Factors Influencing to Becoming a Blood Donor in Mongolia

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Ach Medical University

ABSTRACT

Background: Blood donated by donors saves the lives of many millions of people. Because of the development of medical science and population growth the demand for blood and blood components is increasing throughout the world.

Goal: To define social and cultural factors influencing the population to become voluntary non-remunerated donors Materials and methods: We used a questionnaire for defining influencing factors on blood donation and randomly selected 7633 adults to enroll in the survey from urban and 4 rural provinces. For the data analysis, we used a SPSS software version 21. Results were expressed by percentage of age of knowledge, attitude and average indicators among the population and used corresponding statistical tests. Qualitative survey methods were also used for obtaining the data.

Results: Average age of the respondents is 36.4, majority of them had higher education (40.8%), and completed secondary education (28.9%), khalkh (84.8%), and married (63.1%). As for survey site locations, most respondents were from urban (64.0%, 4887), most of them were Buddhists (51.9%). 14.6% survey respondents were blood donors who are living in urban areas, female, between 18-35 years of age, with completed high education, and married. 45.4% of them decided to donate blood by their own will. To help someone and save a life are the main reasons for blood donation. Respondents failed to donate their blood because family not allowed, afraid, risk of infection, doesn't want to be busy.

Keywords: blood donation, factors to become a blood donor.

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Conclusion: The main factors to becoming a blood donor are education level, gender, attitude of working environment, and willingness to do good deeds.

Keywords: blood donation, factors to become a blood donor.

Author α: PhD student at Ach Medical University, Ulaanbaatar, Mongolia.

σ*:* Academy of Medical Professionals, Ulaanbaatar, Mongolia.

ρ *Ѡ:* Ach Medical University, Ulaanbaatar, Mongolia.

Ѡ: Academy of Sciences, Ulaanbaatar, Mongolia.

χ: National Center for Blood Transfusion, Ulaanbaatar, Mongolia.

§: National Center for Public Health, Ulaanbaatar, Mongolia.

I. INTRODUCTION

Blood transfusion saves lives and improves health, but many patients requiring transfusion do not have timely access to safe blood. Providing safe and adequate blood should be an integral part of every country's national health care policy and infrastructure[1].

[1] WHO, 2019, Blood safety and availability, https://www.who.int/en/news-room/fact-sheets/detail/blood-safety-and-availability

WHO estimates that blood donation by 1% of the population is generally the minimum needed to meet a nation's most basic requirements for blood; the requirements are higher in countries with more advanced health care systems. However, the average donation rate is 15 times lower in developing countries than in developed countries. Globally, more than 70 countries had a blood donation rate of less than 1% (10 donations per 1000 population) in 2006[2]. Voluntary blood donors, particularly regular donors, are the first line of defense in preventing the transmission of HIV, hepatitis viruses and other blood borne infections through the route of transfusion. A number of studies have reported significantly lower prevalence of transfusion transmissible infection markers among voluntary donors compared with other types of donors, with the lowest rates among regular donors[3].

Blood donors are committed to social responsibility, saving lives and improving the health of others. In Mongolia, the legal environment on blood donation has been well established and the national blood bank is consistent with solely blood donated by donors. The necessity for blood and blood products in Mongolia is getting higher and higher every year which probably is associated with high-mortality-rate diseases. It has been estimated that about 100 blood donors donate blood would convince the necessity of blood in Mongolia.

In 1994, Mongolia conducted a new donor system and in 2018 January 19th the government renewed the previous blood donor law. The updated law improved the legal environment for blood safety. The number of blood donations increased from 16707 in 2013 to 25602 in 2017 by 53%, 5932 in 2013 to 7805 in 2017 by 31.5% in the National Center Blood Transfusion Medicine and Blood service centers respectively. The percentage of donors increased from 37.2% to 55% in 2017. However, till now desired blood products are limited and number of permanent blood donors are not sufficient in current demand of blood products.

In 2007, Mongolian Parliament passed a resolution No.45 on "Policy to Ensure Improvement and Safety of Donor Blood and Blood Products Supply" which indicates that the supply of safe blood and blood component is an issue at the center of the government's attention. This policy has defined the methods to implement the main direction of the activities to ensure a sufficient supply of safe and quality blood and blood components with proven efficacy for the continuous operation of health facilities even during national disasters. In 2008, the Government of Mongolia issued a resolution No. 111, an action plan to implement the Policy on "Improvement of Supply and Safety of Donated Blood and Blood Products".

