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HIV test-seeking blood donors in a large blood bank in São Paulo, Brazil

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Abstract

Background—Persons with HIV risk behaviors are excluded from donation to reduce the risk of transfusion-transmitted infection. Persons donating in order to be tested for HIV may therefore deny risk behaviors.

Methods—A random sample of donors completed a survey on motivations, knowledge, and attitudes on the screening process. Donors were considered test seekers if they agreed with two statements: “I think that blood donation is a good, fast, and anonymous way to get my blood tested” and “I donate to get my test results”. This study was conducted from June to November 2006 at the largest blood bank in São Paulo, Brazil.

Results—Of 3,061 participants, 208 (7%) were test seekers. They tended to be male and lower educational level. They were more likely to have incorrect knowledge about blood safety (e.g., not knowing that a unit can test antibody negative and still transmit infection, 50% vs. 42%, $p=0.02$), express dissatisfaction with screening questions (e.g., feeling important questions were not asked, 14% vs. 5%, $p<0.01$), and concur that donors do not answer questions truthfully (e.g., donors have more sexual partners than they admit, 29% vs. 18%, $p<0.01$). Test seekers were more likely to believe it is alright to donate blood to get tested for HIV (41% vs. 10%, $p<0.01$).

Conclusion—Test-seeking motivation, coupled with low knowledge of window period risk, is counter to improving blood safety and to donor prevention needs. Donor education needs to be improved along with availability of appropriate HIV counseling and testing.

Introduction

In accordance with international guidelines^{1,2}, blood banks worldwide have implemented a set of procedures to keep the blood supply as free of transfusion-transmissible infections (TTI) as possible. For example, in Brazil diseases considered as TTI include HIV, Chaga's disease, syphilis, hepatitis B, hepatitis C, and HTLV I/II. Blood is excluded from use based on any reactivity on serological screening tests. In the case of HIV, screening all donations for

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antibodies leaves an immunological window period (i.e., the delay between newly acquiring HIV infection and the development of sufficient levels of antibodies for detection³⁻⁵) and results in a residual risk of contamination as donations made during this time can transmit infection. For example, the residual risk for HIV has been estimated as 1 per 15 to 17 per million donations in our blood bank in São Paulo⁴. To reduce this residual risk, many industrialized nations conduct HIV nucleic acid testing (NAT) to detect the presence of the virus prior to antibody seroconversion⁵⁻⁸. In the USA, NAT has reduced the residual risk of HIV contamination from 1 in 493,000 to an estimated 1 per 2 million^{3,6,9}.

Countries that do not conduct NAT rely on other measures to reduce the residual risk of TTI. These include establishing a stable blood supply based on regular, low-risk, voluntary donors¹⁻³. The approach varies according to location, but steps to accomplish this include active recruitment of altruistic donors from the community and the reduction or elimination of paid and family replacement donors. Blood banks also exclude or temporarily defer persons from donations who answer affirmatively to a series of medical and behavioral questions on risk factors for HIV (e.g., having male-male sex, having sex with sex workers, and history of injection drug use)¹⁻³. The rationale is that such persons are more likely to be in the immunological window period than persons without such risk factors when testing negative for HIV antibodies.

There is concern and evidence that some candidate donors may not disclose risk factors for HIV infection¹⁰⁻¹⁴. Several hypotheses may explain why this could happen. First, behaviors associated with HIV infection are often highly stigmatized or illegal (e.g., male-male sex, injection drug use) and therefore donor candidates may be embarrassed or afraid to answer affirmatively. Replacement donors (i.e., persons providing a donation when a family member needs blood) may be particularly vulnerable to this pressure given their refusal to donate or deferral from donation may engender suspicion about their behavior from their family. Second, donors may not understand the immunological window period and the risk of residual contamination in the presence of negative serological testing. Another hypothesis is that the underlying motivation to donate blood for some persons is the desire to be tested for HIV and learn their serostatus^{10,12,15,16}. Such test-seeking donors may realize that admission to any risk factor for infection will result in their blood not being collected and tested therefore denying them their purpose in donating. Some studies of TTI-infected donors found they acknowledged test seeking in post donation interviews as the reason why they did not admit to risk factors during intake¹⁷. In our blood bank in São Paulo, Brazil, we estimated that one in eleven donors may be donating to be tested for HIV¹⁰. We found that such test seekers did not report risk factors for HIV but did have a higher prevalence of HSV-2 infection – a marker for sexual risk behavior¹⁸⁻²².

