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Relationship between social capital and test seeking among blood donors in Brazil

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Abstract

Background and Objectives—Higher risk of HIV infection could be associated with test seeking, which is one motivation for donating blood. Cognitive social capital is defined as the social support, trust, and cooperation that guide community behaviour. Structural social capital refers to an individual's participation in institutions and organizations. The association between social capital and test seeking was assessed.

Materials and Methods—A survey of over 7500 donors in 3 Brazilian blood centres was conducted. Test seeking was classified into 4 non-overlapping categories (non-test seeker, possible, presumed, and self-disclosed test seekers) using 1 direct and 2 indirect questions. Social capital was summarized into cognitive and structural categorizations. Multivariable logistic regression analysis was performed.

Results—Compared to non-test seekers (62% of survey respondents), cognitive social capital was higher for each category of test seeking (OR= 1.1, 7.4, 7.1, $p<0.05$ respectively). Male gender, lower education, and lower income were also significantly associated with test seeking. Conclusion: As test seekers appear to have strong social networks, blood banks may leverage this to convince them to seek testing at other locations.

Keywords

social capital; motivation; blood donors; logistic regression

Introduction

Several studies have reported that altruism is the main motivation for blood donation.[1–3] Putman’s work on social capital has highlighted changes in terms of attitudes of blood donors, altruism, and voluntary association.[4] Putman argued one possible cause of declining blood donations is the fact that younger generations have less civil engagement, which is a consequence of the decline of social capital in modern society. Healy analysed the data from thirteen European countries and found that income, education and social capital also affect an individual’s decision to donate.[5] Other studies also have observed possible relationships between blood donation and social capital.[6, 7]

A succinct definition of social capital is the “trust, norms and networks that facilitate cooperation for mutual benefit”. [4] According to the World Bank, social capital is composed of the milieu of institutions, relationships, attitudes and values in which people live.[8] Australia’s Productivity Commission, an independent agency which conducts public inquiries and research involving a broad range of economic and social issues, discussed the key factors of social capital: social norms, social networks and trust.[9] Social norms include many elements such as honesty, law abidingness, acceptance of diversity, and helping people in need. Social norms are supported by reciprocity, and according to Taylor, conceptually reciprocity is composed of many short-term altruistic acts in the present coupled with the expectation that in the future perhaps others would similarly provide help when it is needed, like donating blood today for your neighbour because one day others may do the same for you.[10]

Previous studies using factor analysis identified eight distinct elements of social capital: participation in local community, neighbourhood connections, connections among family and friends, work-place connections, being proactive in a social context, feelings of trust and safety, tolerance of diversity, and value of life.[11, 12] De Silva and colleagues and Sapag and colleagues identified two major domains or constructs for social capital: cognitive and structural.[11, 13] Cognitive social capital is defined as the social support, trust, and cooperation that guide individual and community behaviour. Structural social capital is related to the individual’s participation in Institutions, community associations and connectedness. There is an important difference between these constructs. Cognitive social capital underpins the formal organization of society, and works like a social code to guide our behaviour. It is the key element for acceptance in a group. Structural social capital is more visible and is related to how people actively participate in the formal relationships of the groups they have membership in.

Although altruism has been discussed most often as a personal motivator, it also has been referred to in the literature describing social capital. De Silva and colleagues considered altruism to be a component of the sense of fairness.[11] Hughes and colleagues advocate altruism as strongly related to trust, which is an element of cognitive social capital.[14] Also, Titmuss’ discussion concerning altruism and blood donation was a hallmark because he was the first to advocate that blood donation would be a result of national politics that stimulated the sense and feeling of obligation more than an isolated altruistic act.[9, 15]

Motivation to donate blood is a very complex issue. Despite the fact that the most common motivation to donate blood is consistently considered to be altruism, Ferguson and colleagues analysed different aspects of the altruism, including pure (donation driven by only a desire to help others without any personal benefits), warm glow (donation is sustained by the sense of positive emotional gain) and impure altruism (donation is motivated by warm glow and potential for personal benefits).[13, 16] They found evidence that first-time donors showed an impure altruism and repeat donors presented a pure altruism.[16] Test-

seeking is another motivation to donate, in which persons donate in order to be tested to find out about their own HIV status (and other infections) in a setting where there is no potential for stigma or social judgment in having infectious disease testing conducted on samples of blood.[17] Test seeking clearly reflects a motivation other than pure altruism.[17, 18] Furthermore, behaviours associated with HIV infection are often highly stigmatized or illegal, and therefore donor candidates may be unwilling or embarrassed to disclose such behaviours. Finally, donors may have belief in the infallibility of blood screening and may not understand the immunological window period. [19] Test seekers may realize that disclosure of any risk factor for infection will result in their blood not being collected and tested. Therefore, denying risk is the only way to ensure testing.

