

Recruiting and retaining young people as voluntary blood donors

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Objectives Reasons for predonation deferral of young potential donors and prospects of recruiting and retaining young people (age 18–29) as voluntary blood donors were studied.

Study Design and Methods Three different sources of data were analysed: (i) the subsequent donation history of 2057 donors who started their donation career at the Blood Bank of Oslo (BBO) in 1999, age and gender of all new donors accepted for donation at BBO in 2004 was retrieved from electronic data files; (ii) data on reasons for predonation deferral, age and gender of all deferred prospect donors at BBO in 2004 was obtained from original screening questionnaires; and (iii) results from a national telephone survey of the general population's attitudes regarding blood donation, conducted in 2005.

Results Twenty-five per cent of the first-time donors recruited in 1999 remained active in 2005, but the percentage was higher among older than younger donors. Change of residency was the most frequent reason for termination of donation among young donors. Young prospect donors were more frequently than older ones deferred for lifestyle-related reasons. Prospect donors older than 30 years were more frequently deferred for health-related reasons. A large proportion (57.7%) of young adults reported a favourable attitude towards becoming blood donors. Lack of a personal request (not being asked) was the most frequently reported reason for not giving blood among young people with no donation record. Only a minor proportion of young non-donors considered themselves disqualified from donating blood due to health status.

Conclusions Lifestyle-related eligibility criteria and changes of residency pose problems for recruitment and retention of young donors. However, a large proportion of young adults state that they are able and willing to donate blood; therefore, the prospects of recruiting young people as voluntary blood donors seem generally positive.

Key words: blood donors, blood donor recruitment and retention.

Abbreviations and definitions

BBO: Blood Bank of Oslo.

Active donor: a person eligible for donation, who has donated blood or plasma regularly, at least once within the last 12 months.

Lapsed donor: a person who has donated blood or plasma at least once, but not within the last 12 months.

Non-donor: a person who has never donated blood or plasma.

Prospect donor: a person appearing for first-time donor screening, who has never previously donated either blood or plasma.

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First-time donor: a person accepted for donation after first-time screening, who has never previously donated blood or plasma.

Deferral: suspension of eligibility of an individual to donate blood or blood components resulting from self-administrated questionnaire and/or interview responses or medical evaluation, such suspension being either permanent or temporary.

Introduction

Most European countries are currently seeing an increasing number of senior inhabitants [1]. In the UK, this has been estimated to induce a 20% rise in blood consumption during the next 20 years [2]. At the same time, the number of young inhabitants is decreasing, both in absolute and relative terms. This development may lead to a serious imbalance between blood supply and consumption [3]. Recruitment and retention of young people as blood donors is therefore becoming increasingly important to secure the supply of blood products to the health services.

This article aims to explore the opportunities and difficulties that blood banks have when recruiting and retaining young people as voluntary blood donors. In a previous study, we found that the 75th percentile of Blood Bank of Oslo (BBO) of donor's age increased from 47 to 50 in the period 1994–2000. Meanwhile, the number of active donors decreased from 21 000 to 16 500, and the average number of donations per donor increased from 2 to 2.4 per year [4]. In a recent study, we documented an under-representation of the youngest and senior age cohorts among the BBO's active blood donors, and a corresponding over-representation of the intermediate age cohort [5]. According to official population statistics (Statistics Norway), given medium national economic growth, the next 15 years will be characterized by: (i) an increase in the size of the young adult population (18–29 years); (ii) a decrease in the size of the intermediate population (30–59 years); and (iii) an increase in the absolute and relative size of the senior population (60+ years) [6]. These trends emphasize the necessity of recruiting young adults as active blood donors for the maintenance of the donor pool.

We addressed possibilities of recruiting and retaining young people as blood donors by exploration of the following questions:

- Are young donors less likely to continue giving blood, than older ones?
- Do exclusion criteria for donation apply differently to young and older prospect donors? and
- Do young people in general have a favourable attitude towards becoming voluntary blood donors?

Materials and methods

Subjects and sources of data

The BBO has about 17 000 registered donors recruited from the community of Oslo and surrounding Akershus County. All of BBO's collections come from two fixed blood donation sites. Like the other 24 Norwegian blood banks, the BBO is an integrated part of a public hospital. BBO supplies about 25% of the blood transfused in the country. All Norwegian donors are voluntary and non-remunerated, and separate donor pools are recruited and maintained by each blood bank.

