

Determine The Factors Affecting The Blood Donors Of Selecting Blood Donor Program Me In Western Province, Sri Lanka

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Abstract: Blood and blood component transfusion is one of the major therapeutic practices throughout the world. National Blood Transfusion Service (NBTS) in Sri Lanka requires approximately 300000 blood units annually. After initiating mobile donor programme, there have been two types of blood donation programs in Sri Lanka since 1980. Since second half of first decade of 21st century, Sri Lanka shifted to 100% non-replacement blood transfusion policy. That means whole blood and blood component requirement of NBTS has to be collected through mobile blood donor program and voluntary In-house blood donor program. Therefore the objective of this study was to determine the factors affecting the blood donors of selecting blood donor program in Western province, Sri Lanka. Methodology This was a cross sectional descriptive study. The study composed of two components. First, the factors that cause the blood donor to select a blood donor programme; second, the facility survey of blood banks In-house donation. An interviewer administered questionnaire was used to collect data from a sample of 410 Mobile blood donors. Facility survey was done using a checklist. The dependant variables were the attendance of the blood donors to Mobile blood donation and In-house blood donation. Independent variables included were the factors related to socio demography, service quality, accessibility, availability and intrinsic / extrinsic motivation. The analytical statistics applied for testing the association of factors with the blood donor programme was chi-square test. The study has shown some important findings. There was significant association between income level and donating blood. Only 3.3% of In-house blood donor population was female. Majority of In-house population belonged to 30-41 age group. A statistically significant association exists between age and repeat blood donation. The female blood donors' tendency of becoming repeat donors was very low. Distance problem and non availability on easy days were the main demotivational factors for donating blood to In-house blood donation. It appears that utilization of In-house blood donor programme could be improved by addressing the physical and psychological barriers and provision of quality service. This study further pointed out the need to reformulate health policies and utilization of information technology to improve the national blood transfusion service.

Introduction

Blood transfusion is a therapeutic process, which transfers blood from one circulation of one individual to that of another. Discovery of blood and blood circulatory system were the most important events in the history of blood transfusion. From the era of Ebers Papyrus to that of Andrea Vesalio, various physicians and scientists explained the different sections of circulatory system and in 1628, the English physician, William Harvey described the circulatory system in his famous book called "Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus" (Kaaan et al., 2009). It is remarkable that blood transfusion was initially carried out without considerable success due to the lack of knowledge of blood groups. The discovery of the human ABO blood group by Dr Karl Landsteiner in 1890 was the major step in understanding the cause for post blood transfusion reactions. During the first and second world war the scientific and technological aspect of blood transfusion was rapidly developed. The current voluntary blood donation process together with the sophisticated methods of collecting, storage, processing and testing of blood required by the complex medical and surgical procedures of the present day are a long way from the beginning of blood drinking of gladiators (Kaaan et al., 2009). Blood and blood component transfusion is one of the major therapeutic practices throughout the world, especially in lifesaving and emergency care. Doctors and surgeons rely on blood donations to carry out life saving and life enhancing treatments every day. Blood transfusion is highly effective for saving millions of lives each year around the world. The Increase of road traffic accidents and injuries and increasing aging population with demographic transition demand more transfusion therapies in health care. Restoring of a patient's blood loss after surgery, childbirth or accidents and correcting the severe anemia claimed more percentage of donated blood. On the other

hand, some patients, especially those who are with genetically disorders depend on blood transfusion.

Main steps of blood transfusion process are

- Collecting blood from donors.
- Testing the collected blood for Transfusion Transmittable Infections (TTIs).
- Sorting the collected blood according to the blood groups.
- Issuing after the cross match for transfusion to a recipient.

Collecting of blood from donors include

- Donor recruitment
- Donor selection
- Bleeding from the donor
- Post donor care

According to WHO, estimated blood requirement of Southeast Asia is about 16 million units per year, but only 9.4 million units are collected annually leaving a gap of 6 million units (<http://www.searo.who.int>). With an ever-increasing demand for blood supplies worldwide, there is an immense need to ensure a safe and sufficient supply of blood products (Babara, et al., 2008).

According to the WHO classification, there are three types of blood donors.

- Family or family replacement donors.
- Paid commercial/ professional donors.
- Voluntary, non-remunerated (unpaid) donors.

