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ORIGINAL ARTICLE

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF BLOOD DONOR IN A TERTIARY CARE SPECIALIZED HOSPITAL

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Abstract:

Background: *Blood donors are the backbone of a transfusion service. To ensure a safe and appropriate transfusion service, donor demography is to be optimized for proper strategic management. The purpose of this study was to assess the socio-demographic profile of blood donors to make targets for national interventions and to promote blood donation.* ***Methods:*** *This descriptive type cross sectional study was conducted in Transfusion Medicine department of Popular Medical College Hospital from 1st January 2015 to 30th June 2018. All the blood donors who came to donate blood in this department were included in this study. Their signed consent was obtained to include in this study with their socio-demographic determinants. Frequency, percentage and p value<0.05 were calculated for statistics.* ***Results:*** *Out of the 15702 blood donors, male donors were more with a ratio of 6.78:1. Though the younger age group (25-31 years) showed highest donor population (32.61%), but the younger age group (18-38 years) have maximum donation (86.21%). Unmarried donors were 59.07% among the donors and middle class income group also showed highest donors (59.09%). Student donors (30.55%) were more among the donors. Muslims donors (79.01%) were more than others religious donors. Regarding education level of donors, higher secondary and above level showed highest donation (90.97%) which was statistically significant (p<0.001). Among the donors 78.05% showed their future intension to donate.* ***Conclusions:*** *Works on differences in socio-demographic characteristics of blood donors in times of increasing demand appears to be fruitful to target national interventions and to promote blood donation.*

Key wards: *Blood donor, Socio-demography, Characteristics.*

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Introduction:

Blood transfusions are a critical part of modern medicine. Blood transfusion is needed to save lives or improve health in emergency and as a necessary adjunct to emerging modern Medicare in different parts of the world.

The Healthy People 2010 data demonstrate that age, race, and education affect blood donor rates, which are defined as the proportionof individuals aged 18 years or older who donate blood.Overall donor rates were 8% for 18- to 24-year-olds, 6%for 25- to 64-year-olds, and less than 2% for 65 years orolder. Individuals with at least some college education donated at a rate of 8%, high school graduates at approximately 4%, and those who had not completed high school at 2%.[1] Data from the National Survey of Family Growth cycle 6 (2002-2003) demonstrated that race/ethnicity, income, education, and nativity were statistically associated with the likelihood of reporting blood donation.[2]

Donor recruitment efficacy is optimized by targeting those segments of the population with the largest available resource and by focusing on those who are the most likely to respond positively. In this regard, it is reasonable to assume that potential donors would be similar to already active donors with respect to age, sex and sociodemographic characteristics. Therefore, donor recruitment efforts may benefit from detailed knowledge about demographic characteristics of both donors and non-donors, i.e., factors that are related to the probability of being a blood donor.[3]

WHO estimates that at least 1% of the population needs to donate blood to meet the minimum requirement of blood for a country. Globally, 70 countries have a blood donation level less than the optimal level of 10/1000 population.[4]

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The World Health Organization (WHO) recommended that voluntary non-remunerated blood donors (VNRBD) are a bane to adequacy and safety of blood supply worldwide encouraging member nations to develop centralized (nationally coordinated) blood services adequately funded and logistically positioned to recruit, retain and ensure adequate supply of blood from these donors.[5]

Studies have demonstrated that the intention to donate blood predicts the practice of blood donation [6,7]. Demographic, knowledge status, and behavioral factors are shown to determine individuals' intention to donate blood.[8-10]

On the individual level several national studies describe sociodemographic characteristics of blood donors including male gender, middle age, and high education.[11-14]

In recent years, there has been a growing literature describing sociodemographic characteristics of blood donors all over the world. Within the last decade, several countries have been in the process of changing the profile of blood donors from remunerated to non-remunerated. Large studies have been conducted to increase the knowledge of donor profiles to target inclusion strategies towards specific groups defined by e.g. age, gender, income, education.[15-18]

The many investigations of donor demographics have not revealed a clear picture of the typical donor. With respect to age of the donors, previous studies have found blood donor populations either to be younger [19,17,20] or older compared to the general population.[21, 22]