Higher rates of sexual or other risk factors for infection pose a threat to the safety of the blood supply. Moreover, the blood donation process is not the appropriate setting to provide persons with adequate counseling for risk reduction, particularly if they feel compelled to deny their risk behavior. New strategies need to be developed to address this conundrum, beginning with a better understanding of the knowledge, attitudes, and beliefs of test-seeking donors. We therefore conducted a survey of blood donors in São Paulo, Brazil to measure their motivations to donate blood, their understanding of the window period and risk factor deferral, their attitudes about disclosure of risk factors, their satisfaction with the donor screening process, and their level of trust in the blood bank.

Materials and Methods

Overall study design and setting

We conducted a cross-sectional survey consisting of randomly sampled persons presenting for blood donation from June to November 2006 at the central collection site of the Fundação Pro-Sangue/Hemocentro São Paulo (FPS/HSP). FPS/HSP is one of the largest blood banks in Latin America, processing 180,000 units of blood annually, representing approximately 50% of the blood collected in the city of São Paulo and 6% in all of Brazil. Persons accepted for donation and consenting to the study were given a self-administered questionnaire on their motivations to donate, their knowledge of transfusion transmission risk, and their attitudes towards the risk deferral questions and donation process.

Study subjects, sampling design, and procedures

Study subjects were persons aged 18 to 65 years who were approved as blood donors following the usual exam, medical history, and routine risk deferral interview questions. We constructed a representative sample of all blood donors using a time-location sampling design²³. We first created a sampling frame comprised of all 6-hour morning and evening blood collection shifts from June to November 2006 (i.e., 360 shifts). Using a random-number table, we made a simple random sample of 200 shifts. At the selected shift, we randomly selected donors to invite them to participate in the study. This was accomplished by using the last digit of their donor registration number (e.g., 1 and 0 on Mondays, 2 and 3 on Tuesdays, etc.). Participants first underwent the usual steps of vital signs, hemoglobin check, and interview on medical history and risk behavior routinely done face-to-face. If they passed these steps, they proceeded to donate a unit of blood. After donating, they were given our self-administered paper study survey to complete in a private room.

Serological testing and disclosure of results were conducted according to the standard practices of the blood bank for all donors. In Brazil, diseases considered as TTI include HIV, Chaga's disease, syphilis, hepatitis B (HBV), hepatitis C (HCV), and HTLV/II. Blood is excluded from use based on any reactivity on serological screening tests. Blood donors who present reactive or indeterminate results are asked to come back for a confirmatory testing and a second blood sample is taken. Screening tests included HBV surface antigen (Dade Behring Enzygnost®AgHbs 5.0 Newark, DE, USA), HBV core antibody (bioMérieux Hepanostica® Anti-Hbc Uni-Form, Boxtel, The Netherlands and Dade Behring Enzygnost® Anti-Hbc Monoclonal, Marburg, Germany), anti-HCV antibody (ABBOTT Murex, Murex anti-HCV-version 4-0, Kyalima, South Africa), anti-HTLV/II (Ortho, Ortho® HTLV/HTLVII Ab-Capture ELISA Test System, Raritan, NJ, USA and Abbott Murex HTLV I+II Dartford, UK), anti-HIV1/2+0 (Abbott Murex HIV 1.2.0, Dartford, UK and, bioMérieux Vironostika® HIV Uni-Form II plus O, Boxtel, The Netherlands), HIV Ag/Ab: bioMérieux Vironostika® HIV Uni-form II plus O, Boxtel, The Netherlands and Bio-Rad Genscreen® UltraHIV Ag/Ab, Marnes-la-Coquette, France), syphilis (Dade Behring Enzygnost® Syphilis, Marburg, Germany), and Chagas disease (Biomérieux CHAGATEK ELISA; Biomérieux, Buenos Aires, Argentina). If all results are negative, blood donor received by mail a report that all tests were negative. If one or more of the tests was initially positive or inconclusive, participants received one of five different letters that do not explicitly report the serological test results but rather communicate different levels of urgency in returning to the blood bank for counseling and re-testing, with HIV-positive results communicating the most urgency. Return rates for results disclosure and retesting are approximately 60% overall. Too few participants were positive for TTI (2% positive on any marker) in our study to allow for a direct analysis of whether an association exists between test seeking and a positive serology.