In Sri Lanka, to have uninterrupted smooth functioning blood transfusion process, especially to ensure a safe and adequate supply of blood is the responsibility of the National Blood Transfusion Service (NBTS). The vision of NBTS is to be unique model for world securing a quality assured blood services, through a national coordination system. Quality of care and customer satisfaction is the key

aspects of modern health care. Quality is vital to meet the customer satisfaction. "Degree of adherence to the standards consistent with current professional knowledge" is a general definition of quality. One of the most simplest and appropriate is "fitness for purpose". The definition used by the WHO in guidelines of quality assurance programme for blood transfusion services (1993) is "The consistence and reliable performance of services or product in conformity with specified standards". A Quality based approach in all procedures ensures maximum safety for recipients, donors, staff, and maximum clinical effectiveness of the products (Guidelines and principles for safe blood transfusion practice, WHO 2002). Other than quality, responsiveness is a key aspect of customer satisfaction. Both donors and recipient are customers of NBTS. According to Dr R. M. Bindusara, the former director of NBTS, blood transfusion started in Sri Lanka in late 1950s. Initially it was confined to the National hospital with the limited In-house donor facility. In 1968, the hospital

based regional blood bank system started and accepted replacement donations both free and paid in those centers as In-house donation. Paid donations discontinued and voluntary blood donation has been encouraged since 1979. In 1980, mobile blood donation programme was initiated. After initiating mobile donor programme, there have been two types of blood donation programs in Sri Lanka since 1980.

1. In-house Blood Donor Program
2. Mobile Blood Donor Program

In-house Blood Donor Program

Replacement blood donation as well as voluntary non-remunerated donation was initially accepted at In-house blood donor programme. After the discouragement of replacement blood donation, In-house blood collection dramatically reduced. It currently claims only about 10% of total blood collection

Table 1, NBTS statistics- blood collection in Sri Lanka 1998

	Units	Percentage
In-house blood collection	108669	80.15%
Mobile blood collection	29933	19.85%
Total collection	135572	100.0%

Table 2, Blood Collection composition of hospitals in Western Province relevant to study setting in 2012 (source - monthly return, Hospital blood bank).

Hospital	Blood Collection	
	Mobile (%)	In-house (%)
BH Panadura	1119 (87.2)	164 (12.2)
GH Kaluthara	5909 (96.6)	207 (3.4)
BH Horana	715 (70.5)	298 (29.5)
Kethumath women's Hospital Panadura	1838 (94.3)	111 (5.7)
TH Ragama	10187 (94.1)	613 (5.9)
DGH Gampaha	2874 (82.2)	513 (17.8)
GH Negambo	3546 (92.5)	290 (7.5)
BH Wathupitiwala	3029 (91)	299 (9)
TH Colombo South	1496 (74.1)	521 (25.9)
BH Awissawella	855 (56.3)	661 (43.7)
Total	31568(89.5)	3677(10.5)

In- house blood collection is vital to having autologous blood donation, aphaeresis blood donation and regular donor panel.

Mobile Blood Donor Program

Mobile blood donor sessions are conducted by various organizations or individuals in the community, mainly as a charity or a religious program. The premises may be a religious place, a school, a community centre, a private house and public places like market or private/government institution. In mobile blood donor programmes, blood donors recruiting, recalling and providing basic facilities are carried out by the mobile organizers. A team of health care workers from the blood bank visits the place. Donor

selection, blood collection, and post donor care for adverse donor reaction are the main responsibilities of the team.

Some organizations/ individuals organized mobile sessions annually at the same place but others are irregular. In mobile donor programme donor satisfaction is depends on both mobile organizers and facility provided at mobile sessions as well as on health staff participating in the session. In-house donor programme, donor satisfaction totally depends on blood bank staff and facilities provided by the system.

The problem

However, proper data of in-house donor capacity is not available, it is estimated that more than 200000 units per year exists. However, current utility is less than 20% of in-house donor capacity, which means wastage of human resources, materials and time. Shortage of blood and unmet need (postponement of surgeries or therapeutic procedures) are not uncommon. However, these problems are not highlighted because relevant data usually is not recorded, reported or collected. Mobile donor campaigns cause seasonal shortage and overstocks. Most of the Buddhist religious organizations and communities organize mobile blood donations during the Vesak and Poson(May and June) seasons. During this period, most of the blood banks are overstocked. The expenditures of processing these extra units of blood, which may sometimes have to be discarded, affect the cost effectiveness of service. On the other hand, people are reluctant to donate blood during months of April and December due to the festival season . This burden becomes aggravated during April and December due to increased demand of blood for higher number of casualties. This scenario of mismatch between demand and supply arises because NBTS depends more on mobile blood donations.

