Importance of information provision in the acceptance of blood donation criteria by the general public in Belgium

Bert Avau[1,2], Emmy De Buck[1,3], Philippe Vandekerckhove[2,3,4], Veerle Compernolle[4]

[1]Centre for Evidence-Based Practice (CEBaP), Belgian Red Cross, Mechelen; [2]Cochrane Belgium, Centre for Evidence-Based Medicine, Leuven; [3]Department of Public Health and Primary Care, Faculty of Medicine, KU Leuven, Leuven; [4]Belgian Red Cross, Mechelen; [5]Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium

Background. Blood transfusions save lives, but carry the risk of causing transfusion-transmitted diseases. This risk is limited by strict donor selection criteria, the most controversial being the exclusion of men who had sex with men (MSM). This cross-sectional study investigated knowledge and beliefs of the general public concerning donor exclusion criteria, with emphasis on MSM.

Materials and methods. A representative sample of the population of Flanders, Belgium was questioned using a web-based questionnaire. The effect of additional information on people's opinions was tested.

Results. People were less aware of the exclusion of MSM than of other risk populations, e.g. prostitutes. Correspondingly, they were more willing to accept blood from MSM than from other risk populations. MSM were also considered appropriate donors. Interestingly, prior knowledge about the exclusion of MSM appeared to be the strongest predictor for not accepting blood from MSM or a more stringent attitude on MSM exclusion. Receiving information on reasons for exclusion shifted opinions towards more stringency. Nevertheless, most people think that exceptions for MSM should be made under certain circumstances. This study identified several demographic factors associated with opinions concerning the exclusion of MSM for blood donation and the potential to change opinions after receiving information, e.g. age or socio-economic status.

Discussion. Blood collecting services can gain understanding from the general public about their exclusion policies by providing clear information. Communication efforts targeting specific audiences in function of their knowledge and likeliness to change their opinion, might improve the effectiveness of information campaigns.

Keywords: blood donors, blood transfusion/adverse effects, MSM, men who have sex with men, blood donor selection.

Introduction

Donating blood for transfusion is a lifesaving action. A major concern is the possible transmission of infections via a transfusion, e.g. human immunodeficiency virus (HIV)[1]. One very important barrier to prevent transfusion-transmitted infections is the deferral or exclusion of candidate donors who behave in a way that exposes them to the risk of contracting transfusion-transmissible infections. To identify these people, candidate blood donors need to fill in a donor history questionnaire and are interviewed during donor selection[2]. Criteria to determine high-risk populations differ between countries, based on the local epidemiology of transfusion-transmitted infections, legislation and consensus. A controversial criterion in Western countries is the deferral of men who have had sex with men (MSM). This group is considered at risk, as observational studies showed that MSM are associated with an increased prevalence of transfusion-transmitted infections[3]. Whether this also justifies the deferral or exclusion of MSM from blood donation is a matter of debate, as some consider this discriminatory towards MSM, while others argue that the right of the recipient to receive the safest possible blood outweighs the right to donate[4,5]. Recently, a case was brought before the European Court of Justice (case C-528/13) by a French man who was excluded from blood donation, based on his sexual relationship with another man, according to the French law[6]. The Court ruled in April 2015 that every member state of the European Union needs to take the current medical, scientific and epidemiological knowledge and data into account to decide whether a sexual behaviour puts a person at risk of contracting a transfusion-transmissible infection. The measures taken

must be proportional and when different options are available for protecting the recipient, the least onerous measure should be taken. In a systematic review, De Buck *et al*. investigated whether MSM could be considered a risk factor for transfusion-transmissible infections in blood donors in Western countries. Whereas evidence clearly indicated MSM as a risk factor for HIV, the evidence identified was too limited to unambiguously support a certain deferral policy, although limited evidence suggests that permanent exclusion might be unjustified[7]. Most blood services do, however, apply some kind of deferral period for MSM, e.g. 12 months in the United Kingdom[8]. In Belgium, the need to maintain permanent exclusion of MSM from blood donation is currently being reviewed. The rationale behind the current policy is the epidemiology of transfusion-transmissible infections in MSM, but also the window period, during which new infections are not yet detectable by the diagnostic tests used during blood screening[9]. The possibility of new variants of pathogens that might be undetectable as yet or possible errors during laboratory testing or sample labelling, together with the lack of clear scientific support to advocate a certain deferral policy, also lead to the adherence to a "safety first" principle[7,10]. In addition, validated questionnaires to detect MSM risk behaviour reliably are currently lacking.

