Original Article

Differences in Gender and Trends of Transfusion Transmissible Infections Among Blood Donors at a Tertiary Hospital in Bangladesh

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Abstract

Background: *Public awareness-creating activities have been taking place to promote blood donation but the units still do not match the yearly demands for blood. Prevalence of transfusion transmissible infection also happens to be a problem.* ***Objective:*** *To study the difference of ratio in between male and female donors as well as the trend of transfusion transmissible diseases.* ***Materials and Methods:*** *The present study has 56,557 blood donors over fourteen long years (2008 – 2021) by the Department of Transfusion Medicine at Khwaja Yunus Ali Medical College & Hospital (KYAMCH).* ***Result:*** *The donor medical assessment was passed by 56,557 people over 14 years; the number of females were 4,661 in compare to 51,896 males. Regarding the results of TTI screening, it is to be noted that only 688 positive cases were found among 56,557 people – implying only about 1.2% of the potential donor population being rejected.* ***Conclusion:*** *The data analysis has shed some light on the demography of donors and also Transfusion Transmissible Infections (TTIs) trends over the study period.*

Key words: *Hepatitis B, Female blood donors, TTIs*

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Introduction

It is said that "blood for blood is the best treatment". Blood transfusion has been used since 1930 for various indication.[1] However, it is known that blood transfusion can be associated with risks of transmitting certain infections. The prevalence of TTIs in voluntary donors is lower than among replacement.[2,3,4] and paid donors.[5-7] So the hazards of blood transfusion have been well identified to be prevented and if possible, treated. Public awareness creating activities have been taking place to promote blood donation but the units still do not match the yearly demands for blood. Prevalence of transfusion transmissible infection also happens to be a problem.[14] Studying the people who are already donating blood could be one of the ways to figure out where we are falling short. Many researches and surveys have been carried out around the globe on the matter. This study involves the donors of Sirajganj and the areas surrounding it in Bangladesh using one Blood Transfusion Center as the base camp.

Materials and Methods

The survey was conducted over a period of 14 years – from 2008 to 2021 – by the Department of Transfusion Medicine at Khwaja Yunus Ali Medical College and Hospital, Enayetpur, Sirajganj. A 'potential blood donor' population of 56,557 people coming into the Transfusion Medicine Center was taken into account for this study. The majority of this population was family/replacement donors from the local area and neighboring districts (Pabna, Tangail, Bogura, Nator, Rajshahi, Kushtia, Chuadanga, Meherpur, Naoga); the rest were voluntary non-remunerated blood donors among the doctors, nurses, hospital staffs, medical students and nursing students of the aforementioned institute and the students of Khwaja Yunus Ali University. It does not include self deferral cases due to every person being first subjected to a 'donor medical assessment form' devised as per WHO standards. After having qualified through the relevant history and physical examination, informed written consent was taken from the potential donor.

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The blood donations were then received, screened and stored/-supplied as per WHO guideline, except for a switch in steps as screening for TTIs and cross matching was performed before the actual donation due to scarcity of blood bags. The TTIs screened included Hepatitis B, Hepatitis C, HIV 1 and 2, Malaria and Syphilis – as per the WHO directions for Bangladesh. All screening tests were performed by rapid screening methods with device/strips/ICT.

The sex and the TTI screening results of the donors were specifically noted for this study and the data is processed to reflect on the general population of the country.

Result

The donor medical assessment was passed by 56,557 (n) people over 14 years; the number of females were 4,661, with an average of 333 potential female blood donors per year, whereas, there were 51,896 males, with an average of 3707 potential male donors per year. The persistent difference between the genders has been shown in figure 1

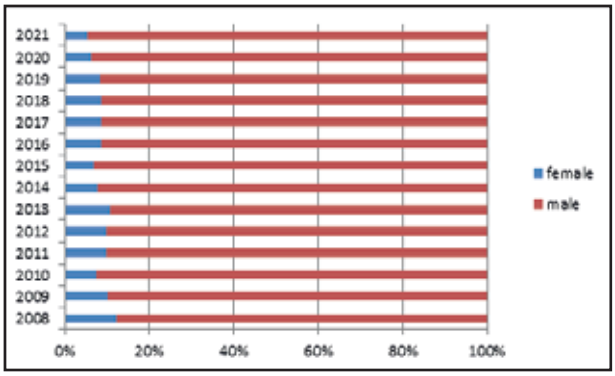

Figure 1: The female donor population has been persistently lower than 20% (n=56,557).

However, the total donor population is seen to have been raised over the years as shown in Table 1 and figure 2.

Table I: There has been a sharp rise in the number of donors in the last 2 years.

Year	Total no. of donors
2008	2506
2009	3447
2010	3988
2011	3408
2012	3541
2013	3396
2014	3428
2015	3130
2016	3052
2017	4061
2018	4725
2019	4796
2020	6093
2021	7046
	Total = 56,557

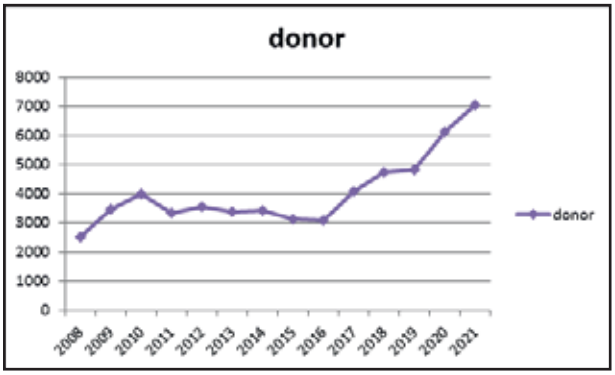

Figure 2: Rising trend in the total number of donors over the year.