None of the previously conducted studies discussed social capital and blood donation from the perspective that blood donors could be motivated for reasons that are not exclusively altruistic, such as being a test seeker. The objective of this study was to understand the association between cognitive and structural social capital and test seeking motivation to donate blood at three blood centres in different regions of Brazil.

Methods

From October 15, 2009 through November 20, 2009 we conducted a cross-sectional survey of blood donor candidates at three Brazilian blood centres participating in the USA, National Institutes of Health, National Heart, Lung and Blood Institute's REDS-II International component. The centres are Fundação Pró-Sangue/Hemocentro de São Paulo (FPS/HSP) in São Paulo, Fundação Hemominas in Belo Horizonte, Minas Gerais and HEMOPE in Recife, Pernambuco. This study was approved by the Brazilian National Ethical Committee and Human Subjects protections committees in the USA at each of the USA-based participating institutions.

All donor candidates aged 18 to 65 years that presented to donate blood during the period of study were invited to participate. We approached approximately 3000 donors from each centre, with the goal of enrolling 2500. Signed informed consent was obtained and subjects completed the self-administered paper questionnaire while at the blood centre. Because donor candidates were recruited to complete the survey prior to the donor screening process, both successful donors and deferred donors were included in the study. Based on previous studies, the percentage of test seekers in Brazil was estimated to be 8 to 10%.[15, 20]

All returned questionnaires were scanned into an electronic database using the software TELEFORM® (Cardiff, Vista, California). We considered a subject to be a refusal if the candidate did not sign the informed consent but completed the questionnaire, the questionnaire was returned but not filled out or the questionnaire was not returned. Completed questionnaires with consent were shipped weekly to one centre for electronic data capture scanning and processing. After all of the data was compiled, the final dataset was sent to Westat (REDS-II International Coordinating Center) for incorporation into the analysis dataset.

In addition to the questionnaire data, the analysis dataset contained data abstracted from the REDS-II Brazil Donation and Deferral Database, a compilation of selected information on all donors, donations and deferrals captured from standardized donor screening procedures at the three blood centres, including donor demographics, donor/donation characteristics (community vs. replacement, first-time vs. repeat) and information regarding the deferral reason (if the visit was a deferral). Community and replacement donors were defined as described by Gonzalez and colleagues where community donors are persons recruited directly from the community at large and replacement donors are those recruited to replenish

the blood supply among the family and friends of patients in need of blood.[3] First time versus repeat donor status was defined using data on previous screening history at the blood centre. Repeat donors had previous test results available in the donation records at each blood centre and first time donors did not. In addition, this database was used to link to accepted donors' laboratory results of routine screening tests performed on blood donations (HIV, Chagas disease, HTLV, Hepatitis B and C and syphilis). HIV status was based on being reactive on two different EIA tests performed in parallel.

Study Measures

The questionnaire contained questions on demographics, previous blood donation, HIV testing and knowledge, and motivational factors for donation. The primary focus of this questionnaire was general motivation to donate blood and HIV knowledge. Attributes of donor motivation measured in the survey included test seeking, altruism, self-interest, direct request or appeal and social capital. For this analysis we did not consider donor motivation measures of altruism, self-interest and direct appeal.