It has already been shown that a small but significant proportion of blood donors with risk behaviour do not adhere to the exclusion criteria, demonstrating the importance of knowledge and understanding of the rationale behind these criteria[11-13]. A recent study by Duquesnoy *et al.*, in which blood donors who were found to be HIV-positive after donation were interviewed, showed that there was a clear lack of knowledge and understanding of the exclusion criteria for blood donation[14]. To further investigate the knowledge and understanding of blood donation criteria in the general population, a survey was conducted in a representative sample of the population of Flanders, Belgium. The beliefs and opinions concerning the exclusion of MSM were measured, and compared to those concerning exclusion of other risk populations. Furthermore, people were informed about the reasons for exclusion or deferral, and it was investigated whether their opinions changed. We hypothesised that clear information would increase people's understanding regarding the exclusion of risk donor populations.

Materials and methods

Survey

A survey was conducted on a representative sample of the Flemish population via computer-assisted web-interviews[15]. A sample size of 2,000 participants was targeted. To reach this number, 26,000 people, randomly recruited from a panel of 130,000 people, were invited to take part in the survey during a 2-week recruitment period in September-October 2015. To blind the participants about the aims of this study, they were asked to complete a survey about blood donation in general. The questions on MSM were blended in together with questions about other aspects of blood donation, including but not limited to other exclusion criteria. The full questionnaire can be found in Online Supplementary Content (Appendix 1); a brief overview is given below.

In the first part of the survey, people were screened for eligibility by questioning their age, gender and region, to get a sample that is representative of the Flemish population regarding these variables. The second part of the study questioned the participant's experiences and motivations concerning blood donation, including, among others issues, previous donation and intention towards future donation (10-point scale). The third part of the survey investigated people's knowledge about deferral and exclusion criteria and subsequently about their opinions concerning these criteria. Before continuing the survey, the participants received information about reasons for deferral or exclusion of two risk populations, of which one was always MSM and the other one either pregnant women, people who have recently been outside of Europe, people who have ever injected drugs, people who have ever performed acts of prostitution and people who were recently tattooed. Afterwards, it was measured whether the participants' opinions changed concerning the selection criteria for which they received information. In a fourth part of the survey, people received *ad hoc* questions concerning blood donation in general, including whether they had received blood products before. The study concluded by measuring socio-demographic variables, including, among others, sexual preference and socio-economic status. The latter was assessed through the methodology of the Belgian Centre for Information on the Media and based on three variables: the highest level of education attained, professional situation and professional occupation[16]. The participants received a score for each and were ranked and subdivided in eight social classes. For the purpose of this analysis, participants from social classes 1-3 were considered to have a low socio-economic status, participants from social classes 4-6 were considered middle class and participants from social classes 7-8 were considered to have a high socio-economic status.

Statistical analysis

Answers that were expressed as ordinal outcomes (on a 3-point, 5-point or 10-point scale) were analysed with a Wilcoxon's rank-sum test for non-parametric

data. Dichotomous (yes/no) or categorical (yes/maybe/no) outcomes were analysed with a Pearson's chi-square test. When comparing outcomes for which only a subset of people was surveyed (opinions about the deferral or exclusion of a risk group other than MSM after receiving information) to outcomes for which the whole sample was surveyed (opinions about the deferral or exclusion of MSM after receiving information), these outcomes were compared in the same subset, to avoid introduction of selection bias. To study the influence of demographic variables on dichotomous outcomes, bivariate logistic regression models were designed to calculate the odds ratios (OR) and 95% confidence intervals (95% CI). For categorical outcomes, multinomial regression was performed. For ordinal outcomes, ordinal logistic regression was performed. Multivariate models were built with outcomes that reached the 10% confidence level in bivariate analyses. The final models were reached through backward stepwise elimination. Data were analysed using the open source software of the R-project for statistical computing, version 3.2.5[17], with the following add-on packages: MASS[18] and rms[19] (The R Foundation for Statistical Computing, Vienna, Austria). Statistical significance was accepted at the 5% level. Data are presented as a proportion (%), mean ± standard deviation (SD) for normally distributed data and median with interquartile range (IQR) for non-normally distributed data.