The subsequent donation history of 2057 whole blood donors that started donating blood in 1999 was obtained from the BBO's donor-management database (ProSang, Databyrån AB, Stockholm, Sweden). Data on age and gender of all new donors accepted for donation in 2004 was retrieved from BBO electronic files.

Data on reasons for deferral, age and gender for all 484 prospect donors that were rejected in 2004 were collected from original screening questionnaires. All individual-related data were anonymized before analysis.

A questionnaire survey on people's position on blood donation was conducted by telephone interviews of a cross-sectional sample of the adult population (18–84 years). Both fixed and mobile phones were included. The interviews were conducted in November 2005, by the opinion poll and market research company Opinion AS, Bergen, Norway. The percentage of individuals who agreed to participate was 24.4%. Altogether, 1000 persons were interviewed. However, 85 respondents were excluded from the analysis because they were too old to be eligible as donors. In Norway, the maximum allowable age of donors is 70.

Exclusion criteria

Norwegian exclusion criteria are regulated in accordance with EU directives and the recommendations of the Council of Europe [7]. In addition, national criteria for donation incorporate the temporary exclusion of people having had a longer stay in, or having a sexual partner born in, areas with high prevalence of transfusion-transmittable infections.

Furthermore, a 12-month temporary deferral is applied for smoking or ingesting illegal drugs (including cannabis), having a body piercing in a mucosal surface, or a permanent tattoo. Persons having a history of chronic drug abuse or alcoholism are permanently deferred from donation. Routines for screening of donors are standardized for all Norwegian donors [8]. General information on donor-selection criteria is included in donor recruitment material. Persons who have signed up for first-time donation receive a welcome letter with detailed information on exclusionary conditions. Prospect donors are also invited to call the donation centre for more information about eligibility criteria and the donation process, before they arrive to donate. Before each donation, the donor fills in a questionnaire about medical history and risk factors for transfusion-transmissible diseases. The screening questionnaire is issued by the Norwegian Board of Health. Blood bank staff also interview all donors before each donation. Blood pressure is measured in donors above age 60. At the BBO, haemoglobin level is measured before donation. If donors do not meet standards for donation, the specific reasons for deferral are written on the questionnaire by blood bank staff. Reason for deferral and length of deferral period are also documented electronically.

Study variables

From BBO donor electronic database, we obtained data on 2057 donors who started their donation career at the BBO in 1999: age, gender, number of successful donations per year, reason for termination of donation and recorded time of termination from active donor status. Change of residency reason for termination of donation was assumed if the donor had notified either the BBO, or the National Population Register about change to an address outside the catchment area of the BBO. The study period was 6 years (1 January 2000–31 December 2005). Donors were categorized in three birth cohorts (1970–1981, 1955–1969 and 1940–1956). Four 1999 first-time donors born in 1939 or earlier were excluded from analysis.

For 484 prospect donors rejected in 2004, age, gender and reasons for predonation deferral were collected from original paper screening questionnaires. In 15 cases, two reasons were reported, each of which would lead to deferral. The reasons for deferral were grouped into 22 categories.

The questionnaire on people's position on blood donation was included as part of an extensive national telephone survey on people's attitudes and preferences. Respondents were asked if they had donated blood within the last 12 months. Non-donors were also asked if they had intentions of becoming a blood donor. Furthermore, non-donors were asked about the main reason for not donating among six alternatives (not asked personally, not qualified

to donate, reduced health status, lack of time, religious or ethical reasons, fear of pain and indifference towards blood donation). The order of these six items was rotated randomly between respondents. If the respondent did not find an appropriate alternative among the listed reasons, two categories were used (none of the listed reasons, or do not know/no response).

Statistical methods

Comparison of reasons for donor deferrals was tested by χ^2 -tests. Survival analysis (Kaplan–Meier) was performed on longitudinal data on donation history. Analyses were performed with SPSS, release 14.0.