Justification

Since second half of first decade of 21st century, Sri Lanka shifted to 100% non-replacement blood transfusion policy. That means whole blood and blood component requirement of NBTS has to be collected through mobile blood donor program and voluntary In-house blood donor program. Sri Lanka has a considerably strong mobile donor program with various and different issues, which adversely affect the patient care services and program management. At the same time a well structured but underutilized In-house donor program exists. Strengthening and empowering of In-house donor program should be attended to minimize the

existing gap between demand and supply of blood and to address other issues. Benefits of In-house donor program should be disclosed. To change the present behavior, Knowledge, beliefs, values and attitudes of blood donors' relevant factors towards blood donation and selecting blood donor program should be carefully studied because, most of the people donate blood at mobile donor programmes having less attraction towards In-house donor programmes. Therefore studying the behavior of blood donors in Sri Lankan context is a present requirement. Very less research data is available for Sri Lanka on this important area of the blood donation. Therefore, it is essential to know the factors affecting the blood donors of selecting donor program for successful launching of voluntary In-house donor motivation, education and recruitment programs. No research data is available for Sri Lanka on this important area. Therefore, this information is very valuable for successful management of In-house blood donor program.

Objectives

1. To determine the factors affecting the blood donors of selecting blood donor program in Western province, Sri Lanka.
2. To evaluate the available donor education, motivation & recruiting programs of In-House blood donor program of government hospital blood banks in Western province, Sri Lanka

Methodology

Blood donation to mobile donor programme and blood donation to in-house donor program were the dependant variable of this study. The independent variables categorized according to socio demographic, service quality related factors, accessibility related factors, and availability related factors and Motivational factors.

Table 3 Independent variables

Factor	Variable
1. Socio demographic	Age Sex Race Religion Education Occupation Income level
2. Service Quality related counseling	Poor reception Lack of privacy in donor Physical environment Poor maintain of records Lack of database Lack of donor appreciation
3. Accessibility transport issues Delays in service provision	Distance problem and Lack of direction

4. Availability		Lack of regular service Opening hours
5. Intrinsic motivation		Fear to hospital setup Altruism Self- interest Beliefs Religious value
6. Extrinsic motivation	community	Recognition among the Peer pressure Influence of media, employer And gift and remunerations

This study was descriptive cross sectional study. The data was collected over the period of one month from 1st of August 2013 31st August 2013. Ethical clearance was obtained from the ethics review committee, faculty of medicine, university of Colombo. The study was completed within the period of six months. This study was carried out in western province. It includes Colombo, Gampaha and Kalutara districts. All government hospitals blood banks with facility of in-house blood donor programme and mobile blood donor programme in western province. (Excluded Cancer institute Maharagama due to its unique nature of blood donor programs.)

Gampaha district - Negombo	DGH Gampaha DGH
Watupitiwala Colombo district - South	TH Ragama BH TH Colombo BH
Avissawella Kalutara district - Women's Hospital,	BH Panadura BH Horana Kethumathi Pananadura GH Kalutara

The study population was all mobile blood donors of nine mobile donor sessions organized by the government hospital blood banks in western province during the study period. Mobile sessions were selected randomly after mobile schedules available of all blood bank .All participants were given information sheet in relevant language (Sinhala, Tamil, and English) to them and informed written consent was taken. Donor - Person who comes to the donor session and accepted as an eligible donor.

Exclusion criteria - Blood donors who were not given the consent. Expected sample size was 422. (According to mobile donor statistics average donors per mobile-50) Sample size calculated according to the standard formula (Lwanga & Lemeshow 1991)

$$S = Z^2 P(1-P) / d^2$$

Study Instruments

Two study instruments were used in the study.

1. Interview or administrated Questionnaire for mobile blood donors
2. A Check List

Questionnaire - Interviewer administrated Questionnaire include

1. Socio –demographic details
2. Service quality related factors
3. Accessibility related factors
4. Availability related factors
5. Motivational factor

It was based on the concept, studies done in the past and some were adapted from the other researches. The Questions were included in order to tally with the conceptual framework. Easily understood, simple questions were included and great care was taken to enhance the specificity. Instructions about how to ask and how to skip the Questions were clearly mentioned in the Questionnaire. The Questionnaire is administrated to a blood donor who is in a some stage of anxiety and without disturbing process of blood donation. The minimum number of questions and more close-ended structured type question were designed. Questionnaire was planned in English and then translated in to Sinhala. An expert translator translated the Questionnaire in English to Tamil.

Check List

A Checklist was prepared to record information of direct observation on the availability of facilities related to blood donors recruiting, retention and recall in in-house donor program. The Checklist was developed based on NBTS, WHO, BTS (British Transfusion Service), National Health Quality Guidelines and The Manual of Management, health care institutions Ministry of health, 1995.