To ensure safe sufficient blood and blood products are essential in Mongolia. Thus, we had evaluated the level of knowledge, attitude and practice towards voluntary blood donation among the general population and determined factors which could influence becoming a permanent blood donor.

Goal:
To define social and cultural factors influencing the population to become voluntary non-remunerated donors.

II. MATERIALS AND METHODS

In 2019, conducted a survey of volunteer community whole-blood donors to evaluate motivations for giving blood. The self-administered survey questionnaire included questions regarding donation history, knowledge and attitude about blood donation, intention to return, donation experience, and motivating factors.

[2] WHO Blood Safety Indicators, 2007. Geneva, World Health Organization, 2009.
[3] WHO and IFRC, 2010, Towards 100% voluntary blood donation: a global framework for action, World Health Organization and International Federation of Red Cross and Red Crescent Societies. ISBN 978 92 4 159969 6

2.1 Survey scope:

The minimum need of the country is met when 1 or more percent of the adult population of Mongolia becomes regular non-remunerated blood donors. Therefore, the scope of the survey covered knowledge, attitude and practice of a represen- tative sample of the Mongolian population aged between 18-60 on non-remunerated blood donation and factors influencing them.

2.2 Questionnaire based research:

The knowledge, attitude and experience of blood donation and factors influencing decision-making are identified through interviews using pre-developed questionnaires.

2.3 Qualitative research:

Individual and focus group discussions were used to clarify difficulties and factors influencing decision-making to donate blood for first and multiple time blood donors. This reveals the reasons why the adult population of eligible age between 18-60 years does not become voluntary non-remunerated donors.

2.4 Survey population, size of the sample and selection:

The survey covered a population aged 18-60 years in 5 provinces and 6 districts of Ulaanbaatar city. Population of the age of 18-60 years was randomly selected by the survey. Because the Kazakh population represents 3.9% of the total population, Bayan-Ulgii aimag was selected in the targeted sampling in order to identify whether cultural and religious reasons have an impact on blood donation. Four central districts and 2 remote districts were selected in Ulaanbaatar City by targeted sampling. The selection considered population density, disease burden, and distance from Ulaanbaatar city. When determining the sample size the level of knowledge, attitude and practice among the population on blood donation is considered as 50.0% with a probability of 95% (Z=1.96), standard deviation (p=0.05), complex sample impact coefficient (1.5) of gender balance and living location representativeness in all age groups (4 age groups for each gender, in total 8). Based on these principles the survey covered a total 6876 people. The number of people who might refuse to participate was considered 10 percent and this was added to the total number of people making a total of 7564 (Formula 1).

2.5 The formula 1 used for estimating the size of the sample:

$$n = Z^2 \frac{P(1-P)}{e^2}$$

$$n = 1.96^2 \frac{0.46(1-0.46)}{0.0025} = 3.8416 \frac{0.2484}{0.0025} = 381.70$$

n x complex sample coefficient x age x gender = 382 x 8 x 1.5 x 1.5 = 6876

The households were randomly selected based on the revised population census corresponding to the adult population of selected province centers and smallest unit of government.

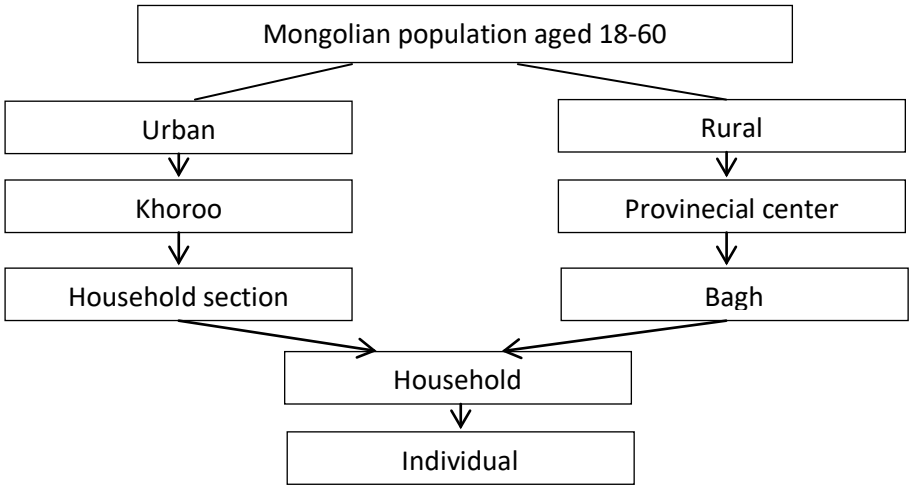

Figure 1: Phases of multiple phase random sampling

The ultimate unit of the sampling or the individual were randomly selected using Kish method among people aged 18-60 from members of selected households. One adult of a selected household was covered by the survey (Figure 1).