The same diversity concerns the donor gender composition. Several studies report men to have a higher donor prevalence than women[17, 20, 23], but the nationwide study from Great Britain reported that 55% of their donors where women.[24] Studies have also generally shown that those of higher socioeconomic status, whether measured by education or personal income, are more likely to be blood donors than individuals with lower status[19,20,25], although Carneiro-Proietti et al. reported a lower prevalence of donors with higher education.[17]

Undoubtedly, the technology of blood donation takes place in a fairly uniform manner, independent of the population served, but, the way blood banks are structured and promoted differ between countries [26]. Therefore, the way the blood donor reacts or behaves, either as a single event or as a lifelong, dedicated practice to blood donation, is expected to be influenced by different contributory factors.[26] The motivation to donate blood for instance, represents a compelling force to carry out this activity which is directed towards meeting personal needs or goals.[27,28]

Age also affects blood donor and donation rates. First, younger individuals are more likely to be first-time donors and have higher donor and donationrates, defined as donors per population and units donated per population, respectively. These data are consistent with the recent REDS study, in which younger individuals were more likely to be first-time than repeat donors.[19] Second, in this study, younger individuals were 18% of the donor pool yet donated only 10% of the total collections due to lower blood donation frequency, which is consistent with the ARC study in which young donors made up 21% of the donor pool yet donated 9% of the units.[29]

The purpose of this study was to assess the demographic characteristics of donors

to acquire an accurate picture of what donors are like, guide recruitment strategies aimed at minority blood donors, and to provide benchmarks to measure the success of these efforts. Works on differences in sociodemographic characteristics of blood donors in times of increasing demand appears to be fruitful to target national interventions and to promote blood donation.

Methods:

A descriptive cross-sectional study conducted in Transfusion Medicine Department of Popular Medical College Hospital. The study participants were those persons who came to donate blood in this setting with age between 18 years to 60 years. A questionnaire was developed after thorough literature review to include the relevant variables. It was then pilot tested and validated. Data were collected from 1st January 2015 to 30th June 2018. Ethical review was secured from the institutional review board.Signed consent was obtained from all donors before the data collection procedure. No personal identification details were recorded on the questionnaire. Frequency, percentage and mean were computed to describe the findings.A p value <0.05 was considered significant.

Results:

In this study more males donated blood than females (6.78:1) Table-I. In Table-II age wise distribution of donors showed age group 25-31 years showed highest (32.61%) donor. But the younger age group i.e. 18-38 years comprises maximum of donors (86.21%). Unmarried donors were more than the married donors (59.07% vs 39.42%). On religion perspective Muslim donors were nearly 4/5th part of the donors. Middle class income group donors were maximum 59.09% followed by poor income group 23.46%. Rich income

group donors were only 17.45% to have donation. By occupation student donors (30.55%) were more than the service holders (Govt. + private) [24.87%] followed by businessman (20.95%). Regarding educational level of donors, maximum of the donors were higher secondary and above level donors (90.97%). In Table III among the donors 72.33% donated blood previously. In Table IV regarding the future intention to donate blood, 78.05% opined to donate but 8.97% denied for donation. Among them 12.98% showed indecision for donation in future. In Table V regarding the blood group wise donor distribution, blood group B showed highest donor (35.07%), followed by blood group O, A and AB (33.02%, 23.86% and8.05%) respectively.

Table-I

Distribution of donors according to Gender.

Gender	Frequency	Percentage
Male	13,684	87.15%
Female	2,018	12.85%
Total	15,702	100.00%

Table-II

Socio-demographic characteristics of donors.