Measures

In order to impose the least impact on the usual operations of blood collection and to not bias our results, our survey did not include questions on risk behaviors. Candidate donors are routinely excluded from donation if they acknowledged having been at risk for HIV, specifically if they: ever injected drugs; had sex with a drug user in the last 12 months, had male-male sex in the last 12 months, had six or more sexual partners in the last 12 months, had sex with an anonymous partner in the last 12 months, had been to the red light district in the last 12 months, ever had exchanged money or drugs for sex, ever had sex with someone suspected of having HIV, or had been diagnosed with a sexually transmitted disease in the last 12 months. For the later question, donors were asked if a health care provider told them they had a sexually transmitted infection in the last 12 months. Donors are also deferred if they indicate that they are seeking an HIV test. Therefore, all our participants denied these behaviors.

Our study survey focused on donor motivations and knowledge, attitudes, and beliefs concerning TTI and the donation process (including the risk behavior questions) measured as 3-point scales of agreement/disagreement with statements. As in our previous survey²⁴, donors were classified as test seekers if they indicated they “strongly agree” with both of the following questions: “I think that blood donation is a good, fast, and anonymous way to get my blood tested” and “I donate blood in order to get my blood test results”. Although the question does not specify HIV testing as opposed to testing for other TTI in its wording, our previous research and post-donation counseling find that virtually all donors consider the HIV test and are far less concerned or aware of the other TTI tests²⁴. The wording is consistent with our previous study. The preceding and following knowledge and opinion questions asked concern HIV, also affirming the context for these questions. Other questions assessed understanding or factual knowledge concerning transfusion transmission risk, for example, “A person may have HIV despite a negative test and still be able to transmit infection to someone through blood transfusion”. Attitudes towards not admitting to risk behavior during the usual donor interview were gauged with several questions, such as “Do you believe it is OK to not answer the questions truthfully in order to donate blood?” and “Many people are not honest when answering the questions”. Questions assessing satisfaction with the donor interview process included items such as “I did not like the donor interview”. We also included attitudes towards blood banks, including “I trust this blood bank” and “Nowadays, blood banks offer safer blood”. Basic demographic information follows the standard donation form, with categories used following guidelines of the Brazilian Institute of Geography and Statistics.

After completing this first part of the survey, subjects returned the completed questionnaire to the study staff and completed a second part. The second part began with being given a one-page explanation to read concerning the above listed TTI with a focus on HIV, the meaning of the immunological window period, and the importance of deferring persons with risk for infection from donation. Donors were then asked “After you have read the information above, would you change any of your answers in the donor health questionnaire?”

Analysis

Our analysis compared test-seeking donors to non-test seekers with respect to demographic characteristics, type of donation, and the motivations, knowledge, attitudes, and beliefs described above. Comparisons of proportions used the chi-square test or the Fisher's exact test (when an expected cell size was five or fewer). Associations at the $p < 0.05$ level were considered statistically significant, but we also discuss findings at the $p < 0.10$ level. We based a pre-survey sample size and power estimate of 3,000 on an expected proportion of test seekers from our previous study and 80% power to detect effects on the order of 50% relative increases or greater in factors associated with test-seeking behavior at a 0.05 significance level.

Ethical considerations

In keeping with the voluntary nature of blood donation, no monetary reward was given to the subject for participation in our study. Participants provided written informed consent and were instructed that their answers to the survey questions would not affect their current or future donation status. The protocol was reviewed and approved by the Internal Review Board of Hospital das Clinicas (in which FSP/HSP is located), the National Ethical Commission for Research (CONEP), and the Committee on Human Research of the University of California, San Francisco.

Results

During the six-month study period, 4,249 randomly selected donor candidates were approached at the randomly selected shifts of whom 3,061 (72%) donated blood and agreed to participate. The majority was male (61%), of white race/ethnicity (54%), single (51%), between the ages of 21 to 40 years (69%), with a monthly income over 1000 reais (approximately US \$500) (70%), and in the highest education category (12 or more years) (81%). Over three-fourths (79%) were community-recruited voluntary donors, with the remainder being family replacement donors. For 28%, the current donation was their first; 44% were recent (i.e., within last 12 months) repeat donors, and 28% had donated previously but not within the last 12 months (henceforth referred to as “lapsed” donors).