In order to ensure that the population of Mongolia is represented the survey sample was selected by multiple phase selection method. In order to ensure a proper ratio between the urban and rural population the survey sampling was done separately in each city. Also we had conducted several in-depth interviews and focus group discussion with selected survey respondents.

III. DATA PROCESSING

Statistical analysis SPSS version 21 (SPSS Inc., Chicago, IL, USA) was used for data analysis. Results were expressed by percentage of knowledge, attitude and average indicators among the population. Confidence interval of 95% (95% CI) was used to identify differences in results' accuracy indicators (distribution percentage) and groups (age, gender, location).

The prevalence of measurement and general tendency of the blue spot and outcome measures (prevalence and mean variance) and differences between groups (gender, age, location, and ethnic group) were calculated with 95% confidence internals (95%CI). The relevant parametric and nonparametric tests such as Mann-Whitney U test, Chi square, Kruskal-Wallis, and in order to determine normality of the variance we used the Kolmogorov –Smirnov test.

IV. RESULTS

The survey covered a total 7633 people and the respondent coverage rate was 100%. Table 1 shows the social and demographic indicators of the respondents.

The table 1 shows that average age of the respondents is 36.41 [36.09-36.73], majority of them were had higher education (40.8%, 3115), and completed secondary education (secondary and high) (28.9% 2204), khalkh (84.8%, 6472), married (63.1%, 4818), and single (28.7%, 2194). As for survey site locations, most respondents were from urban (64.0%, 4887), as for religion most of them were Buddhists (51.9%, 3960) and atheists (29.9%, 2281).

The average number of family members is 4.18 [4.15-4.21] and the largest number was 11 members. Totally (88.8%) gave their household income. The average household income level was 800,000±488,419 [95%CI: 800000-851713] MNT. The smallest income level was 100,000 MNT, the highest level was 4,500,000 MNT. In general, social indicators of these respondents are similar to the Mongolian population statistics.

This indicates that the study sample represents the Mongolian population aged 18-60. Demo-

graphic indicators of respondents were similar to statistical indicators of Mongolia which means the sample of the survey is representative of the general population of Mongolia in terms of showing their knowledge, attitude, and practice.

Table 1: Some social and demographic characteristics of the respondents

Social and demographic characteristics	Male (% and 95%CI)	Female (% and 95%CI)	Total number of respondents (% and 95%CI)
Living location			
Urban	2139 (62.2)	2748 (65.5)	4887 (64.0)
Rural	1298 (37.8)	1448 (34.5)	2746 (36.0)
Education level			
Uneducated	57 (1.7)	65 (1.5)	122 (1.6)
Only literate	9 (0.3)	4 (0.1)	13 (0.2)
Primary	105 (3.1)	83 (2.0)	188 (2.5)
Secondary	497 (14.5)	491 (11.7)	988 (12.9)
Secondary and high	1056 (30.7)	1148 (27.4)	2204 (28.9)
Vocational	405 (11.8)	391 (9.3)	796 (10.4)
Bachelor	1226 (35.7)	1889 (45.0)	3115 (40.8)
Master, PhD	82 (2.4)	125 (3.0)	207 (2.7)
Marital status			
Single	1042 (30.3)	1152 (27.5)	2194 (28.7)
Married	2153 (62.6)	2665 (63.5)	4818 (63.1)
Living with a partner	98 (2.9)	133 (3.2)	231 (3.0)
Separated	52 (1.5)	76 (1.8)	128 (1.7)
Divorced/widow	92 (2.7)	170 (4.1)	262 (3.4)
Mean # of family members	4.20 [4.15-4.25]	4.16 [4.11-4.20]	4.18 [4.15-4.21]
Age group			
Mean age	36.54 [36.12-37.02]	36.30 [35.89-36.70]	36.41 [36.09-36.73]
18-25 years	903 (26.30)	1052 (25.10)	1955 (25.60)
26-35 years	845 (24.60)	1154 (27.50)	1999 (26.20)
36-45 years	786 (22.90)	967 (23.00)	1753 (23.00)
Above 45	903 (26.30)	1023 (24.40)	1926 (25.20)
Ethnicity			
Khalkh	2854 (83.0)	3618 (86.2)	6472 (84.8)
Kazakh	281 (8.2)	305 (7.3)	586 (7.7)
Buryad	153 (4.5)	131 (3.1)	284 (3.7)
Zakhchin	72 (2.1)	54 (1.3)	126 (1.7)
Others	77 (2.7)	88 ()	165 ()
Religion			
Atheists	1170 (34.0)	1111 (26.5)	2281 (29.9)
Buddhism	1675 (48.7)	2285 (54.5)	3960 (51.9)
Christian	87 (2.5)	166 (4.0)	253 (3.3)
Islam	235 (6.8)	244 (5.8)	479 (6.3)
Shamanism	266 (7.7)	389 (9.3)	655 (8.6)
Others	4 (0.1)	1 (0.0)	5 (0.1)
Total	3437	4196	7633