The Checklist included

1. Opening hours of in-house donor programme
2. Availability of donor records and registers essential for in-house donor's recruitment, retention and recall.
3. Basic facilities available for in-house donors
4. Available donor recall methods
5. Availability of donor awareness programmes

Data collection

Nine mobile campaigns were visited during the period from first of August to thirtieth August 2013 for data collection from blood donors .Six mobile campaigns from Gampaha

district, two from Kalutara district and one from Colombo district.

Facility survey

Preliminary investigator visited all 10 blood banks in Western province have both in-house and mobile donor programme. Administrative permission was taken from director, NBTS and consent was obtained from MOICs and nurse in charges of respective blood banks. Relative data were collected by observing and interviewing MOICs, nurse in charges and check list was completed.

Processing and analysis of data

Each completed questionnaire was double checked by the interviewer at the time of data collection. A random spot checks were conducted. Before entering to the computer, each questionnaire was checked again. The data of pre-coded questionnaire were entered by using IBM SPSS statistics version 20. Error occurring during the process of data entry was prevented by using check files. SPSS version 20 was used for analyze the data.

Results

This chapter consists the quantitative results of the analysis. Quantitative results were obtained from two components.

1. Interviewer administered questionnaire of blood donors.
2. Facility survey.

(Chi Square Value = 4.066, df =3, Significance level = 0.05, P value = 0.254)

When consider distribution of respondents according to their level of income (n=395)

138 (34.8%) out of 395 respondents belong to SLR 15000 – 25000 income level.

The percentage of respondents with level of income below SLR7500 is 14.7%.

22(5.6%) out of 395 respondents were above SLR 50000 income level.

1 Results of blood donor Questionnaire

In the first phase of the study, 410 blood donors were interviewed using the interviewer-administered questionnaire. 15 responded questionnaires were removed from further analysis due to incompleteness. According to gender 303 among the 395 respondents were male and 92 were female, respective percentages were 76.7 and 23.3%. Distribution of respondents according to their marital state were 69% married, 30.2% unmarried and 0.8% divorced. When consider the level of education 49.2% of male and 50% of female had studied up to the GCE ordinary level. Only 6.6% were graduated of both male and female respondents. 229 out of 395 respondents (57.9%) were permanently employed. 66.7% male respondents were employed in permanent jobs. But only 29.3% of female respondents had permanent jobs. When consider distribution of permanently employed respondents according to their employment sector, 32.5% were employed in state sector. The pattern of blood donation (how often) was categorized according to regularly, once a year, less than once a year and unable to say. Only 10 respondents from state sector employment and 24 respondents from private sector employment had donated blood regularly. 33 respondents from private sector employment and 22 respondents from state sector employment had donated blood once a year. There is no statistically significance association between pattern of blood donation and sector of employment.

Table 4, Relationship between level of income and In-house blood Donation (n=395)

			In-house Donation		Total
			Yes	No	
Monthly income	Rs. Less than 15000	Count	14	92	106
		% within monthly income	13.2%	86.8%	100%
		% within In-house Donation	15.1%	30.6%	26.9%
	Rs. 15000 and Above	Count	79	210	288
		% within monthly income	27.4%	72.6%	100%
		% within In-house Donation	84.9%	69.4%	73.1%
Total	Count	93	302	395	
	% within monthly income	23.6%	76.4%	100%	
	% within In-house Donation	100%	100%	100%	

Majority of respondents (84.9%) who had donated blood to In-house donor programme, their level of income was SLR 15000 and above. There is statistically significant difference in level of income and In-house blood donation at 0.05 level of significance. (Chi Square Value = 8.692, df = 1, P value = 0.003) 269 (68.1%) among 395 respondents have donated blood previously (i. e. repeat donors). 126 (31.9%) were first time donors among the respondents. 43.7% of male repeat blood donors had donated blood more than four times and 10.7% had donated more than ten times. Only 7% of female repeat blood donors had donated blood more than four times and no female donors had donated blood ten times. (Chi square = 23.786, df = 4, level of significance = 0.01, P value = 0.00) 226 (84%) out of 269 respondents who had donated blood previously were male. 43 (16%) out of 269 respondents who had donated blood previously were female. 75 (33.2%) of male respondents donated blood once a year and 55 (24.3%) donated regularly. Only 14% of female respondents donate

blood regularly. Only 22.7% respondents both males and females had donated regularly. There is no statistically significant difference in pattern of blood donation and Gender at 0.05 level of significance. (Chi square value = 4.122, df = 3, P value = 0.249) 93 (23.5%) among 395 respondents had donated blood at least once to In-house blood donor programme. Only 3 (3.3%) were female out of 93 respondents who had donated blood at least once to In-house blood donor programme. 234 (67.9) out of 395 respondents had awareness of In-house donor program. But only 95 respondents had donated blood to in-house donor programme. The majority of respondents (57.8%), the source of information from which they knew about In-house donor program (n=95) were from relative /friends. The source of information of 23(24.2%) respondents was awareness programs done by the hospital blood bank staff. According to this study the TV, radio, newspapers and internet were minimal as the source of information of in-house blood donor programme.