Of the 3,061 participants, 208 (7%) were classified as HIV test seekers based on strong agreement with two questions concerning their motivation to donate blood in order to get their test results: “I think that blood donation is a good, fast, and anonymous way to get my blood tested” and “I donate blood in order to get my blood test results.” (Table 1) Compared to non-test seekers, test seekers were more likely to be male, of non-white race/ethnicity, have a lower income, and a lower education level (all p -values <0.01). Test seekers were somewhat more likely to be first time or lapsed donors as opposed to regular repeat donors ($p=0.07$).

Test seekers were less likely to understand that a person may test HIV-negative yet still be able to transmit infection through a blood transfusion (71% vs. 83%, respectively, $p<0.01$, Table 2). Test seekers were significantly more likely than other donors to endorse accepting attitudes towards not disclosing risk behaviors. These included believing it is OK not to answer questions truthfully in order to donate blood (12% vs. 7%, $p<0.01$) and for the purpose of getting tested for HIV through donation (41% vs. 10%, $p<0.01$). Test seekers felt there is justification in hiding risk behavior because any infection in the blood will be detected and the unit thrown away anyway (very much agree 26% vs. 10%, $p<0.01$). Test seekers were more likely to assert that people were not honest when answering the risk questions (29% vs. 16%, $p=0.01$), that they understate their number of sex partners (29% vs. 18%, $p<0.01$) and drug use (32% vs. 19%, $p<0.01$) and that they deny their male-male sexual behavior (33% vs. 18%, $p<0.01$). Moreover, test seekers were more likely to say it is easy to pass the questionnaire by memorizing the “correct” answers (24% vs. 8%, $p<0.01$).

Test seekers expressed more dissatisfaction with the donor interview than other donors. Test seekers were more likely to say they did not like the interview (34% vs. 16%, $p<0.01$), that the interviewer did not ask the questions correctly (16% vs. 6%, $p<0.01$) and that the interviewer was prejudiced (7% vs. 4%, $p=0.05$). Concerning the interview process, test seekers were more likely to agree that people are embarrassed to ask for clarifications (26% vs. 12%, $p<0.01$) or to answer sexual behavior questions (33% vs. 17%, $p<0.01$). Test seekers also felt that important questions were omitted from the interview (14% vs. 5%, $p<0.01$).

With respect to general attitudes toward blood donation and blood banks, test seekers were much more favorably disposed than non-test-seekers. Test seekers liked to donate blood,

trusted blood banks in general, trusted our blood bank in particular and believed that blood was safer nowadays compared to non-test seekers (all p-values <0.01).

After reviewing the educational materials about the window period and the importance of disclosing HIV risk related behavior, 12% of test seekers indicated they would now change their responses on the donor interview; a similar proportion of non-test seekers also indicated they would change their responses (11%, p=0.65).

Discussion

Our data suggest that it will be difficult to change the disclosure of risk behavior of persons who seek blood donation as a means of getting tested for HIV. We discern a pattern of self-reinforcing attitudes and beliefs: test-seeking donors have a strong desire to obtain their test results through donation probably because it is free, fast, and they like and trust the blood bank. They know that one needs to deny any risk in order to get the test and tend to endorse this practice as acceptable. They also tend to believe the HIV antibody test used to screen the blood supply will detect all infections; thus, they do not appear to have an understanding of the window period risk. In addition, our attempt to improve understanding of why the blood of donors at risk for HIV should not be transfused had no apparent net benefit on how test seekers would respond to risk factor questions in the future. For the one in 14 donors classified as test seekers, additional measures are needed to divert their blood away from use.