Figure 1 shows the respondents by gender, whether they have a chronic disease or are on some medication. Out of total respondents, 16.6% [95%CI: 15.7-17.4] had any kind of chronic diseases, 16.4% [95%CI: 15.6-17.3] use constant medication (Figure 2).

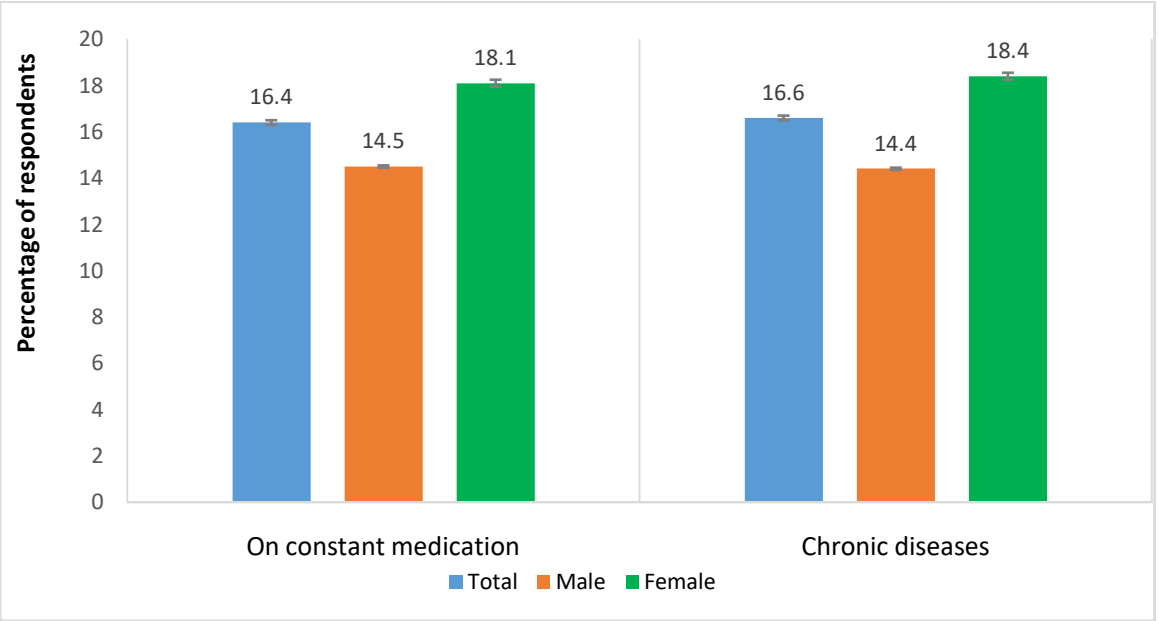

Figure 2: Morbidity of survey respondents, by gender, 2019

Most of (87.3%) all respondents and 86.7% of males have heard about non-remunerated voluntary blood donation. There was no difference between the living location and gender of the population in terms of whether they heard about non-remunerated voluntary blood donation. The survey clarified whether survey respondents had friends, family members, relatives who are blood donors. 59.4% of total respondents, 61.6% of male, 57.6% of female respondents do not know anyone who donates blood 2.8% of males, 3.4% of female respondents were blood donors. Overall 3.2% (n = 241) of survey respondents were blood donors (Table2).