Table 5, Distribution of respondents those who had donated blood to the In-house donor program, according to their opinion on In-house donor programme

Factor	Stimulate (%)	Disturbance (%)	No Comment (%)	Total (%)
Distance to the hospital	37(39.8)	44(47.3)	12(12.9)	93(100)
Easiness of coming to the hospital	32(34.4)	46(49.5)	15(16.1)	93(100)
The guidance from the entrance of the hospital to blood bank	36(38.7)	39(41.9)	18(20.2)	93(100)
Your welcome by hospital staff/reception	55(59.9)	10(10.8)	27(29.3)	92(100)
The time spent for procedure	67(72.8)	6(6.5)	19(20.7)	92(100)
The measures taken for protecting your privacy	81(87.9)	3(3.3)	8(8.8)	92(100)
Time duration allocated for blood donation	48(51.6)	19(20.9)	25(27.5)	92(100)
Furniture facilities for blood donors and those who accompanied	55(59.1)	13(13.9)	25(26.8)	93(100)
Cleanliness of the place	84(91.2)	1(1.1)	7(7.7)	92(100)
Post blood donation appreciation activities of blood bank staff	70(75.8)	0	22(24.2)	92(100)

Table 6, Distribution of respondents according to their opinion on mobile donor program

Factor	No effect at all (%)	No effect (%)	Some effect (%)	Strong effect (%)	No comment (%)	Total (%)
Fear to hospital setup	244(62)	37(9.4)	58(14.8)	14(3.6)	40(10.2)	393(100)

• Recognition as a blood donor among the community	170(44)	53(13.4)	103(26)	14(3.6)	51(13)	395(100)
• The ability to build relationship with the community	129(32.6)	32(8)	168(43)	22(5)	44(10.3)	395(100)
• Treating blood donation at a mobile program as a charity	110(27.8)	26(6.5)	125(31.6)	90(22.8)	44(11.1)	395(100)
• Travelling comfort from home	52(13.3)	20(5.1)	166(41.8)	142(36.2)	14(3.6)	395(100)
• Availability on easy days	67(17.1)	33(8.4)	135(34.3)	135(34.3)	23(5.9)	393(100)
• Encouragement given by the friends and relations	255(64.5)	48(12.1)	35(8.8)	15(3.7)	42(10.6)	395(100)
• Popularity given by the media	265(67.6)	38(9.5)	26(6.5)	9(2)	57(14.4)	395(100)
• Request made by your employer	316(80)	37(9.3)	8(2)	0	34(8.6)	395(100)
• Gift ,souvenirs given at mobile blood donation camps	287(72.9)	35(8)	25(7.3)	1(0)	47(11.8)	395(100)

The 244 out of 365 respondents were 10km or less than distance from residence to hospital with in-house donor facility. Whilst 373 out of 395 were 10km less than distance from residence to mobile campaign. There was no statistically significance difference found between age group and repeat blood donation. 29.7% respondents who have donated blood previously were within 30 – 35 age groups.

Facility Survey

The number of hospital blood bank recruited in to this study was ten for the facility survey. Facilities available for in-house blood donation including donor recruitment, retention and recall were studied using a check list. In-house donor capacity was 25 beds of all hospitals. For evaluate the responsiveness and professional image seven factors were considered. Drinking water available for donors, Comfortable seating facility available in waiting area, Toilet facilities available for donors, Privacy, Clean and tidy cloths, Arrangement of beds, equipments ect and Safety and hygienic were those factors. Only 30% of hospital blood banks had toilet facilities for donors. Drinking water available in 40%. But safety and hygiene, clean and tidy cloths were available in 90% of hospital blood banks. When consider the availability of post blood donation appreciation activities of blood bank staff, inform donors their blood group was 100% and individual written notice of appreciation is send to every donor following In-house donation was 60%. But, providing small tokens of appreciation for achieving certain number of donations was available only 20% (BH Watupitiwala and TH Kalubowila). Most commonly used in-house donor recall method was post cards. SMS and Email had never used. Given a phone call was used by TH Kalubowila and BH Avissawella.WHO

has recommend several donor records essential for donor recruitment, retention and recall for in-house blood donor programme. In-house donor register and register of donors with less common blood types were available almost all blood banks. Regular donor panel register and temporary in house donor deferral record were available 30% and 40% respectively. only BH Watupitiwala had blood donors data base.