Test seeking was classified in four non-overlapping categories according to a respondent's answers to 3 questions; one direct and two indirect. Self-disclosed test seekers were those who answered "totally agree" or "agree" to the direct question: "I donated blood so I could be tested for HIV" regardless of answers given for the two indirect questions. Of those remaining, presumed test seekers were defined as those who answered "totally agree" for both indirect questions: "I think that blood donation is a good, fast and anonymous way to get my blood tested," and "I like to donate blood to get my blood test results". Of those remaining, possible test seekers were defined as those who answered either "totally agree" or "agree" for one of the indirect questions and answered "agree" to the other indirect question. Non-test seekers were participants who did not match the criteria described above. In a previous publication, Goncalz and colleagues used the same indirect questions to classify test seekers, and the category of presumed test seeker is the same as used in the previous publication.[20]

Social capital was measured by a group of 4 structural and 15 cognitive questions based on the Adapted Social Capital Assessment Tool (A-SCAT) validated by Harpham and colleagues.[12] We used a modified version to the Short Social Capital Assessment Tool (SASCAT), which was used for measuring social capital in a previous study in Brazil. The SASCAT is a shortened version of the A-SCAT, and is specifically designed to measure cognitive and structural social capital in low income countries.[21] The structural social capital questions contained content about participation in one or more social groups or organizations, helping other members of the community, the respondent's link with his/her neighbours, and giving money or time to organizations or charities as measures of social involvement. The cognitive social capital questions inquired about whether the respondent received any help (emotional or social support) from his/her neighbours, about feelings, trust, cooperation and support. The structural and cognitive questions and their intended meanings are provided (Tables 1a and 1b).

The structural questions were combined into a single structural score. For questions where the possible answers were "Yes", "No" or "Don't Know" the following weights were applied; 2 for "Yes", and 0 for all other responses. For questions with Likert scale-responses, the weights were 2 for "Totally agree", 1 for "Agree", and 0 for "Disagree", "Totally disagree" and "Don't Know". Similarly the cognitive questions were combined into a single cognitive score. The derivation of these scores was supported by principal component analysis, which is a kind of statistical analysis used to reduce the dimensions of a data set and used for building a score that represents groups. [22] In principal component analysis each structural question had an approximately equal loading factor in the structural

component and each cognitive question had an approximately equal loading factor in the cognitive component. Further, the principal component analysis derived statistically indistinguishable weights for responses “No” and “Don’t Know” for questions of that type and statistically indistinguishable weights for responses “Totally disagree”, “Disagree” and “Don’t Know”. Summary scores were grouped into a five level categorization: low, below average, average, above average, and high. The categorized summary structural and cognitive variables were used in the analysis.

Statistical Analysis

The likelihood ratio chi-square was calculated between each variable of interest and the test seeker variable. These variables included categorized cognitive and structural social capital, gender, age group, education, blood centre location, self-reported ethnicity (race) and donation type (community vs. replacement vs. deferred) and type of donor (first time vs. repeat). These same variables were included as independent variables of interest in the logistic regression models. In addition to these variables, we also examined the HIV seroprevalence among test seekers and non-test seekers, but there were too few disease marker positive donors to include this variable in further modelling. We used separate multivariable logistic regression models to compare each category of test seekers to non-test seekers. Cognitive and structural social capital scores were maintained as predictors in all of the models, in addition to the other independent variables. SAS/STAT version 9.2 (SAS Institute Inc., Cary, NC) was used for these analyses.

Results

During the three-week period of survey data collection, 5595 (34.4 % of donors at the three centres) blood candidates presented to donate in São Paulo, 3935 (24.2%) in Belo Horizonte and 6745 (41.4 %) in Recife. Across all centres, approximately 9000 were approached to complete the survey and 7,635 (85%) completed it. Among the participants, 2,673 (35%) were from São Paulo, 2,547 (33%) were from Belo Horizonte and 2,415 (32%) were from Recife. Cognitive social capital score was average for 37% of participants and 3,572 participants (47%) had an average score for structural social capital. Percentage of participants with low cognitive and structural social capital was 7.5% and 23.7%, respectively. High cognitive and structural social capital was observed for 8.1% and 9.7% of participants, respectively.

The overall demographics of the participants were similar to the demographics of donors previously reported for these blood centres.[23] Most participants in our study were male (64%), similar to 66% male representation in the overall donor population of these centres. In the population of donors, 55% were repeat donors and in our study 63% were repeat donors. In the population of donors, 64% had a high school level of education and in our study 48% had a high school education. The distribution of age did not vary significantly among the 4 categories of test seeking or in the three blood centres.