The process of “confidential unit exclusion” (CUE), where persons accepted for blood donation secretly indicate not to use their blood for transfusion, would apparently offer a means of diverting test-seeking donors from having their blood used. CUE does not require acknowledging risk behavior, avoids potential embarrassment of deferral, and allows one to still get test results. However, at present very few donors use CUE at all, generally less than 2% in our blood bank. In the present study, 29 persons used CUE, including five (2.4%) test seekers compared to 24 (0.8%) non-test seekers. Although the data suggest a higher level of CUE use among test seekers (p=0.04), caution should be exercised in interpreting the small numbers. The small numbers in themselves indicate that few test-seekers currently use CUE. Other studies have found that the CUE process has low sensitivity and low positive predictive value, and in many cases, is misunderstood by donors²⁵⁻²⁸. Yet, some other authors found that CUE positive units were more likely to be seropositive for any infectious disease markers than CUE negative units.²⁵⁻²⁸ Zou *et al*²⁵ reported that donors who used CUE had higher rates of deferrable risks, although the predictive accuracy of CUE was poor. Improving understanding of CUE among donors in Brazil and validating its effectiveness in reducing TTI are areas requires further research.

We do not interpret our data as evidence to abandon risk deferral questions or donor education. Rather, it appears that the minority of donors who are test-seekers may be determined to circumvent the risk questions anyway and that further education may not address this problem. In the first place, the very presence of risk factor deferral questions probably discourages persons at risk of TTI from presenting for donation. Risk factor deferral may for the most part exclude the non-test seeking candidate donors with risk factors for TTI. In our blood center, for example, approximately 30.2% of donors are excluded for a risk behavior¹⁰. However, blood banks need to conduct direct validation to verify that their risk factor deferral questions do indeed exclude candidate donors at higher risk of infection (e.g., testing deferred donors to establish predictive values for questions or by comparing the prevalence of HSV-2 when power is low²⁰) and to assess the level of test-seeking motivation as a potential bias. It is worth noting that NAT, not currently routine at most blood banks in Brazil, would reduce the residual risk of TTI independently of donor risk deferral questions and may therefore be more effective in reducing the residual risk of TTI contamination than questions on risk or additional donor

information materials. Of course, we acknowledge that part of the lack of disclosure of risk may be related to the manner in which questions are asked (i.e., face-to-face as opposed to audio computer-assisted structured interview (ACASI) which affords more privacy when answering the questions)²⁹⁻³¹.

We also acknowledge that our study is limited by small numbers. Nonetheless, our data did allow for the detection of several significant differences between test seekers and other donors in areas that can be improved upon, including knowledge of TTI, endorsement of hiding risk behavior, and dissatisfaction with the donor interview process. We also recognize the limitations in self-reported information. While under-reporting of stigmatized risk behaviors is common to many studies, such bias may be particularly pertinent to our target population because many of our participants endorsed not disclosing risk as a means to avoid being excluded from donation. Our design attempted to limit this bias by asking our questions after participants went through the usual interview, after acceptance to donation, and by having the informed consent clarify that the study questions would not affect their donation status.

Aside from blood safety, there is another public health cost in not addressing the issue of test-seeking behavior among blood donors. The need for true counseling and testing of persons at risk are not well served by the blood bank's mandate to keep the blood supply safe and the processes to exclude persons at risk. For example, by denying their HIV-related behaviors, true client-centered counseling cannot be done and risk reduction is not likely to occur. Because the test-seeking behavior is clandestine, persons may be passive in obtaining test results or make wrong assumptions about their status. For example, if they do not hear from the blood bank or if letters sent to donors are deliberately ambiguous to preserve confidentiality, then donors might wrongly assume they are or are not infected. Approximately 40% of serologically positive donors at our center do not return for their results. Therefore, we believe our data suggest a possible solution to these dilemmas: ask donor candidates questions on how important it is for them to get their test results and offer the option of testing in the location at which they are already presenting (i.e., at the blood collection site, but unlinked to a donation), conducted by the institution they trust. Our study predicts that this would apply to few donors overall. Such a service will need to be carefully evaluated, particularly as to whether it increases the number of persons at risk presenting to the blood bank (i.e., a "magnet effect"). Meanwhile, improving the quality of alternative HIV counseling and testing services in the wider community so persons will be less inclined to use the blood bank to know their serostatus is also necessary. While Brazil does have a system of free HIV counseling and testing, our study suggests that many people still prefer blood donation to accessing these services. Another area of investigation is to assess whether there are particular barriers to the alternative testing sites among blood donors and the larger public and if so, how to reduce these barriers.

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Table 1

Characteristics of blood donors by test-seeking motivation, São Paulo, Brazil.