Regarding the results of TTI screening among the potential donors, it is to be noted that only 688 positive cases were found among 56,557 people – implying only about 1.2% of the potential donor population being rejected. Among these cases, Hepatitis B infection has definitely taken the upper hand (Table 2).

Table II: WHO recommended TTIs screened.

TTI screening tests	*HBsAg +*	*Anti-HCV*	*HIV (1 and 2)*	*VDRL*	*ICT for MP*
No. of positive cases	688	38	03	45	00

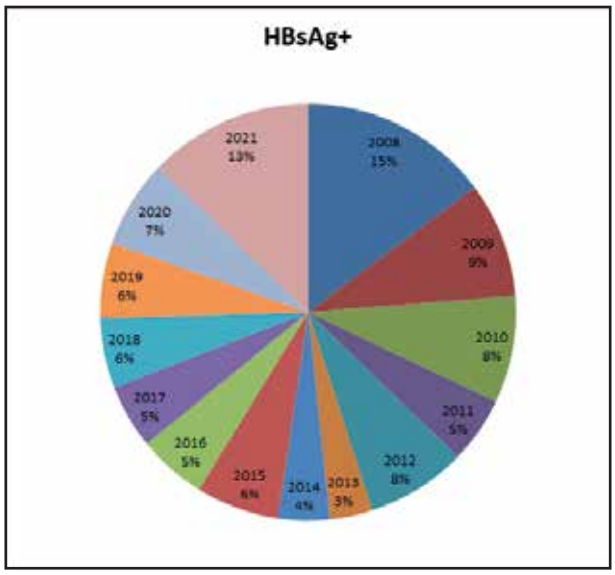

Figure 3: However, the frequency of HBsAg positive cases has been on the fall among the tested 'potential donors' but increased after covid-19 pandemic.

Discussion

The survey reveals that the contribution by half of the country's population – the females – is severely lacking in blood donation. Currently, the country is in a yearly need of about 8 lac units of blood and 7 lac units of blood could be made available. The deficit of another lac can easily be met if the female population could be involved.

One, most apparent, reason to this finding could be explained through the donor population age group. To be an eligible donor, one has to be between the age of 18 to 60 years[8-10] and have many other criteria fulfilled as per guideline by WHO. In reality, we mostly observe people donating blood from late second to fourth decade of life – to be more specific, between the ages of 18 to 40 years.[11,15] To support this observation, a study[12] conducted in Bangladesh from December 2011 to February 2012 on 'prevalence of morbidity per 1000 populations by age group and sex' revealed increasing morbidity in both males and females from the age of 30 years and above. According to the last national census[13] in 2011, there are 26, 059 thousand males and 29,037 thousand females in the age group of 20 to 44 years, and, another 15,125 thousand males, 14,384 thousand females have entered this age group by the year 2018. Despite the numbers, we are still failing to meet the routine and emergency demand for blood. As for getting the ladies involved, the age groups coincide with the prime time of the female reproductive period.

In the Department of Transfusion Medicine, while doing this survey, the most commonly encountered problems related to fewer women donating blood were –

1. Lack of physical fitness, including low levels of haemoglobin in blood - which takes us to the fact that the society is still lacking in awareness and education regarding female health.
2. Religious causes and superstitions.
3. Physiological contraindications in females for blood donation.

The study also reveals a rising pattern in the total number of donor population (Figure 2). The initial years of blood banking at the study institute did not see much 'transaction' and it may be blamed on deficiency on the part of the Blood Banking service, such as – lack of expert person in charge, poorly trained staff, no motivational work, hidden/unethical commercial service, lack of supervision by proper authority, absence of a 'Hospital Transfusion Committee', lack of awareness among the hospital staff and medical students. But the scenario has changed significantly since 2015 through much attention to the scopes of the field and the results are evident from the data in the following years.

The rise in the yearly donor population can be accredited to –
1. The appointment of an expert person of the field in charge
2. Establishment of a complete Hospital Transfusion Committee
3. Training the technicians and the ancillary staff
4. Creation of 'blood donation committee' among the different categories of staffs and students of Khwaja Yunus Ali Medical College and Hospital, Nursing institute and the University
5. Hosting distant outdoor orientation and awareness programs and rallies
6. Distribution of leaflets, booklets, fliers, banners and festoons at the hospital OPD and the local territory
7. Celebration of 'World Blood Donors' Day' on the 14th of June every year
8. Distribution of donor card to regular donors

As stated previously (Figure 3), there has been a steady decrease in HBsAg positive cases among the donor population due to increasing awareness and implementation of proper guidelines and protocols, resulting in self assessment and deferral from donating blood. However, Hepatitis B still remains a major hindrance among the TTIs in blood donation. The relative proportion of the TTIs in the study group may help reflect on the possible trends of these disease patterns on the general population of the country and their eligibility as blood donors (Table 2).

Conclusion

More people are donating blood than ever before in the country but the gap between the male and female donors is so significant that it definitely calls for more work on the topic and for raising social and personal health status of the female population in, at least, this region of Bangladesh.

Also, similar to many previous publications regarding TTIs in the country, but on much smaller sample size and over shorter time period, it can be concluded that Hepatitis B is the biggest threat to transfusion of blood and blood products. But the incidence of positive cases has significantly fallen, reflecting public awareness – if not the actual the disease pattern in the country.

Acknowledgment

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