Discussion

National blood transfusion service Sri Lanka requires approximately three hundred thousand blood donors annually (WHO). Since 2005, NBTS has been discouraging the replacement donation to reach its goal of 100%volentory non-remunerated donation. NBTS currently practiced two types of blood donor programmes for collect blood requirements. Those are Mobile donor programme and In-house donor programme. In 1998, 80% of total blood collection of NBTS from In-house blood donor programme (Table 1) .But currently it claims only about 10% of total blood collection (Table 2). Main objective of this study is to determine the factors affecting the blood donors of selecting blood donor program in Western province, Sri lanka.

Blood donor Questionnaire

Blood donors are from different educational background. Therefore interviewer administered questionnaire was designed to maximize the correctness, reliability, and completeness of answer the questions. The implication of gender, age, ethnicity and religion with the Mobile and In-house blood donor programme.

Gender distribution

Most of the blood donors in the sample were male. Previous study done in Sri Lanka also states the most of blood donors were male (Jayalal, 2002). Haemoglobin level of female population in Sri Lanka which is less than 12g/dl and their body weight which is less than 50 kg may cause for lower blood donation of females. Those two are essential criteria to be selected as blood donors. This may be the major cause for the lesser number of females in the donor sample. When In-house blood donation and Sex of donors are considered 96.8% of In-house blood donors were male. Only 3 (3.3%) out of 92 female had donated to In-house donor programme. When the distribution of pattern of blood donation and sex are considered 90.2% of regular blood donors were male. 43 out of 92 females population had donated blood previously, which shows the majority of female were first time donors. 226 (76.6%) out of 303 male population had donated blood previously. Boulware et al (2002) concluded in their study that female sex is a major demotivating factor of blood donation. 10.7% of male repeat blood donor population had donated blood more than ten times. 43.1% of the male repeat blood donor population had donated blood more than five times.

These factors lead to inference that

1. Gender distribution of blood donors differ remarkably.
2. Gender distribution of In-house blood donors differ remarkably.
3. Majority of male donors had become the repeat donors.

Ethnicity and religion distribution

Majority of the blood donor population were Sinhala Buddhists. "Donating a part from own body for others well being is highly valued in Buddhism. This may be the reason of higher motivation among Buddhist to donate blood" (Jayalal, 2002). In addition the ethnic and religion composition of selected population for the sample is predominantly Sinhala Buddhist. This is in line with the research done by Boulware et al (2002) in USA. This study that found minority groups were de-motivated in blood donation.

Civil Status

69% of blood donors in the sample were married.

Age

Highest population of blood donors 108 (27.3%) belong to 30-35 age group. Majority of blood donors were in 24-35 age group. It was found that researches done in Australia that majority of blood donors were 50-59 age group (Polonsky et al, 2010). In 30-35 age group 80 out of 108 blood donors were repeat donors. There was statistically significant association exists between age and previous blood donation. 60.3% of In-house blood donor population belonged to 30-41 age group. In extreme of age groups, In-house blood donation could be observed remarkably low. A statically significant association exists between age and In-house blood donation. The implication of educational level, employment sector and income level with Mobile and In-house blood donation

Educational level

The educational level of majority of donor population was up to GCE O/L. Only 8.1% of donor population had higher

educational qualification. This is different from the findings of study done by Bueiuiene et al, 2011 in Lithuania that majority of voluntary blood donors had higher education level.

Employment

58% of donor population was permanently employed. But the percentage of permanently employed female donor population is 25.3%.

Sector of employment

Majority (67.5%) of permanently employed donors were employed in private sector. 168 out of 269 repeat donors were permanently employed. 20.2% of permanently employed blood donors were regular donors.

There was no statistically significant association between sector of employment and pattern of blood donation in this study population.

Income level

14.7% of blood donor population belonged to lowest income level category. That might be due to fact that people who were not engaged in income generation (e.g. house wives, students, unemployed) were included in to this category. Only 5.6% of donors were from higher income group. 73.1% of blood donors belonged to middle and higher income level.

There was a statistically significant difference between income level and blood donation.

Donor awareness and source of information about In-house donor program

32.1% of blood donors population were not aware of In-house donor programme. Only 93 out of 234 who had been aware of In-house donor programme, had donated blood to In-house donor programme. This shows that majority of the donor population who had been aware of In-house donor programmes couldn't recruited by In-house donor programme.

