



Contents lists available at ScienceDirect

Transfusion and Apheresis Science

journal homepage: www.elsevier.com/locate/transci



An analysis of blood donation barriers experienced by North American and Caribbean university students in Grenada, West Indies

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ARTICLE INFO

Article history:

Received 19 April 2017
Received in revised form
10 September 2017
Accepted 14 November 2017
Available online xxx

Keywords:

Student blood donation
Donation barrier
Caribbean
North America

ABSTRACT

Objectives: To estimate the associations of nationality, university program, donation history and gender, with blood donation barriers experienced by non-donating students on the day of a campus blood drive. This project focused particularly on nationality and the effect of the different blood donation cultures in the students' countries of origin.

Methods: A retrospective cohort study of 398 North American and Caribbean university students was conducted at St. George's University, Grenada, in 2010. Data were collected from non-donating students on campus while a blood drive was taking place. Log-binomial regression was used to estimate associations between the exposures of interest and donation barriers experienced by the students.

Results: North American (voluntary blood donation culture) students were more likely than Caribbean (replacement blood donation culture) students to experience "Lack of Time" (relative risk (RR) = 1.57; 95% confidence interval (CI): 1.19–2.07) and "Lack of Eligibility" (RR = 1.55; 95% CI: 1.08–2.22) as barriers to donation. Conversely, Caribbean students were a third as likely to state "Lack of Incentive" (RR = 0.32; 95% CI: 0.20–0.50), "Fear of Infection" (RR = 0.35; 95% CI: 0.21–0.58), and "Fear of Needles" (RR = 0.32; 95% CI: 0.21–0.48) were barriers than North American students.

Conclusions: University students from voluntary blood donation cultures are likely to experience different barriers to donation than those from replacement cultures. Knowledge of barriers that students from contrasting blood donation systems face provides valuable information for blood drive promotion in university student populations that contain multiple nationalities.

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1. Introduction

In 2004, the World Health Organization's (WHO) first World Blood Donor Day coincided with their report urging for increased blood donation in all countries, with an emphasis on developing nations [1]. Only 39 of the world's countries are successful in collecting the WHO recommended 50 units of blood per 1000 inhabitants each year [2]. More concerning, is that the average blood donation rate is 15 times lower (approximately 3–4 units of blood per 1000 inhabitants annually) in developing countries compared to developed countries [1]. In their framework for voluntary blood donation, the WHO stresses that young people present

a promising pool of potential blood donors and that they should be a focus for developing blood donation systems [1]. University students are one such promising population of potential donors who have been associated with high receptivity to blood donation campaign material [3] and higher overall blood donation rates when compared with the general population [4]. Increasing university student blood donation rates in developing countries presents one method that could increase blood availability in some of the global regions that need it most.

Improving student donation rates entails, among other things, understanding the factors that promote and prevent student donation. Cacioppo and Gardner suggest that to fully understand blood donation as a behaviour it should be assessed by separately evaluating its positive and negative components [5]. An evaluation of Canadian university students supports this notion with findings that negative beliefs regarding blood donation were larger distin-

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guishing factors between donating and non-donating students than positive beliefs [5,6]. A primary research implication from an analysis of blood donation attitudes in Serbian medical students was that, “strategies of blood promotion should focus on reducing, or even, eliminating barriers” [7]. Therefore, understanding the factors that prevent non-donating students from donating represents an opportunity to substantially improve voluntary donation rates.

Fear has most often been identified by university students as the most common reason for not donating at a blood drive [8–10], but this is not always the case. It has been reported that 45% of Nigerian students did not donate because of their tight lecture schedule [11], that the most common barriers for African American non-donating students were medical reasons or ineligibility [12], and that 45% of Saudi Arabian students did not donate because no one ever asked [13]. These contrasting results from studies around the world suggest that there is value in analyzing the relationship of common barriers to blood donation behaviour in populations from different cultural backgrounds.

This project is part of the “Blood for Grenada Project”, a collaborative effort between the American Medical Student Association (AMSA), St. George’s University (SGU) clinic and the Grenada Blood Bank (GBB), which aims to increase voluntary blood donation in Grenada, West Indies. [14]. SGU is a unique blood donation environment as it consists of large numbers of students from both the Caribbean and North America and is host to the only organized voluntary blood drive in Grenada. Beyond being classified as developing and developed, the Caribbean and North America also have contrasting blood donation cultures. Similar to Trinidad and Tobago and other Caribbean countries, the majority of blood donation in Grenada tends to be by replacement donors, often by relatives or friends of those requiring transfusions [4,14]. This system stands in contrast to the established voluntary and proactive donation framework established in North America and other developed countries in which blood donation is dependent primarily on the altruism and social consciousness of donors [15].

