influence the prevalence of donation motivations.

Due to the absence of an agreed-upon catalogue of donation motivations, in this work we proposed, designed and validated a scale which grouped the types of motivations as identified in the literature. This scale, holistic and integrative in nature, was used as a measurement tool to analyse the prevalence of motivations in active donors in the Canary Islands (Spain). In general terms, the most frequent motivation dimension was "Solidarity", which is consistent with findings reported previously in the literature<sup>20,34</sup>. Additionally, and consistent with other authors, active donors also showed high values in response to "Marketing stimuli" and "Health benefit" dimensions. Another relevant contribution of this study was, from a very much needed integrative perspective, to statistically

prove the influence of sociodemographic profile and donation behaviour on the prevalence of the different types of donor motivations. As stated in the literature, women tend to donate for more humanitarian and collective reasons, while men donate for somewhat more self-serving, individualistic reasons<sup>21,34</sup>. With regards to age, younger donors are the most motivated donors, both for altruistic reasons and for external aspects such as incentives (e.g. analytical results, formal recognition) or marketing incentives<sup>20,33</sup>. Donors with lower educational levels are more motivated than those with a university education, except for the most altruistic motivations ("Solidarity"). The same trend was observed in regard to donor income<sup>34</sup>. Finally, regarding donation behaviour characteristics, motivations are higher among less experienced donors, i.e. those who have been donating for less than 11 years, although there were no major differences with regard to donation frequency.

Therefore, in summary, the least motivated donors are those over 35 years old, with a higher level of education and income and more donor experience, although this does not necessarily imply a high donation frequency. This work proposes that social marketing actions specifically aimed at this group would do well by aiming to highlight the benefits of blood donation and the social need of actively contributing to this social cause. Marketing actions should allude to both social and personal benefits, since the multidimensionality of donation motivations has been demonstrated<sup>25</sup>. This does not mean that BTC should discard solidarity messages in their promotional campaigns, as the "Solidarity" dimension is the most prevalent. Given that these individuals are already members of the donation system, it would be recommended that, rather than initiating a call for action (e.g. "Donate blood"), messages based on facts are more effective (e.g. "Blood expires and needs to be replaced") or testimonies (e.g. "Thanks to you, I was able to have surgery"), encouraging donors to continue to donate and deepen their commitment to the cause. Complementarily, it is proposed that BTC design loyalty programmes in which donors are rewarded and recognised according to the number of donations made and the number of years they have been donating blood. These loyalty builders, which in no case should be monetary to avoid crowding-out<sup>37,43</sup>, should be aligned with the motivations already identified: symbolic gifts with the graphic identity



of the BTC, indicating that the individual is a regular donor; mailing or e-mailing of the analytical results of the blood donated; access to downloadable content for sharing on social networks (e.g. personalised avatars), etc. In addition, and in regard to the most inhibited donors, depending on the educational and income profile of these individuals, periodically taking mobile units to work centres would be advisable.

The main limitation of this study is that it is largely circumscribed to the population under investigation: active donors who reside in the Canary Islands. It would be advisable to extend the geographical scope to cover the entire national territory, or to replicate the study in other geographical areas. Moreover, and regarding future lines of research, since voluntary donation is the only form of donation permitted in Spain, replicating the study in context with alternative donation systems (e.g. replacement, mixed) might be interesting for comparative purposes. Another limitation of this study is that marketing actions described in this section are based on proposals stemming from our results. These results have been transferred to the ICHH managers and some of them have been implemented in social media campaigns. However, the authors do not have access to the effectiveness of the results of these most recent interventions.

## **CONCLUSIONS**

This work contributes, from a theoretical perspective, to the literature on blood donor behaviour by designing and validating a motivation scale, which presents itself as a solution to the lack of consensus in regard to currently existing measurement tools. From an operational perspective, it has been shown that sociodemographic and donation behaviour characteristics do influence donation motivations. Therefore, BTC should take these characteristics into account when designing and applying any marketing actions targeted at the least motivated donors, whether it is intended to increase their donation frequency or retain them for the longest time possible. Moreover, these characteristics might be useful as segmentation criteria, which might help BTC better define which segments of the donor pool should be targeted. On the other hand, it has been confirmed that, given the active donor profile, marketing actions should take into account not only the altruist dimension of blood donation, but also other types of motivation seeking individual benefits

(e.g. health benefits, social approval). Lastly, this work proposes a series of social marketing actions according to the donor profile identified, which might be applicable and beneficial to any BTC in coordination with similar donor profiles.

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## **AUTHORSHIP CONTRIBUTIONS**

LRD, JDMS, AJSM and ABP contributed to the conception and design of the study, its material preparation, data collection and analysis, as well writing the paper (draft preparation, review and editing). All Authors read and approved the final manuscript.

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