Perception of In-house blood donors regarding In-house donor programme

Distance was disturbance to 47.3% of In-house donor population. Half of the In-house donor population had travelling problems to In-house donor facility. Directions to the blood bank were disturbance to 39.3% of donor population. That might be due to fact that some blood banks (e.g. TH Kalubowila, BH Wathupitiwala) were located at one corner of the hospital or the second/third floor of the building. The availability of directions boards were in poor (TH Ragama) condition. Reception, timeliness, privacy, opening hours, seating facilities, cleanliness and post blood donation appropriation activities were the parameters that stimulated the In-house blood donors. Moore (2008) found in his research that image of the national blood transfusion

service was motivational force for blood donation.

Motivational factors of blood donors in blood donation to mobile donor programme

In this study population, fear of hospitals, recognition in the community as a blood donor, peer pressure, media influence, influence by employer and gift or remunerations

were not motivational factors for blood donation to mobile programme. This differ from the findings of a study carried out of Boulware et al (2002), It was found that fear to hospitals was a major de-motivation factor of blood donation. Mobile donor programmes held on easy days and closer to their residence, were the most motivational factors to donate blood to mobile donor programme. 36.2% of donor population had strong effect on motivation that mobile campaigns were held closer to their homes and 41.6% had at least some effect of mobile campaign if they were held on convenience days that they can participate in. Similar proportion had at least some effect on that. This is consistent with that 58% of blood donors permanently employed. Therefore, it might not be easy for them to attended blood donation unless it is closer to their work place.

Distance distribution

94.4% of mobile donors were within 10 km of distance from their living place. This indicates that distance is a significant factor in selecting blood donor programme. 38.2% of blood donors were more than 10 km away from their closest In-house blood donor facility . In Sri Lanka, free western type government health care services are available within 4.8 km of patient's home (Annual Health Bulletin, 2008). However, most of those health facilities are lack of In-house donor facility. There are only 4 health institutions with In-house donor facility in Kaluthara district that has 1576 km² land area and 11.1 million population (source-Register general department statistics and N BTS statistics).

Facility survey

The total bed capacity was 25. Usually, in-house donor facility open from 8 am to 4 pm. According to WHO recommendation, maximum time duration for single episode of blood donation is less than one hour. Average In-house donor capacity per year of these ten study setting hospitals (bed capacity x opening hours per day x 365) should be more than 73000units. But it had collected only 3677units (table2). Most of the blood banks could not accepted in-house donations when the team visited out side. Basic facilities for blood donors like availability of drinking water, toilet facilities were very poor. Safety and hygiene, cleanliness and arrangement were in accepted level according to the hospital management manual. Maintaining of registers required for donor recruiting, recall and identify and trace the lapse donors were not available accordingly. Most of the blood bank staff was not aware some of those registers and records. Post donor appreciation activities were confined only to send donor blood group in majority of blood banks.

CONCLUSION

This study concludes that there was a considerable disparity of people attracting to the blood donation. Especially the young age group (18-23) was remarkably low in donating blood. The study shows that the female participation to the blood donation was minimum in both Mobile and In-house donor programmes. When the educational level is considered, the higher educational group was the least tendency to donate blood. However, it was explained that middle and higher income groups were more interested in donating blood. The group of permanently employed population donates blood more than

that of unemployed, self-employed and business communities. When the pattern of blood donation is considered the tendency of repeat donors, becoming regular donors is considerably low. That might be due to the lack of proper recalling methods. Awareness of the donors regarding In-house donor programme was satisfactory. However, there weren't proper programmes to recruit them as In-house donors. Technical quality of In-house donor programme could be considered satisfactory. However, functional quality aspect needs to be improved.

LIMITATIONS

1. Different ideas and views from a similar study could not be used, as there were no other comparative studies done on this subject.
2. Blood donation is a national programme. Input for this study was taken only from the hospitals with both Mobile and In-house donor programmes in Western province.
3. The main partner of N BTS, National Blood Centre, Narahenpita, which has well established mobile and In-house donor programmes wasn't included in this study.
4. A sample was not selected from the In- house blood donors.
5. The Checklist was not pretested.