Results

Termination of donation

After 6 years (2000–2005), 47.4% (554/1168) of young 1999 first-time donors (1970–1981 birth cohort) were no longer registered as donors at BBO, compared with 38.8% for the birth cohort 1955–1969 (270/696), and 38.9% for the cohort 1940–1954 (75/193). Termination due to change of residency was more frequent in the youngest birth cohort 51.6% (286/554) than in the intermediate cohort 40.4% (109/270) and lowest in the senior one 18.6% (14/75). Kaplan–Meier survival analysis for termination of donation during a 6-year period for the three cohorts of first-time donors confirmed that the tendency to terminate donation was slightly higher in the youngest cohort than in the two others. The overall difference was found to be significant, using the Mantel–Cox log-rank test ($\chi^2 = 12.0$, d.f. = 1 and $P < 0.001$). Figure 1 shows differences between the three cohorts in their tendency to remain active during the 6-year period. All together, 25.9% of all 1999 first-time donors donate blood at least once in 2005. Only 2 of 10 in the youngest cohort, 3 of 10 of the intermediate cohort and 4 of 10 in the most senior cohort had donated at least once in 2005.

Predonation deferrals of young prospect donors

In 2004, 13.6% (484/3569) of prospect donors were deferred at predonation screening at the BBO. The mean age of rejected prospect donors was 30.1 years (median 28), and similar to the age of those that were accepted (30.4 years, median 28). The gender distribution was similar among deferred and accepted prospect donors (58% and 59.9% females, respectively).

Young prospect donors (18–29 years) were more frequently deferred for lifestyle-related reasons (36%, 107/297) than prospect donors above the age of 30 years (21.4%,

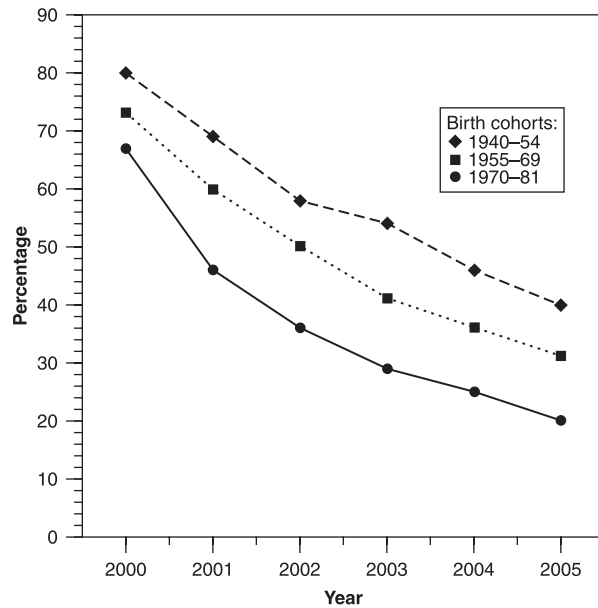


Fig. 1 Percentage of active donors (donated at least once a year) among year 1999 first-time donors ($n = 2057$), three birth cohorts compared, during 6-year period (1 January 2000–31 December 2005). Overall Pearson $\chi^2 = 113$, d.f. = 12; $P < 0.001$. Asymptotic significance was $P < 0.001$, for all χ^2 -tests performed on the differences between cohorts (weighted) for each year.

40/187) ($P = 0.048$). Especially, young prospect donors were deferred more frequently (11.8%, 33/297) than older ones (4.3%, 8/187) for taking illegal drugs ($P = 0.015$). Cannabis consumption was the single most frequent drug-related reason for deferral of young prospect donors (39.4%, 13/33). Furthermore, young prospect donors were deferred more frequently (10.8%, 33/297) than older ones (5.3%, 10/187) for having a body piercing; however, the P -value of this trend did not reach the $P \leq 0.05$ statistical significance level. In contrast, deferrals among prospect donors above the age of 30 were more frequently linked to reduced health status (77.5%, 145/187) than among young prospect donors (61.6%, 183/297) ($P < 0.001$). No significant difference was found between age intervals on 'other reasons' for deferral.