Results

Baseline characteristics of the sample

A total of 2,005 participants completed the survey, of whom 1,035 (51.6%) were male and 970 (48.4%) were female (Table I). The mean age of the participants was 50.72±14.39 years. Concerning donor history, 954 (47.6%) of the participants had previously donated blood (products), while 911 (45.4%) had never done so. One hundred and forty participants (7.0%) had once presented for blood donation, but were deferred. Regarding sexual preference, 1,817 participants reported being heterosexual (90.6%), while 72 (3.6%) considered themselves homosexual, bisexual or transgender (LGBT). One hundred and sixteen participants (5.8%) did not disclose their sexual preference. In our sample, 1,599 people (79.8%) had never received any blood product, while 406 (20.2%) had. Six hundred and twenty-two participants (31%) had a low socio-economic status, 618 (31%) were middle class and 765 (38%) had a high socio-economic status. Eight hundred and four (40%) participants did not consider donating blood in the future (scored 1-3 on a 10-point scale), 576 (29%) were undecided (scored 4-6) and 625 (31%) had a positive attitude towards future blood donation (scored 7-10).

Table I - Baseline demographic characteristics of the survey sample (N=2,005).

Gender	
Male	1,035 (51.6%)
Female	970 (48.4%)
Age	
Mean ± SD	50.72±14.39
Donor status	
Ever donated	954 (47.6%)
Presented but deferred	140 (7.0%)
Never donated	911 (45.4%)
Sexual preference	
Heterosexual	1,817 (90.6%)
LGBT	72 (3.6%)
Undisclosed	116 (5.8%)
Ever received blood products	
Yes	406 (20.2%)
No	1,599 (79.8%)
Socio-economic status	
Low (1-3)	622 (31%)
Middle (4-6)	618 (31%)
High (7-8)	765 (38%)
Attitude towards future blood donation	
Not a future donor (1-3)	804 (40%)
Perhaps a future donor (4-6)	576 (29%)
Future donor (7-10)	625 (31%)

SD: standard deviation; LGBT: homosexual, bisexual or transgender.

People are less aware of the exclusion criterion for MSM than for other risk groups

The majority of the people surveyed (1,478, 74%) were aware that not every adult is allowed to donate blood. When asked whether they thought MSM could donate blood, the majority of participants (1,283; 64%) falsely responded that such men were allowed to donate blood (Figure 1). Compared to other permanently deferred groups, i.e., people who ever injected drugs (1,001; 50%) or performed acts of prostitution (931; 46%), significantly fewer people thought these groups were allowed to donate blood ($p<0.0001$ and $p<0.0001$, respectively). Furthermore, the response was also compared to the responses concerning temporarily deferred groups. Participants were significantly more aware that people who had recently been outside of Europe (699 wrong answers; 35%; $p<0.0001$), were pregnant (514; 26%; $p<0.0001$) or had recently been tattooed (757; 38%; $p<0.0001$), are not allowed to donate blood. To conclude, people were less aware of the exclusion criterion for MSM than of other exclusion criteria.