Table 2: Respondents who know a blood donor, by gender

№	Whether the respondent knows a blood donor	Male	Female	n (%)
1.	Do not know anyone	2118 (61.6)	2415 (57.6)	4533 (59.4)
2.	Friends	485 (14.1)	606 (14.4)	1091 (14.3)
3.	Family members, relatives	279 (8.1)	412 (9.8)	691 (9.1)
4.	Co-workers	143 (4.2)	190 (4.5)	333 (4.4)
5.	Ordinary acquaintances	237 (6.9)	343 (8.2)	580 (7.6)
6.	Myself	97 (2.8)	144 (3.4)	241 (3.2)
7.	Other	9 (0.3)	18 (0.4)	5 (0.1)
8.	Cannot tell	73 (2.1)	86 (2.0)	27 (0.4)
	Total	3437 (100.0)	4196 (100.0)	7633 (100.0)

Ninety point two (19.2%) percent of survey respondents [95%CI: 18.4-20.1] said they donated their blood at least once in lifetime. 43.3% out of these people [95%CI: 40.6-46.3] donated only once, 31.9% (95%CI: 29.4-34.6) donated twice.

Table 3: Characteristics of respondents who had donated a blood

Indicators	Age group									
	18-25		26-35		36-45		46 and +		Total	
	n	%	n	%	n	%	n	%	n	%
1. Location, χ^2=10.96, p=0.012										
Rural	110	29.3	122	34.0	139	41.0	136	34.5	507	34.5
Urban	266	70.7	237	66.0	200	59.0	258	65.5	961	65.5
2. Gender, χ^2=11.97, p=0.007										
Male	182	48.4	149	41.5	130	38.3	146	37.1	607	41.3
Female	194	51.6	210	58.5	209	61.7	248	62.9	861	58.7
3. First impressions on blood donation among respondents, χ^2=28.96, p=0.016										
Nice impressions	130	34.6	113	31.5	93	27.4	111	28.2	447	30.4
No special impressions	132	35.1	131	36.5	150	44.2	190	48.2	603	41.1
Thought whether my blood would replenish	42	11.2	37	10.3	37	10.9	27	6.9	143	9.7
Feared of catching an infection	6	1.6	14	3.9	13	3.8	9	2.3	42	2.9
Fear of something	20	5.3	15	4.2	11	3.2	17	4.3	63	4.3
Impression to donate blood again	46	12.2	49	13.6	35	10.3	40	10.2	170	11.6
4. The main reason why blood donors started blood donation χ^2=77.70, p<0.001										
At own will	207	55.1	197	54.9	140	41.3	122	31.0	666	45.4
Compelled to help someone	73	19.4	58	16.2	96	28.3	120	30.5	347	23.6
Needed money	13	3.5	10	2.8	10	2.9	7	1.8	40	2.7
Peer pressure of coworkers	77	20.5	87	24.2	80	23.6	133	33.8	377	25.7
When I was soldier	6	1.6	7	1.9	13	3.8	12	3.0	38	2.6
Total	376	100.0	359	100.0	339	100.0	394	100.0	1468	100.0

Of those respondents who had donated a blood, most of them were aged 36 and above (49.9%, 95%CI: 45.8—54.4), urban citizen (65.5%, 95%CI: 24.8-29.1), and female (58.7%, 95%CI: 56.2-61.3). Some (30.4%) of respondents who donated blood [95%CI: 28.0-32.9] said they had "nice impressions" when first donated blood. 45.4% of people who donated their blood [95%CI: 42.8-47.9] did so at their own free will, 23.6% [95%CI: 21.5-25.8] donated because they were coerced to help someone. 25.7% of survey respondents [95%CI: 23.5-27.9] donated blood following their organization and coworkers.

Also, to help someone and save a life are the main reasons for blood donation. Knowledge of blood donors does not affect the religion or the geographical living place of residence. Most of the people who were interviewed said that they had "nice impressions" when first donating blood (Table 3).

Fourteen point six percent of (14.6%, 95%CI: 11.8-17.6) survey respondents were blood donors. Most blood donors live in urban areas, female, between 18-35 years of age, and with completed high education, and married. Some (37.0%) of these people [95%CI: 27.8-4.4] were donors who

donated their blood once in a year, 34.3% [95%CI:25.9-44.4] of them donate once in 3 months. 61.1% of blood donors of survey respondents [95%CI:51.9-70.4] said that they take blood tests each time when they donate blood, 37.5% of blood donors [95%CI: 27.5-48.7] said that they made somebody from their close circles into a blood donor. 30.6% of them were felt after the first donation to become regular blood donor. Also 45.4% [95%CI: 43.4-54.8] of them decided to donate blood by their own will.