Variable	Total n	Non-test seekers n (%)	Test seekers n (%)	p-value *
Total	3,061	2,853 (93)	208 (7)	--
Sex:				<0.01
Male	1,875	1,717 (92)	158 (8)	
Female	1,186	1,136 (96)	50 (4)	
Race/ethnicity:				<0.01
White	1,658	1,574 (95)	84 (5)	
Mixed	822	747 (91)	75 (9)	
Black	390	354 (91)	36 (9)	
Asian	85	84 (99)	1 (1)	
Other	41	37 (90)	4 (10)	
Missing	65	57 (88)	8 (12)	
Marital status:				0.41
Single	1,574	1,474 (94)	100 (6)	
Married	1,090	1,013 (93)	85 (8)	
Divorced	323	305 (94)	18 (6)	
Other	55	51 (93)	4 (7)	
Missing	19	10 (53)	9 (47)	
Age in years:				0.81
<21	62	59 (95)	3 (5)	
21-30	1,185	1,106 (93)	79 (7)	
31-40	917	854 (93)	63 (7)	
41-50	581	536 (92)	45 (8)	
>51	316	298 (94)	18 (6)	
Monthly income, reais [†] :				<0.01
500	185	172 (93)	13 (7)	
501-1000	865	775 (90)	90 (10)	
1001-3000	1,221	1,144 (94)	77 (6)	
>3000	692	670 (98)	22 (2)	
Missing	98	92 (94)	6 (6)	
Years of school:				<0.01
<8	398	343 (86)	55 (14)	
8	365	338 (93)	27 (7)	
9-11	1,134	1,061 (94)	73 (6)	
12+	1,154	1,101 (95)	53 (5)	
Missing	10	10 (100)	0	

Variable	Total n	Non-test seekers n (%)	Test seekers n (%)	p-value *
Type of donor:				1.00
Community	2,413	2,249 (93)	164 (7)	
Family replacement	647	603 (93)	44 (7)	
Missing	1	1 (100)	0	
Donation history:				0.07
First time	871	806 (93)	65 (8)	
Repeat, <1 year	1,374	1,296 (94)	78 (6)	
Lapsed, ≥1 year	816	751 (85)	65 (7)	

* Compared to non-test seekers;

† 1 real is approximate US \$0.5

Table 2

Knowledge, attitudes, and beliefs of blood donors by test-seeking motivation, São Paulo, Brazil (n=3,061).

Domain/question	Answer	Test seekers n (%)	Non-test seekers n (%)	p-value
Understanding of the window period				
A person may have HIV with a negative test and still be able to transmit infection to someone through blood transfusion.	True	144 (69)	2309 (81)	<0.01
	False	60 (29)	463 (16)	
	Don't know	0 (0)	27 (1)	
	Missing	4 (2)	54 (2)	
Attitudes towards not admitting risk behavior on donor screening questions				
Do you believe it is OK to not answer the questions truthfully in order to donate blood?	Yes	23 (11)	180 (6)	<0.01
	No	175 (84)	2598 (91)	
	Missing	10 (5)	75 (3)	
Do you believe it is OK to donate blood in order to be tested for HIV?	Yes	83 (40)	277 (10)	<0.01
	No	122 (59)	2533 (89)	
	Missing	3 (1)	43 (1)	
It is OK if a person hides information on the donor health interview because the blood test will detect infection and the blood will be thrown away.	Not at all agree	98 (47)	1773 (62)	<0.01
	Very little agree	29 (14)	447 (16)	
	Somewhat agree	27 (13)	298 (10)	
	Very much agree	53 (25.5)	270 (10)	
	Missing	1 (.5)	65 (2)	
Many people are not honest when answering the questions.	Not at all agree	33 (16)	299 (11)	<0.01
	Very little agree	47 (23)	826 (29)	
	Somewhat agree	58 (28)	1148 (40)	
	Very much agree	57 (27)	436 (15)	
Some people have more sexual partners than they admit to on the donor interview.	Missing	13 (6)	144 (5)	<0.01
	Not at all agree	46 (22)	365 (13)	
	Very little agree	45 (22)	756 (26)	
	Somewhat agree	52 (25)	1109 (39)	