The demographic profile of the participants from Recife was somewhat different from that of the other centres. Among the candidates from Recife, 1,845 (76%) were male, while in São Paulo and Belo Horizonte the percentages were 60% and 59%, respectively. Also, 375 (17%) of participants in Recife were classified in the lower income level, as compared to 87 (4%) in São Paulo and 168 (8%) in Belo Horizonte, and the percentage of replacement donors was higher in Recife (57%) compared to São Paulo (11%) and Belo Horizonte (32%). The proportion of repeat donors was higher than first-time donors in all centres, but was lowest in Belo Horizonte (60%) as compared with São Paulo (67%) and Recife (64%). For most questions, missing responses were less than 3%, except for income (13%).

Among the participants, 1,444 (19%) were deferred before donation. A higher deferral proportion was observed in Belo Horizonte (22%), followed by Recife (20%) and São Paulo (15%). Proportions are consistent with deferral in the overall donor population in the same period, Belo Horizonte (23%) and Recife (23%) and São Paulo (18%). Of 6,191 participants approved for blood donation, 9 (0.15%) tested positive for HIV. Of those 6 were from São Paulo and 3 were from Recife. No HIV positive participants were classified in any test seeker category. Also, we did not find significant differences in age, education, gender or social capital scores among HIV positive and negative groups. Replacement donors were more likely to be possible test seekers, but replacement donor status was not associated with being a self-disclosed and presumed test seeker.

In unadjusted analyses, cognitive and structural social capital were more likely to be associated with all test seeker categories (Table 2). Multivariable logistic regression analyses (Table 3) revealed a highly significant association between cognitive social capital and being a presumed or self-disclosed test seeker. The odds ratio (OR) varied from OR = 2.3 (95% CI: 1.3 – 3.9) among those with average cognitive social capital to OR = 7.4 (95% CI: 4.2 – 13.3) among those with high cognitive social capital in the presumed test seeker group. Among self-disclosed test seekers, the odds ratio varied from OR = 2.1 (95% CI: 1.3 – 3.6) for those with below average cognitive social capital to OR = 7.1 (95% CI 4.1 – 12.4) for those with high cognitive social capital. Also, a ‘dose-response’ effect was observed, where a higher cognitive social capital score was increasingly associated with possible, presumed, and self-disclosed test seeking. Structural social capital was not significantly associated with being a presumed or self-disclosed test seeker, and having ‘black’ or ‘mixed’ and ‘other’ categories of self-reported ethnicity were not associated with test seeking in the adjusted logistic regression models. Persons of female gender, more education, or more income were less likely to be associated with being a test seeker. Compared to São Paulo, donors in Recife had higher odds of being a possible, OR=1.9 (95% CI: 1.6 – 2.2), presumed, OR=2.6 (95% CI: 1.9 – 3.4) or self-disclosed test seeker, OR= 3.4 (95% CI: 2.6 – 4.5).

Discussion

Social capital has been defined as the resources embedded in a community structure which is accessed and/or mobilized in purposive actions and is comprised of two major domains: cognitive and structural.[4, 10, 12] To our knowledge this is the first analysis that correlates social capital and blood donation in Brazil. The willingness to donate blood has been associated with psychosocial, cultural and demographic factors; however few studies worldwide have correlated blood donation and social capital.[6, 7, 24–26] Kim and Kawachi analysed social capital as a predictor of self-rated health in the United States and found a significant association between formal group involvement and better health (more related to structural social capital), but did not find an association between trust and health (more related to cognitive social capital).[27] From this context and in contrast to our main hypothesis, test seekers have more cognitive social capital in Brazil compared to non-test seekers, even after adjusting for gender, education, income, and blood centre. Interestingly, structural social capital was not significantly associated with the categories that are most indicative of true test seeking.

Therefore, the common idea that blood donors are a naturally altruistic group and test seekers are an exception could be a false assumption. Healy focused on how the differences among European organizations and blood banks affected the profile of donors. He argued that it is as important to understand who the donors are as it is to understand where they donate.[5] Our study reinforces the idea that blood donors are not a homogenous group and

motivation to come to blood centres may be associated with both individual and social group characteristics.