The association between certain demographic factors and knowledge of the MSM exclusion criterion was investigated (Online Supplementary Content, Table SI). In bivariate analyses, the odds ratio for age was significantly higher (OR: 1.02, 95% CI: 1.01-1.02; p<0.0001) with increasing age, meaning people were more likely to think that MSM are allowed to donate blood with advancing age. Furthermore the odds ratio for people who presented for blood donation but were deferred (OR: 1.49, 95% CI: 1.03-2.18; p=0.036) or for people who had never donated (OR: 1.84, 95% CI: 1.52-2.23; p<0.0001), compared to people who had ever donated blood, was significantly higher, indicating that these people are less aware of the exclusion of MSM. People who are undecided about future blood donation have a higher odds ratio compared to people who do not intend to donate blood in the future (OR: 1.28, 95% CI: 1.01-1.61; p=0.04), indicating that these people are less aware of the MSM exclusion criterion. On the other hand, people who intend to donate blood have a lower odds ratio (OR: 0.63, 95% CI: 0.51-0.78); p<0.0001) than that of people who do not intend to donate. Finally, people who have a high socio-economic class also have a lower odds ratio (OR: 0.64, 95% CI: 0.51-0.79; p<0.0001) than that of people of a low socio-economic class, indicating that these people are more aware of the exclusion criterion for MSM. The variables gender, sexual preference and the previous need for blood products were not significantly associated with knowledge concerning the exclusion criterion for MSM. Factors that had a p-value <0.1 in the bivariate analyses were included in a multivariate analysis, to adjust for confounding. Age, being deferred as a donor, not being a donor, a high socio-economic status and being undecided about future donation all remained significant factors. In contrast, intention to donate was no longer associated with an increased knowledge of the MSM exclusion criterion (OR: 0.96, 95% CI: 0.75-1.23; p=0.73).

People are more likely to accept blood donated by MSM than blood donated by other risk populations, except for pregnant women

Responses to the question "Would you accept donated blood from a man who had sex with another man five years ago?" are shown in Figure 2. The willingness of people to accept blood from MSM donors (median response 5 [2-8]) was significantly higher than the willingness to accept blood from donors permanently deferred for having injected drugs ten years ago (4 [1-7]; p<0.0001) or for having ever performed acts of prostitution (4 [1-7]; p<0.0001). The participants were also significantly more likely to accept blood from MSM than from the temporarily deferred people who had recently been outside of Europe (4 [1-6]; p<0.0001)

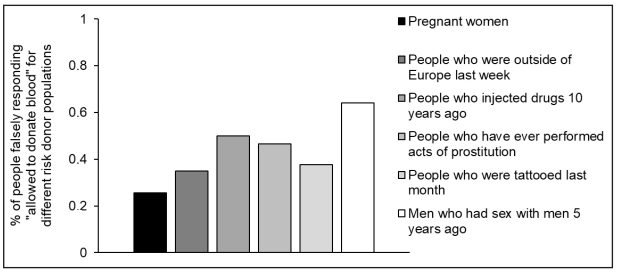

Figure 1 - Knowledge of a representative sample of the Flemish population about the exclusion criteria for blood donation in Belgium.
Proportion of people (% of total, N=2,005) who gave false responses regarding risk populations that are allowed to donate blood. The percentage of people who falsely believed that MSM are allowed to donate blood was significantly higher than the percentage for any other exclusion criterion (p<0.0001).
MSM: men who have sex with men.

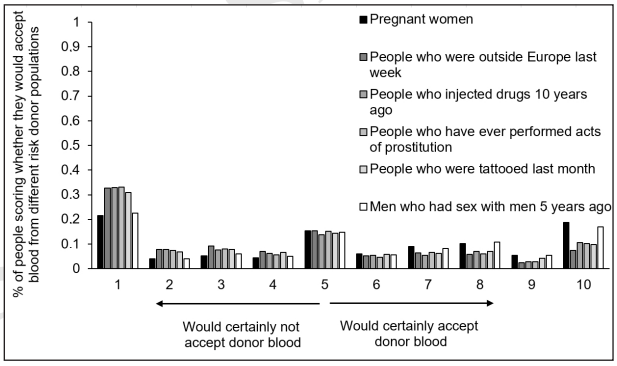

Figure 2 - Attitudes of a representative sample of the Flemish population towards hypothetically accepting blood from risk donors.
Proportion of people (% of total, N=2,005) scoring whether they would accept donor blood from risk populations. People were significantly more likely to accept blood from MSM than from any other risk population, except pregnant women (p<0.0001 *vs* other risk populations, except pregnant women; p=0.1 *vs* pregnant women).
MSM: men who have sex with men.

or who had recently been tattooed (4 [1-7]; p<0.0001), but not pregnant women (5 [2-8]; p=0.10). Thus, people are more likely to accept donor blood from MSM than other risk groups, except for pregnant women.