Domain/question	Answer	Test seekers n (%)	Non-test seekers n (%)	p-value
	Very much agree	59 (28)	491 (17)	<0.01
	Missing	6 (3)	132 (5)	
Some people do not admit to using drugs on the donor interview.	Not at all agree	41 (20)	350 (12)	<0.01
	Very little agree	31 (15)	531 (19)	
	Somewhat agree	62 (30)	1317 (46)	
	Very much agree	65 (31)	521 (18)	
	Missing	9 (4)	134 (5)	
Some people do not admit they have male-male sex on the donor interview.	Not at all agree	44 (21)	395 (14)	<0.01
	Very little agree	29 (14)	544 (19)	
	Somewhat agree	61 (30)	1265 (44)	
	Very much agree	67 (32)	482 (17)	
	Missing	7 (3)	167 (6)	
It is easy to pass the donor screening questions by memorizing the correct answers.	Not at all agree	97 (47)	1440 (50)	<0.01
	Very little agree	28 (13)	624 (22)	
	Somewhat agree	28 (13)	507 (18)	
	Very much agree	47 (23)	208 (7)	
	Missing	8 (4)	74 (3)	
Dissatisfaction with the donor interview				
I did not like the donor interview.	Not at all agree	86 (41)	1617 (57)	<0.01
	Very little agree	18 (9)	333 (11)	
	Somewhat agree	30 (14)	392 (14)	
	Very much agree	68 (33)	449 (16)	
	Missing	6 (3)	62 (2)	
I felt the interviewer was not able to ask the questions correctly.	Not at all agree	150 (72)	2231 (78)	<0.01
	Very little agree	17 (8)	268 (9)	
	Somewhat agree	6 (3)	139 (5)	
	Very much agree	32 (16)	164 (6)	
	Missing	3 (1)	51 (2)	

Domain/question	Answer	Test seekers n (%)	Non-test seekers n (%)	p-value
I felt the interview was prejudiced.	Not at all agree	171 (82)	2417 (85)	0.05
	Very little agree	13 (6)	199 (7)	
	Somewhat agree	3 (2)	82 (3)	
	Very much agree	14 (7)	99 (3)	
	Missing	7 (3)	56 (2)	
Some people are embarrassed to ask the interviewer for clarifications or to repeat the questions.	Not at all agree	41 (20)	450 (16)	<0.01
	Very little agree	27 (13)	608 (21)	
	Somewhat agree	84 (40)	1407 (49)	
	Very much agree	54 (26)	327 (12)	
	Missing	2 (1)	61 (2)	
Some people are embarrassed to answer the sexual questions on the donor interview.	Not at all agree	47 (22)	457 (16)	<0.01
	Very little agree	18 (9)	484 (17)	
	Somewhat agree	72 (35)	1359 (48)	
	Very much agree	67 (32)	466 (16)	
	Missing	4 (2)	87 (3)	
I believe the donor interview omits some important questions.	Not at all agree	91 (44)	1326 (47)	<0.01
	Very little agree	48 (23)	887 (31)	
	Somewhat agree	33 (16)	367 (13)	
	Very much agree	27 (13)	147 (5)	
	Missing	9 (4)	126 (4)	
Attitudes towards blood donation and blood banks				
I like to donate blood.	Not at all agree	2 (1)	50 (2)	<0.01
	Very little agree	7 (3)	187 (6)	
	Somewhat agree	29 (14)	740 (26)	
	Very much agree	170 (82)	1830 (64)	
	Missing	0 (0)	46 (2)	
I trust blood banks.	Not at all agree	3 (2)	52 (2)	<0.01
	Very little agree	5 (3)	175 (6)	

Domain/question	Answer	Test seekers n (%)	Non-test seekers n (%)	p-value
	Somewhat agree	23 (11)	790 (28)	
	Very much agree	175 (83)	1787 (62)	
	Missing	2 (1)	49 (2)	
I trust this blood bank.	Not at all agree	4 (2)	30 (1)	<0.01
	Very little agree	1 (.5)	117 (4)	
	Somewhat agree	26 (12.5)	647 (23)	
	Very much agree	172 (83)	1982 (69)	
	Missing	5 (2)	77 (3)	
Nowadays, blood banks offer safer blood.	Not at all agree	5 (2)	88 (3)	<0.01
	Very little agree	18 (9)	384 (13)	
	Somewhat agree	58 (28)	1228 (43)	
	Very much agree	120 (58)	1019 (36)	
	Missing	7 (3)	134 (5)	