Box 1. First impressions on blood donation among respondents

I have donated my blood to my colleagues. I wasn't planning on doing it regularly but after receiving a healthful text and I have decided to become a regular donor. I have donated my blood 3 times already and plan to do it for a long time.

In-depth interview R, 48 years old female)

Figure 3 shows the reason why blood donors started donating their blood. Most respondents stated that the main reason why they started donating their blood was (59.3%, 95%CI: 50.0-68.5) to do good deeds.

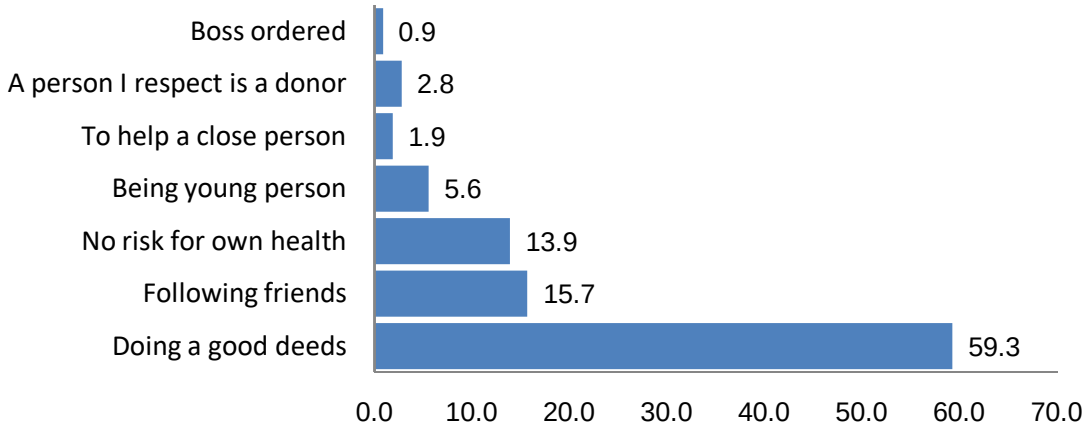

Figure 3: The main reason why blood donors started blood donation, by a percentage of respondents

Blood donors despite saying they are proud to donate blood still expressed their desire to see the Government to support the livelihood and social welfare of blood donors. Blood donors who participated in the qualitative survey appreciated governmental actions such as rewarding blood donors, constantly involving blood donors in any kind of activity in the last years.

Most of the respondents who had a negative attitude toward blood donation live in urban area (63.9% [95%CI: 61.6-66.1]), female (57.2%[95% CI: 54.9-59.6]), uneducated (41.1%[95%CI: 38-5-43.6]), married (56.6% [95%CI: 54.2-58.9]) and khalkh ethnic group (83.7 [95%CI: 81.9-85.4]) of people.

Table 4: General characteristic of survey respondent who believe blood donation has a risk for donors

№	General characteristics of blood donors	Number	%	95%CI
1. Living location				
	Urban	1065	63.9	61.6-66.1
	Rural	602	36.1	33.9-38.4
2. Gender				
	Male	713	42.8	40.4-45.1
	Female	954	57.2	54.9-59.6
3. Educational level				
	Uneducated	73	4.4	3.5-5.4
	Incomplete secondary	9	0.5	0.2-0.9
	Complete secondary	39	2.3	1.6-3.1
	Technical vocational	171	10.3	8.8-11.7
	Higher	457	27.4	25.2-29.5
	Master, doctor	174	10.4	8.9-12.0
	Uneducated	685	41.1	38.5-43.6
	Incomplete secondary	59	3.5	2.7-4.5
4. Marital status				
	Single	549	32.9	30.8-35.2
	Married	943	56.6	54.2-58.9
	Live with a partner	65	3.9	3.0-4.9
	Separated	51	3.1	2.3-3.9
	Divorced/widow	59	3.5	2.6-4.5
5. Ethnicity				
	Khalkh	1396	83.7	81.9-85.4
	Kazakh	159	9.5	8.2-10.9
	Buryad	47	2.8	2.0-3.7
	Zakhchin	25	1.5	0.9-2.1
	Others	40	2.4	1.7-3.2
	Total	1667	100.0	

Almost all quantitative and qualitative survey respondents are considered that donating blood is a good deed.