Non-donors' position on blood donation

Stated intention of becoming a blood donor was particularly high 57.7% (75/130), in the youngest age interval (18–29 years) and decreased significantly ($P < 0.001$) with age. In comparison, 41.2% of respondents of 30–44 years old, 30.4% of respondents of 45–59 years old, and 19.7% of respondents of 60–70 years old stated intentions of becoming blood donors. Thirty-three point eight percent (44/130) of young respondents stated that they had no intention of becoming blood donors. The tendency among non-donors to state that

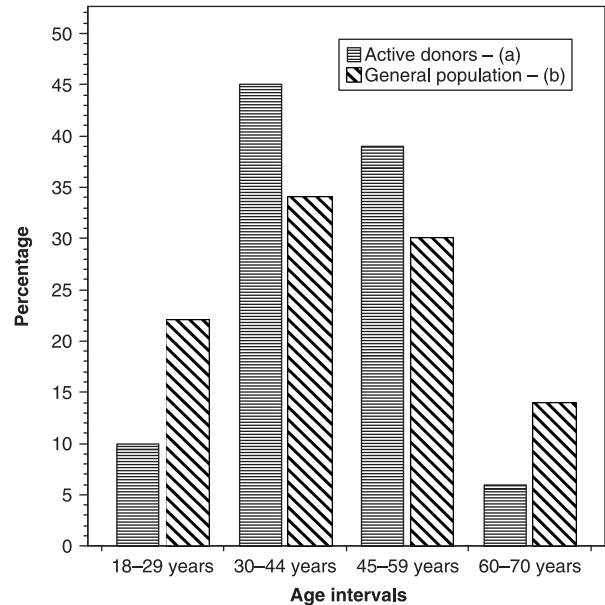


Fig. 2 Relative proportion of age intervals (18–70 years) for active blood donors and general population, in percentage. (a) Data from Omnibus national telephone survey 2005. (b) Statistic Norway 2005, table 7-1 (http://www.ssb.no.folkfram_en/arkiv/1999/tables/tab-2002-01-30-0701.html).

they had no intention of giving blood increased significantly with age ($P < 0.001$). Only a very small percentage of young people reported being either active (3.8%) or lapsed (4.6%) donors. The frequency of people reporting to be lapsed donors increased significantly ($P < 0.001$) with age.

Figure 2 shows that the youngest and oldest cohorts were under-represented among active donors, compared with the relative size of these cohorts in the general population. Correspondingly, the intermediate age cohorts were over-represented among active donors. The overall percentage of respondents (18–70 years) who reported being active donors was 5.6% (51/915). However, the population of active Norwegian donors (about 100 000 persons) numbers only about 3.5% of the adult population available for blood donation (18–70 years old). Thus, the number of respondents reporting to be active donors is higher than what would be expected by chance (Binomial test result, $P = 0.047$).

Figure 3 shows that lack of a personal request ('not being asked personally') was the most frequently reported reason for not donating blood among young non-donors. The proportion of support for this reason decreased with increasing age. Two different reasons for not donating ranked second among young non-donors: fear of pain during donation, and being too busy to donate. The support for these reasons decreased with increasing age. The fourth-most frequently reported reason for not donating among young non-donors was self-perceived poor health status ('cannot give due to