In our study, demographic characteristics did not vary significantly among test seekers and non-test seekers, including the key factors identified in other studies: age, type of donor (first-time versus repeat), income and education level.[20, 28] However, we did find differences in gender and blood centre location, suggesting test seekers may not be a homogenous category of donors and could vary according to blood centres. Male gender was very highly associated with being a test seeker, as was donating in Recife. Recife has a higher proportion of male donors and, compared to São Paulo and Belo Horizonte, a lower income level and a less organized local healthcare system. According to a previous study, the Northeast compared to the Southeast of Brazil has more limited access to Voluntary Counselling and Testing (VCT) sites. More than 60% of the Northeast Brazilian population does not have easy access to VCTs. On the other hand, as blood banks constantly need donors, in trying to facilitate access of the population to donation, they become a *de facto* alternative for HIV testing, even though this is contrary to their mission.[29]

In our study the proportion of deferred donor candidates was similar between test seekers and non-test seekers. It has been described that mechanisms by which social capital may be linked to health include the faster dissemination of knowledge about health related innovations, maintenance of health norms, promotion of access to local services and amenities, and contributions to psychosocial processes that provide effective support and mutual respect.[30–32] Moreover, cognitive social capital is related more to the invisible rules of society, including the ideas that support collaborative behaviour. Trust is an important element in cognitive social capital and among general blood donors it can be crucial in deciding whether to donate or not. In this way, test seekers may not be different. Since they believe in the results of the test, they probably also believe in the capacity of the blood banks to infallibly avoid using infected blood. People with more cognitive social capital may have a good network and share information. Social networks constitute a primary source of social capital because network members provide a wide range of social support for and information exchange between one another.[30, 33] These networks also foster patterns of trust and reciprocity among members, which speaks to the individual and collective aspects of social capital.[4] Glynn and colleagues found encouragement to donate by friends or family and a request from the workplace were strong motivators for some groups.[2]

Interestingly, the 9 HIV positive accepted blood donors were classified as non-test seekers. We did not find any difference in social or demographic characteristics between the HIV positive and negative candidates. However, since they were approved for donation by medical interview, they may not have disclosed risk behaviours. Replacement donors were only associated with possible test seeking. In Brazil, replacement donors show lower prevalence of HIV and syphilis when compared to community donors, which is different from what might be expected.[34, 35] Consequently, qualified replacement donors may be retained in the pool of repeat donors as a safe resource of the blood supply.

Our study has limitations. First, the definition of test seeker is difficult to validate. We used three questions to define test seeking, thus misclassification could have occurred due to the inability to know for certain which donors were actual test seekers. Considering the similar distribution of deferral proportions among non-test seekers and test seekers, we do not believe that this was a source of differential bias in the identification of test seekers. Another potential limitation stems from the population mixture in Brazil, making race or ethnic background quite difficult to measure. We used self-reported ethnicity, but this measure may not be able to adequately represent the true social capital variability among races, if such a

difference exists. Another limitation may be due to employing an intentionally brief, self-administered questionnaire. There were only a few questions available to assess social capital, thus it was not possible to assess all dimensions of cognitive and structural social capital as described in the literature. [36] A further limitation is that our findings are from Brazil and may not be directly generalizable to other settings. However, the study has identified hypotheses of the relationship between test seeking and social capital that would be equally applicable in other countries, meriting similar studies elsewhere.

In spite of these limitations the results are provocative, and useful for blood banks. Blood banks are very dependent on their image in society because a positive image helps to ensure a sufficient blood supply. Test seekers may not change their behaviour unless they believe other institutions that conduct testing, such as VCTs, are as safe and reputable as blood banks. The ultimate solution to this problem probably will not be achieved with measures only inside blood banks. In order to prevent people from going to blood banks for testing, offering alternative locations which provide comparable service is crucial. This suggests a need for greater communication and coordination between blood centres and VCTs in Brazil. Test seekers have more cognitive social capital. This means that test seekers have more reciprocity, cooperation, sense of belonging and social support. Blood banks could leverage this in order to communicate with prospective donors in ways that convince them to seek testing at locations other than blood banks.