Box 2. The tendency to consider that donating blood is a good deed

We are ready to help people with the gift of life. It's a wonderful act of kindness.

(From group discussion))

The gift of the body is the best charity. Therefore, I am very happy to be a blood donor.

(In-depth interview)

Majority of the respondents who had a negative attitude toward blood donation (770, 20.4%) thinking of anemia (276, 35.9%), risk of infection (272, 35.4%). 52.2% of people who donated their blood (95%CI: 48.0-56.4) did so at their own will. 93.7% (n 3544) of them were agreed that blood donation is a charity and good work and 93.9% of the respondents (95% CI:93.1-94.7) considered blood donation as a gift of virtue and good deeds. 36.64% of respondents believed that they did not give blood for their blood because they fear of needle, risk of getting any kind of infection, bleeding, or will have low blood volume.

On binary logistic regression, we found that person with sufficient knowledge were more likely to have donated blood before (OR = 3.15, 95% CI

= 3.043.28), along with those in old aged people (OR = 3.71, 95% CI = 3.53-3.92) and living in urban settings (OR = 2.67, 95% CI=2.31-3.05). Details about association between demographics, education and marital status are shown in Table 4-5.

Figure 5 shows risks that might arise when voluntarily donating a blood by the proportion of responses.

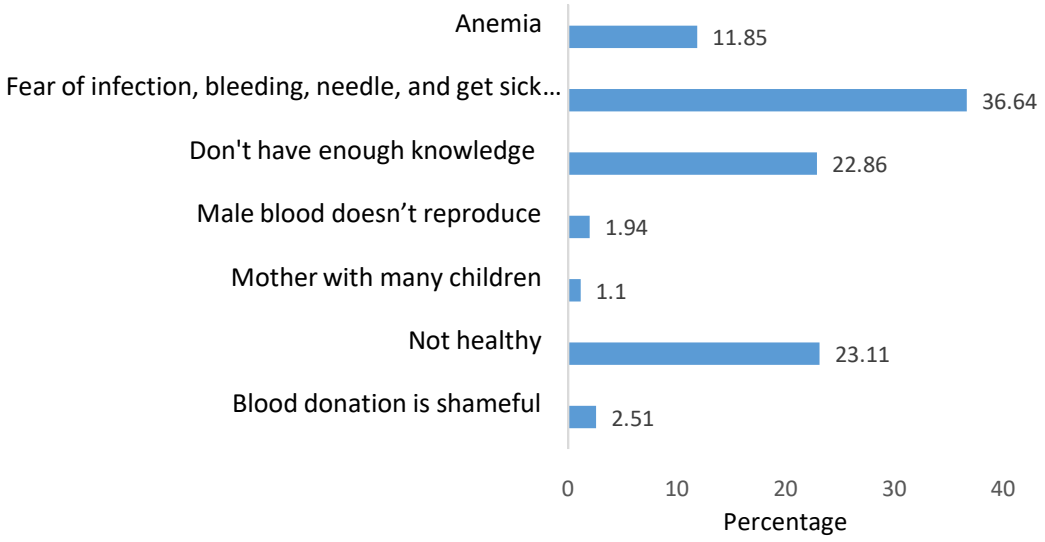

Figure 4: Risks encountered during blood donation, by percentage

The majority of (93.6% [95%CI: 93.1-94.7]) respondents agreed that blood donation is a good deed regardless of gender, education level, religion. But Buddhists, highly educated respondents, female, and aged above 26 years orders are slightly higher than other groups (Table 5).

Table 5: A tendency to consider giving blood as a virtuous act, by gender, age, education, religion

	Agree with blood donation is a good deed	Not agree with blood donation is not a good deed	Total
1. Gender, χ^2=11.97, p<0.001			
Male	3072 (93.1)	229 (6.9)	3301
Female	3802 (94.0)	244 (6.0)	4046
2. Age group, χ^2=35.23, p<0.001			
18-25 years	1651 (90.6)	171 (9.4)	1822
26-35 years	1832 (94.2)	112 (5.8)	1944
36-45 years	1606 (94.5)	93 (5.5)	1699
Above 46 years	1785 (94.8)	97 (5.2)	1882
3. Education level, χ^2=57.57, p<0.001			
Uneducated	94 (79.7)	24 (20.3)	118
Incomplete secondary	11 (84.6)	2 (15.4)	13
Complete secondary	161 (86.6)	25 (13.4)	186
Technical vocational	888 (92.9)	68 (7.1)	956