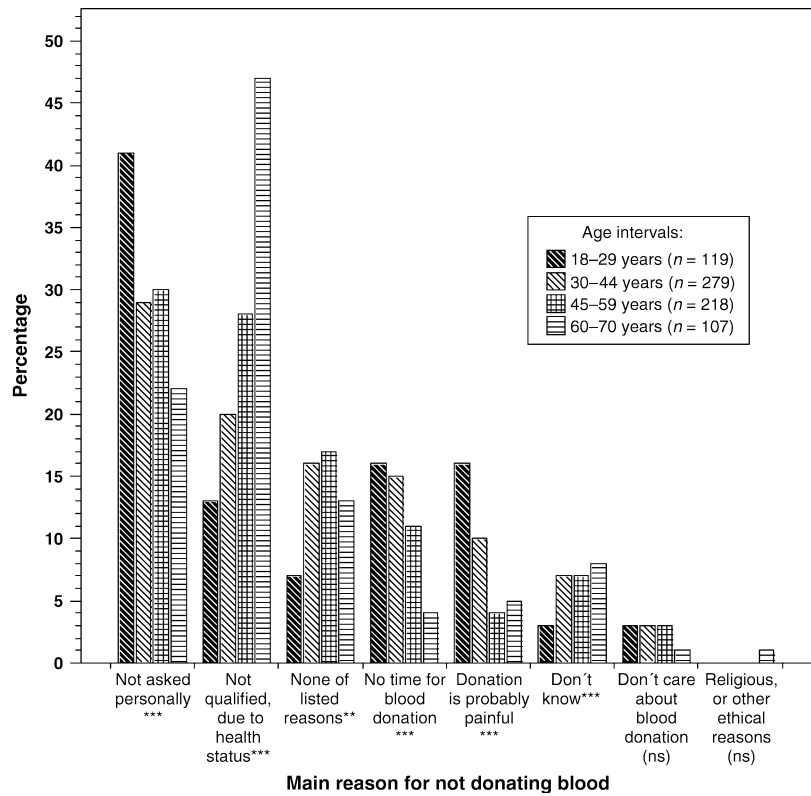


Fig. 3 Main reason for not donating blood, four age intervals of non-donors ($n = 723$) compared, by 2005 national telephone survey. Overall Pearson $\chi^2 = 93$, d.f. = 21, $P < 0.001$. Asymptotic significance χ^2 -tests for differences between age intervals: *** $P \leq 0.001$, ** $P \leq 0.01$, ns, non-significant $P > 0.05$.

own health status'). Only few young non-donors, and even fewer older ones, reported that they were indifferent towards blood donation. Religious or other ethical reasons for not donating blood were extremely rare in all age groups.

Discussion

Current demographical developments challenge the maintenance of donor pools in most European countries. The need for blood and blood components is expected to increase with the growing size of the senior cohorts. Moreover, the number of young people who can commit themselves as voluntary blood donors is expected to decrease. Therefore, attention should be directed at strategies for recruitment and retention of young people as blood donors, in order to maintain donor pools. The present study was undertaken to explore the willingness and ability of young people to donate blood. We first analysed longitudinal data on young donors' donation history over a 6-year period. We then considered exclusion criteria with regard to the predonation deferrals of young prospect donors in Oslo, Norway. Finally, we explored non-donors' position on blood donation.

Previous research has documented that young first-time donors have lower return rates and higher deferral rates than older ones [9,10]. Our analysis of termination of donation during a 6-year period showed that young donors were more

likely to stop giving blood at the BBO than older ones. This indicates that those who start donating at a mature age tend to be more stable as donors over time. Young donors were more likely than others to stop giving blood due to change of residency. Many young people apparently started donation at the BBO, and stopped when moving elsewhere. Due to the decentralized management of donor pools in Norway, we do not know if these young donors have continued donating at another blood bank. Considering young donors' high level of mobility, a national donor recruitment and management database might contribute to retaining young people as donors.

No difference was found between deferral frequencies among young (18-29) and older prospect donors. However, young prospect donors were deferred for other reasons than older ones. Young people were deferred mostly for lifestyle-related reasons, especially for taking illegal drugs or having a body piercing. As would be expected, senior prospect donors were more frequently deferred due to reduced health status. Similar age-specific patterns of rejections from donation have been reported previously among first-time donors in the USA [11,12]. Previous research has shown that temporary deferral reduces future return rate [13,14]. It is therefore likely that many young persons deferred temporarily at initial screening are lost permanently from the donor pool.

The response rate of the telephone survey was low; 24.4% of those reached by fixed or mobile phone agreed to participate.

Poor response rates may pose a problem of data validity (response bias) if respondents are not representative of the population being studied. Participants in the telephone survey were selected to be representative for the general population with respect to criteria based on sociodemographic characteristics (gender, age, occupation, income, education etc.). However, even if data are representative with respect to central characteristics, they may be biased on other, more subtle traits, such as attitudes. Of special interest to us was the number of respondents who reported being active blood donors. The age distribution of respondents claiming to be active donors (Fig. 2) is similar to the age distribution of active donors documented previously [5]. This indicates consistency with previous studies and suggests that the response bias of the telephone survey may be low despite low response rates.