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Table 1a**Cognitive social capital questions**

Cognitive questions	Answer choices	Intended meaning
1. In the past 12 months, have you told someone in your neighbourhood about any personal problem(s) that you might have had?	Yes No Don't Know	To understand trust between the respondent and his/her neighbours
2. In your neighbourhood, people know each other. 3. In your neighbourhood, people care about each other. 4. In your neighbourhood, people do share the same values 5. In your neighbourhood, there are neighbours that could give financial support in case you needed it. 6. In your neighbourhood, there are neighbours that would inform you about a job opportunity. 7. Do you think that you belong to this neighbourhood? 8. People in this area actively participate in the neighbourhood association or community group. 9. In your neighbourhood, there are neighbours that could donate blood to help other neighbours.	Totally agree Agree Disagree Totally disagree Don't Know	These questions are about the feeling of trust
10. Have you helped carry a stranger's belongings? 11. Have you allowed someone to go ahead of you in a line? 12. Have you offered to help a handicapped or elderly person across a street?	Yes No Don't Know	These questions are about cooperation and support
13. In the past 12 months, have you or any of your family members, received help from neighbours when you/they have needed it?	Yes No Don't Know	To understand if the respondent received any help (emotional or social support) from his/her neighbours
14. Do you give money to charity?	Yes No Don't Know	To understand about giving money to charity as a measure of social involvement
15. Do you donate time or money to causes you believe in?	Yes No Don't Know	To understand if the respondent spends time or money for social causes.

Table 1b

Structural social capital questions

Structural questions	Answer choices	Intended meaning
1. Do you belong or attend meetings of any of the following groups or organizations, networks, associations, including any non-governmental organizations? (Trade or Labour Union/Political parties or movements; Educational groups/Cultural groups or associations; Councils/Social/Community development groups; Religious or spiritual groups; Self-help groups; Neighbourhood/village committees/groups for the elderly; Other (Specify))	Check all that apply	To understand if the respondent participates in one or more social groups or organizations
2. In the past 12 months, have you actively participated in some type of volunteer work to benefit your community or neighbourhood?	Yes No No, but I would No, and I never would Don't Know	To understand if the respondent helped other members of the community
3. In the past 12 months, have you gotten together with other neighbours to try to solve some problem that is affecting the area that you are living in?	Yes No No, but I would No, and I never would Don't Know	To understand if the respondent is linked with his/her neighbours
4. People in this area actively participate in campaigns and elections.	Totally agree Agree Disagree Totally disagree Don't Know	To understand if the respondent participates in campaigns and elections.

Table 2

Descriptive analysis according to category of test seeker.

Variables	Non Test Seeker N (%)	Possible Test Seeker N (%)	Presumed Test Seeker N (%)	Self-disclosed Test Seeker N (%)	p-value
Total	4755 (62.3)	1722 (22.5)	541 (7.1)	617 (8.1)	
Cognitive Social Capital					
Low	443 (76.8)	96 (16.6)	18 (3.1)	20 (3.5)	p<0.001
Below average	946 (68.7)	282 (20.5)	62 (4.5)	87 (6.3)	
Average	1797 (63.6)	672 (23.8)	162 (5.7)	193 (6.8)	
Above average	1262 (56.4)	563 (25.2)	196 (8.8)	216 (9.7)	
High	307 (49.5)	109 (17.6)	103 (16.6)	101 (16.3)	
Structural Social Capital					
Low	1253 (69.2)	329 (18.2)	105 (5.8)	124 (6.9)	p<0.001
Below average	398 (50.5)	242 (30.7)	54 (6.9)	94 (11.9)	
Average	2191 (61.3)	782 (21.9)	300 (8.4)	299 (8.4)	
Above average	425 (58.9)	207 (28.7)	36 (5.0)	53 (7.3)	
High	488 (65.7)	162 (21.8)	46 (6.2)	47 (6.3)	
Gender					
Female	1904 (70.2)	534 (19.7)	140 (5.2)	133 (4.9)	p<0.001
Male	2851 (57.9)	1188 (24.1)	401 (8.1)	484 (9.8)	
Age					
18-25	1334 (64.0)	485 (23.3)	126 (6.1)	138 (6.6)	p<0.001
26-30	970 (63.7)	343 (22.5)	86 (5.7)	124 (8.1)	
31-39	1219 (61.7)	451 (22.8)	137 (6.9)	169 (8.5)	
40+	1232 (60.0)	443 (21.6)	192 (9.3)	186 (9.1)	
Race					
White	1905 (68.3)	568 (20.4)	155 (5.6)	162 (5.8)	p<0.001
Black	624 (61.8)	227 (22.5)	78 (7.7)	80 (7.9)	