The factors associated with the likelihood of people accepting blood from MSM were analysed (Online Supplementary Content, Table SI). Increasing age was shown to be significantly associated with a decreased acceptance of blood from MSM (OR: 0.99, 95% CI: 0.987-0.997; p=0.002), meaning that older people would be less likely to accept blood from MSM. On the other hand, people who presented for blood donation but were deferred (OR: 1.62, 95% CI: 1.18-2.23; p=0.003), LGBT (OR: 2.64, 95% CI: 1.73-4.03;

p<0.0001), people of middle or higher socio-economic status (OR: 1.33, 95% CI: 1.09-1.62; p=0.004 and OR: 1.25, 95% CI: 1.04-1.51; p=0.02, respectively) and people who were not aware of the exclusion criterion for MSM (OR: 4.31, 95% CI: 3.63-5.13; p<0.0001) were significantly more likely to accept blood from MSM. In contrast, gender, intention to donate in the future and a previous need for blood products were not significantly associated with the acceptance of blood from MSM. In a multivariate analysis, knowledge concerning the exclusion criterion for MSM, being LGBT and being of middle or high socio-economic status remained significantly associated with an increased acceptance of blood from MSM, while being of higher age remained significantly associated with a decreased acceptance. Being deferred as a donor was no longer associated with an increased acceptance of blood from MSM.

People agree to the permanent exclusion of MSM to a lesser extent than to exclusion or deferral of other risk groups.

Before receiving any information, the majority of participants (1,086; 54%) thought that MSM should be temporarily deferred from blood donation, while roughly equal proportions thought that they should not be deferred (485; 24%) or should be permanently excluded (434; 22%) (Figure 3A). Significantly more people felt that MSM should not be deferred or only temporarily deferred, compared to subjects who had ever injected drugs (p<0.0001) or performed acts of prostitution (p<0.0001) (Figure 3B and 3C).

The demographic variables significantly associated with not agreeing with the permanent exclusion of MSM in bivariate analyses were not being aware of the exclusion criterion for MSM (OR: 0.28, 95% CI: 0.23-0.34; p<0.0001), being LGBT (OR: 0.24, 95% CI: 0.14-0.38; p<0.0001), an undisclosed sexual preference (OR: 0.66, 95% CI: 0.46-0.96; p=0.03) and being deferred as a donor (OR: 0.71, 95% CI: 0.50-0.99; p=0.047) (Online Supplementary Content, Table SI). In multivariate analysis, only not being aware of the exclusion of MSM, being LGBT and an undisclosed sexual preference remained significantly associated with not agreeing with permanently excluding MSM. Furthermore, increasing age, which was of borderline significance in the bivariate analysis, became significantly associated with increased agreement with permanently excluding MSM (OR: 1.01, 95% CI: 1.004-1.02; p=0.0009).

Explaining the reasons for donor exclusion results in increased understanding of blood donor exclusion criteria.