Age	Male	Female	Total	Percentage	P value	Significance
18- 24 Years	4006	593	4599	29.29%	>0.1	Not significant
25-31 Years	4462	658	5120	32.61%		
32-38 Years	3328	489	3817	24.31%		
39-44 Years	917	135	1052	6.70%		
45-51 Years	656	97	753	4.79%		
52-59 Years	315	46	361	2.30%		
Total	13684	2018	15702	100.00%		
Marital Status						
Married	5395	795	6190	39.42%	>0.1	Not significant
Un Married	7810	1151	8961	57.07%		
Divorced/ Widowed	479	72	551	3.51%		
Total	13684	2018	15702	100.00%		
Religion						
Muslim	10811	1595	12406	79.01%	>0.1	Not significant
Hindus	2411	355	2766	17.62%		
Christian	368	54	422	2.68%		
Buddhist	94	14	108	0.69%		
Total	13684	2018	15702	100.00%		
Occupation						
Student	4499	291	4790	30.50%	Not done	
Govt. Service	1692	52	1744	11.11%		
Private Service	2117	44	2161	13.76%		
Business	3282	8	3290	20.95%		
Teacher	1071	11	1082	6.89%		
House wife	00	1609	1690	10.25%		
Banker	412	3	415	2.65%		
Firmer	254	00	254	1.62%		
Driver	357	00	357	2.27%		
Total	15702	2018	15702	100.00%		
Income Level						
Rich ≥70000	2388	352	2740	17.45%	>0.1	Not significant
Middle Class 20001-69999	8085	1193	9278	59.09%		
Poor ≤20000	3211	473	3684	23.46%		
Total	13684	2018	15702	100.00%		
Education Level						
Primary	396	38	436	2.76%	<0.01	Significant
Secondary	825	157	982	6.25%		
Higher Secondary	3972	502	4474	28.49%		
Degree	5203	915	6118	38.96%		
Post Graduate	3288	406	3694	23.52%		
Total	13684	2018	16702	100.00%		

Table-III

Showing Donors previous donation.

	Male	Female	Total	P value	Significance
Yes	9899 (63.04%)	1459 (9.29%)	11358 (72.33%)	>0.1	Not significant
No	3785 (24.11%)	559 (3.56%)	4344 (27.67%)		
Total	13684 (87.15%)	2018 (12.85%)	15702 (100.00%)		

Table-IV

Future intension to donate.

	Male	Female	Total	P value	Significance
Yes	10679 (68.01%)	1576 (10.04%)	12255 (78.05%)	>0.1	Not significant
No	1227 (7.82%)	181 (1.15%)	1408 (8.97%)		
Yet not decided	1778 (11.32%)	261 (1.66%)	2039 (12.98%)		
Total	13684 (87.15%)	2018 (12.85%)	15702 (100.00%)		

Table-V

Blood group wise distribution of donors.

Blood Group	A		B		O		AB		Total
	Male n(%)	Female n(%)	Male n(%)	Female n(%)	Male n(%)	Female n(%)	Male n(%)	Female n(%)	
Rh +	3,177 (20.23%)	468 (2.98%)	4,657 (29.66%)	686 (4.37%)	4,568 (29.09%)	460 (2.93%)	1,064 (6.78%)	157 (1.00%)	15,237 (97.04%)
Rh -	90 (0.57%)	13 (0.08%)	142 (0.91%)	21 (0.13%)	137 (0.87%)	20 (0.13%)	37 (0.24%)	5 (0.03%)	465 (2.96%)
Total	3,267 (20.80%)	481 (3.06%)	4977 (30.57%)	707 (4.50%)	4,705 (29.96%)	480 (3.06%)	1,101 (7.02%)	162 (1.03%)	15,702 (100.00%)

Discussion:

This study was conducted in tertiary care hospitals blood bank in capital of Dhaka, Bangladesh. The current concept of the WHO is to target appropriate blood donors in particular settings in order to increase blood availability and safety.[30] Therefore, the study was conducted to see the socio-demographic characteristics,motivation and attitude of blood donors for future intention to donate blood at this hospital based blood bank.

In this study, more males donated blood than females (6.78:1) Table I. The predominant male blood donation is similar to the findings by Orkuma JA et al.[31], Erhabur O et al.[21]and Busari FI et al.[33] but different from Andrade Neto JL et al.[34] study. Studies by Carneiro-Proietti AB et al.[17], Yang BC et al.[20] and Cimaroli K[23] also showed male to have higher donor prevalence than female. But the nationwide study by Lattimore S et al.[24] from Great Britain reported 55% of their donors were female which different from the present study. For low female donation many reasons have been adduced including predonation temporary deferral due to anemia resulting from menstruation, uncompensated blood losses as a result of child birth and lactation. Socio-cultural and superstition also plays a role in female participation.