Variables	Non		Possible		Presumed		Self-disclosed		p-value
	Test Seeker N (%)	Test Seeker N (%)	Test Seeker N (%)	Test Seeker N (%)	Test Seeker N (%)	Test Seeker N (%)	Test Seeker N (%)	Test Seeker N (%)	
Mixture and others	2136 (57.7)	901 (24.3)	296 (8.0)	368 (9.9)					
Missing	90 (66.7)	26 (19.3)	12 (8.9)	7 (5.2)					
Education									
<8 years	383 (52.0)	173 (23.5)	82 (11.1)	99 (13.4)					p<0.001
8–10 years	666 (53.0)	323 (25.7)	123 (9.8)	146 (11.6)					
11 years	2707 (62.4)	1033 (23.8)	283 (6.5)	313 (7.2)					
College or more	845 (77.7)	162 (14.9)	38 (3.5)	42 (3.9)					
Missing	154 (71.0)	31 (14.3)	15 (6.9)	17 (7.8)					
Monthly Income									
Less than R\$500 (US\$250)	275 (43.6)	172 (27.3)	74 (11.7)	109 (17.3)					p<0.001
Between R\$ 501 and R\$ 1,000 (US\$ 251–500)	1202 (53.1)	629 (27.8)	194 (8.6)	240 (10.6)					
Between R\$ 1,001 and R\$ 3,000 (US\$ 501–1500)	1673 (65.8)	554 (21.8)	181 (7.1)	136 (5.3)					
More than R\$ 3,001 (US\$ 1501)	921 (77.01)	193 (16.1)	42 (3.5)	40 (3.3)					
Missing	684 (68.4)	174 (17.4)	50 (5.0)	92 (9.2)					
Blood Centre Location									
São Paulo	1949 (72.9)	464 (17.4)	137 (5.1)	123 (4.6)					p<0.001
Belo Horizonte	1789 (70.2)	531 (20.8)	112 (4.4)	115 (4.5)					
Recife	1017 (42.1)	727 (30.1)	292 (12.1)	379 (15.7)					
Donation Type									
Community	2541 (69)	699 (19)	217 (5.9)	224 (6.1)					p<0.001
Replacement	1303 (51.9)	711 (28.3)	225 (9.0)	271 (10.8)					
Deferred	911 (63.1)	312 (21.6)	99 (6.9)	122 (8.5)					
Donor Status									
Repeat	3016 (62.3)	1064 (21.9)	354 (7.3)	410 (8.5)					p=0.15
First-time	1739 (62.3)	658 (23.6)	187 (6.7)	207 (7.4)					
HIV EIA Screening Result									

Variables	Non		Possible		Presumed		Self-disclosed		p-value
	Test Seeker	N (%)	Test Seeker	N (%)	Test Seeker	N (%)	Test Seeker	N (%)	
Negative	3835	(62.0)	1410	(22.8)	442	(7.2)	495	(8.0)	
Positive	9	(100)	0		0		0		p=0.13
Not tested (Deferred)	911	(63.1)	312	(21.6)	99	(6.9)	122	(8.5)	

Table 3

Logistic regression analysis for socio-demographics, descriptive characteristics and social capital variables among candidate blood donors according to HIV test seeker group[†]