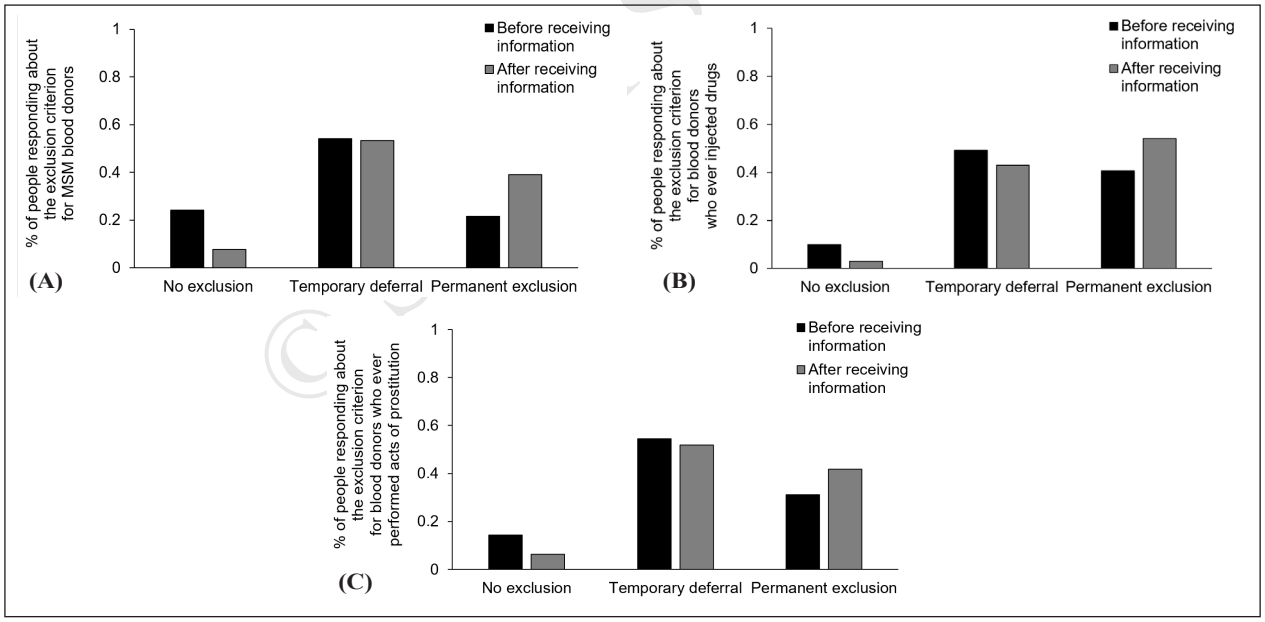

Figure 3 - Opinion of a representative sample of the Flemish population concerning the exclusion of permanently excluded risk populations from blood donation, before and after receiving information about reasons for the exclusion. Proportion of people (% of the number of people who received information) responding that temporary or permanently exclusion should not be applied to (A) MSM (N. who received information=2,005), (B) people who have ever injected drugs (N. who received information=399), or (C) people who have ever performed acts of prostitution (N. who received information=399). Before receiving information, participants were significantly more lenient towards MSM donating than to other risk populations (p<0.0001). Informed people became more stringent for each of the exclusion criteria (p<0.0001). The change was significantly greater for MSM than for people who have ever injected drugs (p<0.0001) or people who have ever performed acts of prostitution (p=0.008). MSM: men who have sex with men.

Providing people with the reasons for donor exclusion criteria made their opinions significantly more stringent concerning blood donation by risk populations (Figure 3). The percentage of people who thought that MSM should never be excluded decreased (−16%), the proportion of people who thought that MSM should be permanently excluded increased (+17%), while the proportion who thought that they should be temporarily deferred remained stable (−1%). This resulted in a significant change towards more stringency (temporary deferral or permanent exclusion; p<0.0001). A similar pattern could be seen for people who had ever injected drugs (never excluded −7%, temporarily deferred −8%, permanently excluded +14%; p<0.0001) or performed acts of prostitution (never excluded −8%, temporarily deferred −5%, permanently deferred +12%; p<0.0001). However, the proportion of people who became more stringent was significantly larger for MSM than for people injecting drugs (p<0.0001) or performing acts of prostitution (p=0.008).

Demographic variables associated with a change towards more stringency concerning MSM were investigated (Online Supplementary Content, Table SI). Being female (OR:1.30, 95% CI: 1.09-1.55; p=0.003), increasing age (OR: 1.01, 95% CI: 1.001-1.01; p=0.02) and being undecided about future donation (OR: 1.31, 95% CI: 1.06-1.61; p=0.01) were associated with an increased change towards more stringency. On the other hand, being of a high socio-economic status was associated with a decreased change towards more stringency (OR: 0.70, 95% CI: 0.57-0.87, p=0.001). None of these associations changed after addition in a multivariate model.