Blood donors of this study showed that age group 18-24 years, 25-31 years 32-38 years comprises 86.21% of blood donation. Study done by Orkuma JA et al.[31] also found that blood donors aged 18-25 and 26-35 years presented majority of blood donations comprising 77.5%, which is near similar to present study. A study by Pule PI et al.[35] showed that three-fourth of their participants (76%) were in the age range of 21-40 years. The above studies were similar to the present study.

In our study unmarried donors (57.07%) were more than the married donors (39.42%). This study is similar to study done by Orkuma JA et al.[31], Pule PI et al.[35]. The predominance of unmarried donors in this study agree with Andrade Neto JL et al.[34] This study differs with the study done by Burgdorf KS et al.[3] study where cohabitation status showed that single donors have less donations than donors living with others.

In our study, on religious background Muslim donors were 79.01% followed by Hindus 17.62%, Christians 2.68% and Buddhist's 0.69%. Study done by Pule PI et al.[35] showed Christians (80.2%) were more than others which differs from the present study. In another study on Danish blood donors by Burgdorf KS et al.[3] also differs from the present study. The Muslim preponderance may be due to the Muslim originality of the peoples of Bangladesh.

Middle class income group in our study showed highest donation (59.09%) followed by poor income group (23.46%) and high income group (17.45%). Study on Danish blood donors by Burgdorf KS at el.[3] showed that donor prevalence was lower amongindividuals in the highest 10% income group compared to the peak in the 70-90% personal income deciles. The statistics of Denmark[36] also showed a positive association between working hours and income. We hypothesized that the reason for this decrease in the highest income group might be related to the challenges of a busy working schedule.

Educational status plays a role in blood donation. In our study we found that those who were higher secondary and above education they donated maximum (90.97%). Orkuma JA et al.[31] in their study found that blood donors with secondary education accounted for 45.7% when compared with tertiary (38.4%) as well as primary and those with formal education who summed upto 15.9%. Study of Volken T et al.[37] in a cross national comparison of German and Swiss population found that the OR of reporting donation was 2.62 times higher for respondents with medium education (95% CI 2.18, 3.13; p= 0.0000) and 4.16 times higher for those with high education relative to the group with low education (95% CI 3.37, 5.13; p= 0.0000). The present study also found statistical significance (p< 0.0001) with education and which coincides with above two studies. Burgdorf KS et al.[3] in their study found that for both sexes donation prevalence and relative risk were lowest among persons with lowest education level [women 3,9%, 0.60 (0.59-0.62); men 3..3%, 0.48 (0.47-0.49)] compared with the reference category of persons with short or middle length higher education. Carneiro-Proietti et al.[17] reported a lower prevalence of donors with higher education which differed from the present study.

Nearly three quarter (72.33%) of our study donors donated blood previously. Among the donors 78.05% showed positive intention to donate blood in future. Study done by BH Abderrahman and MYN Saleh[38] in Middle East and LE Boulware et al.[39] in USA showed that two third of the participants reported that they have ever donated blood. Above findings are similar to the present study. Study done by Orkuma JA et al.[31], N Shenga et al.[40] B Singh et al.[41] showed opposite result of previous donation and future intention to donate than our study.

In our study we found that blood group B donors were highest 35.07%, followed by blood group O (33.02%), A (23.86%) and AB (8.05%) respectively. Blood group wise distribution of the present study coincides with the prevalence study done by Rahman M.[52] Study done by Dipta TF[43] and Karim S[44] on blood donors showed similar findings with the present study in regard of blood group wise donor prevalence.

Conclusions:

In this study we observed the socio-demographic characteristics of blood donors in a tertiary level hospital.Therefore, the attitudes and perception of blood donation by hospital based blood donors could be influenced by individual experiences, culture, social and socio-demographic complexes. We, recommend that this information is taken into account when planning donor recruitment, donor care and retention strategies in health settings.

Conflict of Interest:

The author stated that there is no conflict of interest in this study

Funding:

No specific funding was received for this study.

Ethical consideration:

The study was conducted after approval from the ethical review committee. The confidentiality and anonymity of the study participants were maintained.

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