	Possible Test Seeker	Presumed Test Seeker	Self-disclosed Test Seeker
Variables	Ad OR ^a (95%CI)	Ad OR ^b (95%CI)	Ad OR ^c (95%CI)
Cognitive Social Capital			
Low	1.0	1.0	1.0
Below average	1.2 (0.9 – 1.5)	1.6 (0.9 – 2.9)	2.1 (1.3 – 3.6)
Average	1.3 (1.0 – 1.7)	2.3 (1.3 – 3.9)	2.5 (1.5 – 4.2)
Above average	1.5 (1.1 – 1.9)	3.6 (2.1 – 6.2)	3.8 (2.2 – 6.3)
High	1.1 (0.8 – 1.6)	7.4 (4.2 – 13.3)	7.1 (4.1 – 12.4)
Structural Social Capital			
Low	1.0	1.0	1.0
Below average	1.7 (1.3 – 2.1)	0.8 (0.6 – 1.2)	1.3 (0.9 – 1.8)
Average	1.2 (1.1 – 1.5)	1.1 (0.8 – 1.4)	1.0 (0.8 – 1.3)
Above average	1.5 (1.2 – 1.9)	0.6 (0.4 – 1.0)	0.8 (0.6 – 1.2)
High	1.1 (0.9 – 1.5)	0.7 (0.5 – 1.0)	0.7 (0.4 – 1.0)
Gender			
Female	1.0	1.0	1.0
Male	1.4 (1.2 – 1.5)	1.6 (1.3 – 2.0)	2.1 (1.7 – 2.6)
Age			
18–25	1.0	1.0	1.0
26–30	1.0 (0.8 – 1.2)	0.9 (0.7 – 1.3)	1.2 (0.9 – 1.6)
31–39	1.0 (0.9 – 1.2)	1.0 (0.8 – 1.3)	1.1 (0.9 – 1.5)
40+	1.1 (0.9 – 1.3)	1.5 (1.1 – 2.0)	1.2 (0.9 – 1.6)
Race			
White	1.0	1.0	1.0
Black	1.0 (0.8 – 1.2)	1.2 (0.9 – 1.7)	1.0 (0.8 – 1.4)
Mixture and others	1.0 (0.9 – 1.2)	1.1 (0.9 – 1.4)	0.7 (0.3 – 2.0)
Education			
<8 years	1.0	1.0	1.0
8–10 Years	0.9 (0.7 – 1.2)	0.8 (0.5 – 1.1)	0.6 (0.4 – 0.8)
11 Years	0.9 (0.7 – 1.1)	0.6 (0.4 – 0.8)	0.7 (0.5 – 1.0)
College or more	0.6 (0.4 – 0.8)	0.3 (0.2 – 0.5)	0.4 (0.3 – 0.6)
Monthly Income			
Less than R\$500 (US\$250)	1.0	1.0	1.0
Between R\$ 501 and R\$ 1,000 (US\$ 251–500)	0.9 (0.8 – 1.2)	0.8 (0.6 – 1.1)	0.7 (0.5 – 0.9)
Between R\$ 1,001 and R\$	0.7 (0.5 – 0.9)	0.7 (0.5 – 1.0)	0.4 (0.3 – 0.5)

	Possible Test Seeker	Presumed Test Seeker	Self-disclosed Test Seeker
Variables	Ad OR ^{*a} (95%CI)	Ad OR ^b (95%CI)	Ad OR ^c (95%CI)
3,000 (US\$ 501–1500)			
More than R\$ 3,001 (US\$ 1501)	0.5 (0.4 – 0.7)	0.4 (0.2 – 0.6)	0.2 (0.2 – 0.4)
Blood centre Location			
São Paulo	1.0	1.0	1.0
Belo Horizonte	1.0 (0.8 – 1.2)	0.7 (0.5 – 1.0)	0.8 (0.6 – 1.1)
Recife	1.9 (1.6 – 2.2)	2.6 (1.9 – 3.4)	3.4 (2.6 – 4.5)
Donation Type			
Community	1.0	1.0	1.0
Replacement	1.4 (1.2 – 1.6)	1.2 (0.9 – 1.5)	1.1 (0.9 – 1.5)
Deferred	1.1 (0.9 – 1.2)	1.0 (0.8 – 1.4)	1.2 (0.9 – 1.5)
Donor Status			
Repeat	1.0	1.0	1.0
First-time	1.1 (0.9 – 1.2)	1.0 (0.8 – 1.2)	0.9 (0.7 – 1.1)

⁺ Non-test seekers is the reference group.

^{*} Adjusted odds ratio

^a Presumed and self-disclosed test seekers were excluded

^b Possible and self-disclosed test seekers were excluded

^c Possible and presumed test seekers were excluded