Even after receiving extra information, most people felt that exceptions to the exclusion of MSM from blood donation might be justified

The proportion of people who thought strongly (10 on a 10-point scale) that exceptions should be made in certain cases to MSM donating blood (476, 24%) was a lot larger than the proportion who thought strongly (1 on a 10-point scale) that no exceptions should be made (228, 11%) (Figure 4). When comparing the median response concerning exceptions for MSM (7 [5-9]) to exceptions for other risk groups, the response for MSM was significantly higher than the response concerning exceptions for the permanent exclusion of people who have ever injected drugs (3 [1-6]; p<0.0001), who have ever performed acts of prostitution (6 [4-8]; p<0.0001), or for the temporary deferral of pregnant women (4 [1-7]; p<0.0001), of people who have been outside of Europe recently (3 [1-6]; p<0.0001) or people who were recently tattooed (3 [1-6]; p<0.0001).

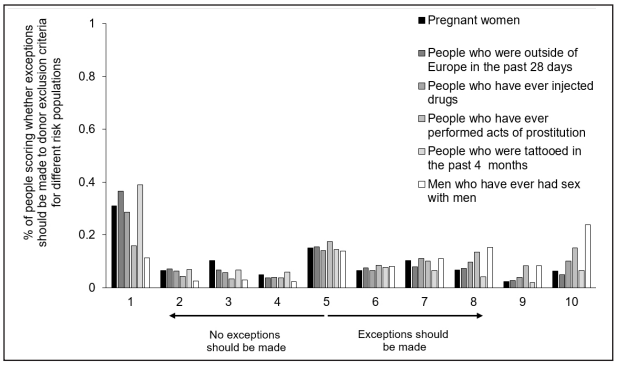

Figure 4 - Opinion of a representative sample of the Flemish population about whether exceptions should be made for blood donation by risk populations.
Proportion of people (% of total, N=2,005) scoring on a scale of 1 (no exceptions) to 10 (exceptions) whether they thought exceptions should be made. People were more likely to allow exceptions for MSM than for any of the other risk populations (p<0.0001).
MSM: men who have sex with men.

Demographic factors that might influence people's opinion regarding exceptions towards MSM and blood donation are presented in the Online Supplementary Content (Table SI). In bivariate analyses, female gender (OR: 1.41, 95% CI: 1.21-1.64; p<0.0001), being LGBT (OR: 3.23, 95% CI: 2.08-5.08); p<0.0001), having a high socio-economic status (OR: 1.64, 95% CI: 1.36-1.98; p<0.0001) and intending to donate blood in the future (OR: 1.65, 95% CI: 1.37-1.99; p<0.0001) all had significantly higher odds of agreeing that exceptions should be made for blood donation by MSM. In contrast, increasing age (OR: 0.98, 95% CI: 0.98-0.99; p<0.0001) and never having donated blood (OR: 0.69, 95% CI: 0.59-0.81; p<0.0001) were significantly associated with a decreased tendency towards agreeing with exceptions for MSM. These associations all remained statistically significant in a multivariate analysis. Furthermore, having an undisclosed sexual preference became significantly positively associated with agreeing on exceptions (OR: 1.44, 95% CI: 1.02-2.02; p=0.04).

Discussion

This study focused on the knowledge and opinions of the general public concerning exclusion criteria for blood donation in Flanders, Belgium, with an emphasis on MSM. People's knowledge regarding the exclusion of MSM was limited. A surprisingly large number of people were unaware that MSM are currently permanently excluded from blood donation in Belgium, especially compared to other risk groups for blood donation, such as prostitutes or intravenous drug users. A recent study from Italy in HIV-positive blood donors also showed that knowledge on risk behaviour is rather