References

- [1] Aggarwal, S and Sharma, V. (2012) Attitudes and problems related to Voluntary blood donation in India: A short communication. *Annals of Tropical Medicine and Public Health*, 5, 50-52 .<http://www.atmph.org/article>
- [2] Annual Health Bulletin, 2008. Ministry of health, Sri Lanka.
- [3] Australian Bureau of Statistics. (2007) Census of population and Housing.
- [4] (<http://www.abs.gov.au/>)
- [5] Barbara, M ., White, K .M ., Ketherine, M ., Hyde, M .K and Terry , D . J. (2008) The Psychology of blood donation: current research and future direction. *Transfusion Medicine Reviews*, 22, 215-233.
- [6] Blood Donation Procedure, National Blood Transfusion Service, Sri Lanka.
- [7] <http://www.bloodbanksrilanka.com>.
- [8] Boulware, L. E., Rathner, L. E., Ness, P. M., Cooper, L. A., Chambell-Lee, Laveist, T. A., Powe, N. R., (2002) The contribution of socio demographic, medical and attitudinal factors to blood donation among the general public. *Transfusion*, 42, 669-678.
- [9] Bueiuiene, I ., Blazeviene ,A., Stoniene, L ., Kazlauskaitė , R .and Skudine, V. (2011) Blood donors motivation and attitude to non-remunerated blood donation in Lithuania. *BMC Public Health*.

- [10] Condie, S.J., Warner, W.K., Gillman, D.C. (1976) Getting blood from collective turnips: Volunteer donation in mass blood drives. *Journal of applied psychology*, 61 (3), 290-294.
- [11] Donor selection criteria review, UK. (April 2011) <http://www.blood.co.uk>.
- [12] Ferguson, E., Farrell, K. and Lawrence, C. (2006) Blood donation is an act of benevolence rather than altruism. *Health psychology*, 27 (3), 327-336.
- [13] Gift of life, official publication of national blood transfusion service, 2, (June 2008).
- [14] Giles, M., Mc Clenahan, C., Cairns, E. and Mallet, J. (2004) An application of the theory of planned behavior to blood donation: the importance of self-efficacy. *Health Education Research*, 19, 380-91.
- [15] Gillespie, T. W., Hillyer, C. D., (2010) Blood donors and factors impacting the blood donation decision. *Transfusion Medicine Reviews*, 16 (2), 115-130.
- [16] Guidelines and principles for safe blood transfusion practice, WHO (2002).
- [17] Guidelines and principles for safe blood donation, WHO (2002).
- [18] Hollingworth B, Wildman, I., (2004) what population factors influence the decision to donate blood? *Transfusion Medicine*, 14, 13-17.
- [19] Kaadan ,A. N. ,Angrini, M. , (2009) Blood Transfusion History.
- [20] Kuruppu, K. K.S.,(2006) Quality assurance in donor care, *Trans Med*, 20-21, 21-23.
- [21] Manual on the management, maintenance and use of blood cold chain equipment, WHO (2005).
- [22] Mascaretti I, James v, Barbara j, Cardenas JM, Blagoevska M, Haraeae M: Comparative analysis of national regulations concerning blood safety across Europe. *Transfusion Medicine* 2004.
- [23] Mellstrom, C. and Johannesson, M. (2012) Crowding Out in Blood Donation: Was Titmuss Wright?, Gothenburg University, Sweden.
- [24] Moore, R. J. (2008) Promotion blood donation; a study of the social profile, attitude, motivation and experience of donors. *Transfusion Medicine*, 1 (4), 201-207.
- [25] Olaiya, M.A., Alakija, W., Ajala, A. and Olatunji, R.O. (2004). Knowledge, attitude, belief and motivations towards blood donation among blood donors in Lagos, Nigeria.
- [26] *Tranfusion Medicine*, 14 (1), 13-17. Politis, C. (2000) Blood donation system as an integral part of the health system. *Arch Hellen Med*, 17 (4), 354-357.
- [27] Politis, C. (2000) Blood donation system as an integral part of the health system. *Arch Hellen Med*, 17 (4), 354-357.
- [28] Polonsky, M. J., Renzaho, A. M. N., Brijnath, B. (2010) Understanding barriers to blood donation by Sub-Saharan African migrants and refugees. *Transfusion*, 42, 216-225.
- [29] Perera, I. J.G., (2006) Development of donor recruitment software for a blood transfusion service. *Trans Med* 2006. 20-21, 53.
- [30] Ried, M., and Wood, A. (2008) An investigation in to blood donation intentions among non donors. *International Journal of Non profit and Voluntary sector Marketing*, 13 (1), 31-43.
- [31] Sareen, R., Gupta, G .N., Dutt, A ., (2012). Donor awareness: key to successful voluntary blood donation. <http://floodor.es/rxchpk>. Standard Manual, National blood Transfusion Service, 2010.
- [32] The Manual of management for secondary and tertiary care health institution, Ministry of health, Sri Lanka, 1995
- [33] Wiwaniikit, V. (2002) Knowledge about blood donation among a sample of Thai University students. *Vox Sanguinis*, 83, 97-99 <http://onlinelibrary.wiel.com>
- [34] World Blood Donor Day <http://www.who.int/worldblooddonor/day/medical>