This retrospective cohort study was conducted to quantify the prevalence of blood donation barriers experienced among non-donating SGU students on the day of a campus blood drive and to estimate the associations between selected demographic exposures and these barriers. Of primary interest was a comparison of the effects of region of origin (Caribbean versus North America) and their contrasting blood donation cultures on the aforementioned relationship.

2. Materials & methods

2.1. Study population

The study was approved by the SGU Institutional Review Board prior to commencement. Persons were eligible to participate only if they were currently enrolled SGU students, were from the Caribbean or North America, and had not donated blood at any of three consecutive monthly (February–April, 2010) SGU blood drives.

Data were collected by interviewer-administered questionnaires at seven high-traffic SGU campus locations selected based on the School of Medicine (SOM), School of Veterinary Medicine (SVM) and School of Arts and Sciences (SAS) class locations for the entire duration of the blood drives held from 9:00 to 15:00. Students were only considered to be non-donating if, up until the time of the interview, they had not donated blood at any of the three blood drives. As persons were eligible to donate at SGU blood drives once in a three-month period, the three-month data collection period provided the opportunity for all SGU students to donate. All potential participants were informed of the study’s aims and

requirements, the voluntary nature of the study and that no personal identifiers would be required. Verbal consent was obtained from all participants.

2.2. Exposure ascertainment

The questionnaire contained 4 sections pertaining to the student’s SGU blood drive knowledge: blood donation general knowledge, blood donation experience and perception, current states of busyness and mind, and demographic information. This allowed for collection of data regarding the exposures of interest: nationality, school program, gender, and previous blood donation history (having donated blood at least once before) as well as ascertainment of potential confounders including residence location, year of enrolment, AMSA membership, civil status, presence of children (i.e. whether or not they were a parent), religion and age. North American and Caribbean nationalities were used as proxies for voluntary and replacement blood donation cultures respectively, as these are the contrasting blood donation systems prevalent in the two global regions [4,14,15].

2.3. Outcome ascertainment

Students were provided with five potential reasons why they had not donated at the current blood drive and asked to answer “Yes” or “No” to each of the following: “Lack of Time”, “Lack of Eligibility”, “Lack of Incentive”, “Fear of Infection”, and “Fear of Needles”. Each of these represented a separate outcome of interest.

2.4. Statistical analysis

Data were entered into an IBM SPSS Statistics, Version 20 database for analysis. For each donation barrier (outcome), for example: “Lack of Time” (Fig. 1), a hypothesized web of causal relationships between the exposures of interest was depicted by constructing a Directed Acyclic Graph (DAG) using DAGitty, Version 2.3 software [16]. Each barrier’s DAG was solved independently for each exposure of interest to identify a minimally sufficient set of confounders to control for during analysis [17]. Based on the solved DAGs for nationality and school program, neither exposure had any confounders that needed to be controlled for. Log-binomial regression was used to estimate the relative risk (RR) along with a 95% confidence interval (CI) for each exposure of interest–donation barrier (outcome) relationship [18]. A final set of confounders for each exposure was identified for inclusion in the final model using the change-in-estimate procedure with an inclusion criterion of 10% [19,20].

3. Results

Table 1 includes the barriers identified by the students as well as descriptive statistics for the study population by student nationality. One hundred and forty-five out of 394 (36.8%; 95% CI: 32.0–41.6%) non-donating students identified “Lack of Time” as a reason for not donating, making it the most common barrier. Ninety-eight out of 393 (24.9%; 95% CI: 20.6–29.2%) selected “Lack of Eligibility”, 84 out of 394 (21.3%; 95% CI: 17.3–25.3%) identified “Lack of Incentive”, 70 out of 394 (17.8%; 95% CI: 14.0–21.6%) identified “Fear of Infection” and 96 out of 393 (24.4%; 95% CI: 20.1–28.6%) stated that “Fear of Needles” was a barrier to donation.

The mean age for North American students was slightly higher than Caribbean students (25.4 vs. 22.6). A higher percentage of North American compared to Caribbean students were in the SOM (83.2% vs. 16.0%), were first-year students (70.3% vs. 29.1%), and lived on campus (36.3% vs. 4.2%). Conversely, a larger proportion of Caribbean compared to North American students were in the

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