Sociologist Robert D. Putnam has interpreted the decline in blood donation as a result of generational differences in socialization [15]. While previous generations grew up in a social environment that encouraged civic engagement in favour of common goals, younger cohorts face an environment that emphasizes individual interest rather than common goals, possibly limiting their willingness to volunteer. We found that a large proportion of young non-donors (age 18–29) stated intentions of becoming blood donors. Lack of a personal request ('not asked personally') was the main reason why they had not signed up for donating blood. Furthermore, only a relatively small proportion of young people considered themselves disqualified from donating blood due to own health status. Indifference towards blood donation was rare among young non-donors. Therefore, we found no support for the theory of a young generation of self-centred individuals unwilling to donate, as the prospects for recruiting young people as donors seem generally positive. The main challenge ahead is to transform the seemingly positive attitude towards giving blood into active commitment. The importance of social networks as a recruitment channel for donation has been documented previously [5]. Therefore, young active donors should be encouraged to recruit among friends, fellow students and co-workers. In order to avoid unnecessary deferrals, such promotional efforts should also include easily understandable information about eligibility criteria.

In conclusion, lifestyle-related eligibility criteria and frequent change of residency may pose problems for recruitment and retention efforts among young people. However, a large proportion of young people state that they are able and willing to donate blood. Efforts to recruit and retain young people as blood donors are therefore strongly recommended. The similarity of our findings with other studies on deferral patterns and donation continuance suggests that the issues addressed in this study have multinational relevance.

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References

- 1 Eurostat: *Eurostat Yearbook 2004 – The Statistical Guide to Europe: Data 1992–2002*. Office for Official Publications of the European Communities, 2004 (ISSN 1681-4789)
- 2 Currie CJ, Patel TC, McEwan P, Dixon S: Evaluation of the future supply and demand for blood products in the United Kingdom, National Health Service. *Transfus Med* 2004; 14:19–24
- 3 Copplestone JA: Changes in blood supplies, regulations, and transfusion practice: clinicians need to prepare for shortage now. *BMJ* 2005; 330:268–269
- 4 Heier HE, Bosnes V: Emerging problems of donor recruitment and maintenance in Oslo, Norway. Abstract P514, ISBT VII European Regional Congress, Paris, 15–18 July, 2001. *Transfus Clin Biol* 2001; 8 (Suppl. 1):178s
- 5 Misje AH, Bosnes V, Gåsdal O, Heier HE: Motivation, recruitment and retention of voluntary non-remunerated blood donors: a survey-based questionnaire study. *Vox Sang* 2005; 89:236–244
- 6 Statistics Norway: Oslo-Kongsvinger, 2005 (<http://www.ssb.no/english/statbank>) table 7.1 (available from http://www.ssb.no/folkfram_en/arkiv/1999/tables/tab-2002-01-30-0701.html)
- 7 Council of Europe: *Guide to the Preparation, Use and Quality Assurance of Blood Components. Recommendation No. R (95), 15*. 12th edn. Strasbourg, Council of Europe Publishing, 2006 (ISBN 92-871-5884-3)
- 8 Sosial- og helsedirektoratet: *Veileder for transfusjonstjenesten i Norge (Guide for Transfusion Services in Norway)*. IS-1184, Oslo, 06/2004: Sosial- og helsedirektoratet, 2004
- 9 Ownby HE, Kong F, Watanabe K, Tu Y, Nass CC: Analysis of donor return behavior. *Transfusion* 1999; 39:1128–1135
- 10 Schreiber GB, Shama UK, Wright DJ, Glynn SA, Ownsby HE, Tu Y, Garratty G, Piliavin J, Zuck T, Gilcher R: First year donation pattern predicts long-term commitment for first-time donors. *Transfusion* 2005; 88:144–121
- 11 Custer B, Johnson ES, Sullivan SD, Hazler TK, Ramsey SD, Hirschler NV, Murphy EL, Busch MP: Quantifying losses to the donated blood supply due to donor deferral and miscollection. *Transfusion* 2004; 44:1417–1426
- 12 Newman B: Blood donor suitability and allogeneic whole blood donation. *Transfus Med Rev* 2001; 15:234–244
- 13 Piliavin JA: Temporary deferral and donor return. *Transfusion* 1987; 27:199–200
- 14 Bosnes V, Aldrin M, Heier HE: Predicting blood donor arrival. *Transfusion* 2005; 45:162–170
- 15 Putnam RD: *Bowling Alone: The Collapse and Revival American Community*. New York, NY, Simon & Schuster, 2000:116–133 (ISBN 0-684-83283-6)

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