limited[20]. In contrast, in an American study the majority of the people questioned were aware that MSM are excluded from blood donation[11]. A large proportion of the participants do not agree with the permanent exclusion of MSM. The strongest predictor identified for not agreeing with MSM exclusion turned out to be not knowing about the exclusion criterion for MSM. However, if people were informed about the reasons for excluding MSM, their opinions changed towards a more stringent point of view. Nevertheless, most of the people questioned still thought exceptions should be made in certain circumstances. In a study by Custer *et al*., a comparable proportion of people (43.3%) thought that the exclusion criterion for MSM needs to be changed[11]. In several countries with stable HIV epidemiology, including the United Kingdom, Canada and Australia, the policy concerning blood donation by MSM has recently changed from permanent exclusion to a temporary deferral period without observable changes in HIV rates in donor blood[21].

Perhaps not surprisingly, people who consider themselves LGBT had less restrictive opinions than heterosexuals regarding the exclusion of MSM. This observation corresponds to the results of a study by Liszewski *et al*., who found that a large majority of LGBT strongly agreed with the statement that blood from abstinent or monogamous LGBT is safe and considered their own blood as safe[22]. People who once presented for donation but were deferred showed a similar, but less distinct response pattern as LGBT, compared to people who had ever donated. Furthermore, in multivariate analyses, this subgroup was often no longer significant. This suggests that a substantial portion of these respondents might in fact be LGBT. Furthermore, people of a higher socio-economic status were also more tolerant towards blood donation by MSM and less prone to change their opinions, compared to people of a lower social class. In contrast, increasing age was associated with more restrictive views concerning MSM and blood donation. Females and males were equally stringent towards MSM exclusion, but females were more likely to change their opinions after being informed and thought that exceptions should be made in certain circumstances. A prior need for blood products was not associated with differing opinions or beliefs regarding blood donation. People who were undecided about future blood donation were less aware about the exclusion of MSM but conversely showed an increased change in opinion after receiving information, compared to those who did not consider donating blood.

This study has some limitations. Firstly, there is the possibility of selection bias. Although the people in our sample were carefully selected from a pool of volunteers, weighted for age, gender and location, these people were not an entirely random sample of the Flemish population. Furthermore, all data collected in this questionnaire were self-reported, potentially leading to socially desirable answers. However, the fact that the questionnaire was computer-based probably limits this potential bias. The fact that the changes in opinion after information provision were measured immediately does not allow us to make conclusions about long-term changes in opinions and beliefs. A final limitation is that data were largely collected cross-sectionally, which therefore precludes determining causal relationships between demographic factors and opinions and beliefs.

The aim of this study was to map opinions and beliefs concerning exclusion criteria for blood donation in the general population, and to investigate the effect of information provision on these opinions and beliefs. Increased understanding of blood donor exclusion criteria should lead to increased compliance and therefore safer blood. About half of the study sample investigated (54.6%) consisted of people who had previously donated, or at least intended to donate, blood products. It is interesting to note that there seemed to be a tendency in bivariate analyses towards a decreased potential for previous donors, compared to non-donors, to change their opinions on MSM exclusion after receiving additional information. As blood donors are the actual target population that needs to comply with donor exclusion criteria, future research should focus on information provision in this group of people, and prospectively investigate whether additional information on the exclusion criteria could lead to changed opinions and subsequently improved compliance in the long run.

Conclusions

Altogether, the results of this study suggest that people's opinions and beliefs are influenced by knowledge. Clear communication is, therefore, essential if blood collecting services want to increase understanding and acceptance from the general public about their policies. This study has identified several demographic groups associated with differing knowledge and opinions about the deferral and exclusion of risk populations, for example, older people. It might be worthwhile targeting these groups specifically for communication efforts concerning blood donor deferral, to maximise the efficacy of such campaigns.

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Authorship contributions

EDB, PV and VC conceived the research design, critically revised the paper and approved the final manuscript. BA analysed and interpreted the data and wrote the draft manuscript.

The Authors declare no conflicts of interest.

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Correspondence: Bert Avau
Centre for Evidence-Based Practice (CEBaP)
Belgian Red Cross
Motstraat 42
2800 Mechelen, Belgium
e-mail: bert.avau@rodekruis.be