



## Blood donation knowledge and attitudes among undergraduate health science students: A cross-sectional study



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### ABSTRACT

Awareness towards blood donation can be empowered by health professionals' role-modelling. We aimed to assess knowledge and attitudes among Greek undergraduate medical laboratory students. A questionnaire was distributed to 330 students (response rate: 88.7%). Overall, 24% had donated blood at least once, with males 4.62 times more likely to be donors. Voluntary, non-remunerated blood donors were more likely to be repeaters. A quarter of all students were inclined to offer blood for monetary reward, with men more prone to accept payment. There is a need to campaign health science students during formal education through need-based as well as altruistic 'smart' messages.

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## 1. Introduction

Rapid population ageing with subsequent reduction of eligible subjects as well as growing access to surgical procedures by elderly patients has led to a significant increase in blood donation needs [1]. Although in some western countries there is a decline in the number of transfusions, reports from the World Health Organization (WHO) estimate that a total of 75–90 million blood units are administered annually [1]. Blood donation demand per 1000 inhabitants is covered by 40 individuals in developed countries, 10 individuals in middle-income countries and 3 individuals in low-

income countries. The most desirable blood donors are voluntary, non-remunerated blood donors (VNRBD) from low-risk populations. As of 2011, 62 countries' national blood supplies were based on 100% or almost 100% voluntary unpaid blood donations, whereas 40 countries collected less than 25% from voluntary unpaid blood donors. WHO's goal for all countries is to rely exclusively on VNRBDs for all blood supplies by the year 2020 [2]. A well-documented decline in blood donor pools has been attributed to reduced altruism, increased deferrals, and growing inertia [3,4]. Thus, promoting donor recruitment and retention is essential to addressing this growing concern.

In Greece, blood donation is voluntary and non-remunerated. All healthy adults between 18 and 65 years of age are eligible to become blood donors. However, donation supply in Greece remains persistently lower than transfusion needs [5] with only 5.6% of the general population registered as regular blood donors (persons who

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received a donor card) [6]. Seasonal variation related to increased needs of blood due to tourism increased rates of genetic conditions such as thalassemia, limited willingness to donate blood are all contributing factors to decreased blood availability [7]. Earlier reports of a 10% reduction in volunteer blood donors for 2010, resulting in a need to import 40 000 units of blood for that year, have been attributed to direct or indirect economic crisis effects [8]. Since then, the number of volunteer blood donors has been decreasing. Data provided by the National Center for Blood Donation (EKEA) show a steady downward trend throughout the years of economic austerity [9]. In 2013, blood centers collected 39 000 blood units less, compared to 2012. Throughout major metropolitan hospitals, 70% of collected blood are donated from relatives/friends of patients and only 30% from voluntary donors, when the ideal proportion of type of donors should be 50–50 [9]. The situation is somewhat better in regional hospitals. However, given that during summer months, Greece hosts several millions of tourists, its seasonal transfusion needs can dramatically increase.

Drop in voluntary blood giving can be attributed to both individual as well as organizational factors. At the individual level, identified barriers responsible for low blood donation rates include fear of needles, sensation of dizziness, sight of blood and lack of trust in/safety of the health care system [6,10]. At the organizational level, the absence of systematic reminders to registered donors, inadequate incentives and lack of a national information campaign are among the main hindering factors [5,6]. Although there is evidence that women and young people in Greece donate the least, very little is known about blood donation practices of the general student population and even less among health science students. Undergraduate education and exposure to health science knowledge appear to cultivate positive attitudes towards being a blood and organ donor [11]. Given the important role of formal education and early interventions in shaping a young person's values, beliefs and stands towards a social good, such as blood donation, the Theory of Planned Behavior has been widely used in blood donation research [12–14]. However, the absence of psychometrically tested and uniformly accepted instruments impedes comparative studies and drawing of firm conclusions [15]. The purpose of this study was to explore knowledge, beliefs and attitudes towards blood donation among undergraduate medical laboratory students while aiming to identify enabling or hindering factors that influence blood donation trends.

## 2. Methods

The study was undertaken during a consecutive two-month period of the academic year 2013–14 at the Department of Medical Laboratories, within the Technological Educational Institute of Thessaly in Larissa, Greece. Inclusion criteria were the following: 1) junior class enrolment (5th and 6th semester courses), and 2) in-person class attendance during the specified 8-week data collection period. As part of the standardized curriculum throughout all Medical Laboratory Departments in Greece, junior students were required to register for and pass a “Blood Donation” course with in-class attendance of lectures being

optional. The course focused mainly on techniques and processes required by technicians in Blood Banks, while also informing about inclusion/exclusion criteria for enlisting blood donors.

A self-administered questionnaire was distributed to 330 eligible students during in-class teaching sessions in the targeted department. Upon assuring that participation was voluntary and that responses would be anonymous and confidential, return of a completed questionnaire indicated informed consent. Study approval was not required from the Institutional Review Board of the University of Thessaly since all data were processed anonymously and no biological material was used.

The questionnaire included demographics (gender, age) and a total of 8 questions. Items ranged from regular in-class attendance of the “Blood Donation” course, the nature of blood donation (voluntary, family emergency case, or other), repetition of act over time, reasons that impeded students to donate blood (health, psychological, other), incentives to donate blood (i.e. monetary) and awareness about rare blood donor group needs. Regular donors were defined as persons who possess a blood donor card issued by approved NHS hospitals.

Pilot testing of the questionnaire was performed on 30 students, distributed during the course and investigators responded to students' queries. Pilot students were excluded from the final sample. Each participant was assigned a code number for data entry and analysis. Data were tabulated using the SPSS 21.0 statistical package (SPSS Inc., Chicago, IL, USA) and Open Epi software. Questionnaire items that were not fully or clearly completed were reported as missing values. Data were presented as absolute (n) and relative (%) frequencies. Chi square test with Yates' correction was used for univariate data analysis. Odds ratios (ORs) and 95% confidence intervals (95% CI) were also calculated. P values were considered statistically significant if  $P < 0.05$ .

## 3. Results

A total of 293 questionnaires were returned and fully answered (response rate 88.7%) The majority of respondents were women (77.5%) and the mean age was 21.2 years old (min 19, max 30 years). Demographic characteristics as well as knowledge, beliefs and attitudes towards blood donation are summarized in Table 1.

Regular attendance of blood donation course lectures was reported by 31.4% (N = 92) of participants. Blood donation, at least once, was reported by 23.9% (N = 70). In regard to the nature of blood donation, 78.3% (N = 54) were volunteer donors (VDs), 13% (N = 9) were donors for a relative or friend (RDs) and 8.7% (N = 6) for other reasons. The average age of students who donated blood for the first time was 19 with SD: 2.5 years. Remarkably, one out of two from all donor categories [N = 37] repeated the blood donation act while some did not return for a second time [N = 31].

Analysis of non-donors (NDs) revealed that 26.9% (N = 61) were excluded for medical reasons, 14.1% (N = 32) did not donate blood for psychological reasons and 4.4% (N = 10) worried about their own health. More than half of NDs [(N = 120) 54.6%] did not provide any explanation for their inertia. The majority of respondents [93.5%, N = 273] were

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