Higher	1935 (92.7)	153 (7.3)	2088
Master, doctor	749 (95.7)	34 (4.3)	783
Uneducated	2852 (94.9)	153 (5.1)	3005
Incomplete secondary	184 (92.9)	14 (7.1)	198
4. Religion, χ^2=80.2, p<0.001			
Atheists	2017 (91.8)	180 (8.2)	2197
Buddhism	3633 (95.7)	164 (4.3)	3797
Christian	221 (90.6)	23 (9.4)	244
Islam	401 (86.1)	65 (13.9)	466
Shamanism	599 (93.7)	40 (6.3)	639
Others	3 (75.0)	1 (25.0)	4
Total	6874 (93.6)	473 (6.4)	7347

VI. DISCUSSION

There are a lot of factors that influence deciding to become a donor. The legal environment, information on blood necessity, social status, social network are all external factors yet the most important factor in an individual's education level, attitude, and habit.

The main factors influencing blood donation are altruism, empathy, and various social reasons. Regular voluntary non-remunerated donors often donate blood altruistically, but at that, they feel great responsibility to the recipients.[4]

In this survey result we tried to find out the reason for becoming permanent blood donors in Mongolia. The main factors to becoming a blood donor are education level, gender, and attitude of the working environment, and willingness to do good deeds. The result of our survey, the similar trend was defined. 14.6% of blood donors who participated in the survey are permanent blood donors. The majority of blood donors are urban citizens and women, aged 18-35, educated and married.

One unique result of this study was the biggest intention of blood donation among Mongolians is willingness to do the good deed. It could be explained by the traditional Mongolian culture and Buddhism influence. . Liu et al were found that the ethnicity and religion were successfully incorporated into health promotion interventions for ethnic minority groups in a study of health researchers and promoters. Identifying with culture, race/ethnicity, and religious affiliation can influence health behaviors and can promote minority blood donors to benefit the health of others[5].

Oswalt's[6] and Bettinghause et al's[7] reviews were stated on motivation and recruitment of donors and non-donors reported that main motivation of blood donation is an altruism which was defined as "prosocial behavior that has no obvious benefit for the respondent but is beneficial to the recipient".[8]

Another intention of blood donation is the working environment of people which leads to the first blood donation. Not many researchers have found such results. Maybe it relates with the organization's culture of Mongolian institutions.

The research result of Lee et al (2008) shows that only 6% of the first-time donors become regular

[4] Kasraian, L., 2010. Causes of discontinuity of blood donation among donors in Shiraz, Iran: cross-sectional study. Sao Paulo Med J, 128(5): 272-275.

[5] Liu, J. J., Davidson, E., Bhopal, R., White, M., Johnson, M., Netto, G., & Sheikh, A. (2016). Adapting health promotion interventions for ethnic minority groups: A qualitative study. Health Promotion International, 31, 325–334.

[6] Oswalt RM: A review of blood donor motivation and recruit-ment. Transfusion 17:123-135, 1977

[7] Bettinghaus EP, Milkovich MB: Donors and non-donors. Communication and information. Transfusion 15:165-169, 1975

[8] Zillmer EA, Glidden RA, Honaker LM, et al: Mood states in the volunteer blood donor. Transfusion 29:27-30, 1989

donors, and 62% never come again for another donation[9].

The glorification of blood donors contributes to the recruitment of new donors and a positive impact on the distribution of information, and to support regular donors who have voluntarily donated their blood. This result was identical with results of Karen et al (2008)[10], Polonsky, Brijnath, & Renzaho, (2011)[11]; Renzaho & Polonsky, (2013)[12] ; Robbins et al., (2015)[13]; and Tran et al., (2013).[14]

Barriers of blood donation of defined in numbers of studies [15, 16, 17, 18, 19] . According to the Alsalmi et al (2019)[20] The most common reported barrier from blood donation by donors was various fears from donation (67; 16%), in contrast to health reasons (85; 47.2%) according to nondonors. Around 286 (47.8%) students expressed that appreciation certificates are the best motivations for them to donate blood, while 226 (37.8%) preferred academic support such as bonus marks in the courses they take.

Piliavin[21] classified return donors into 2 categories: (1) those who had given 1 to 3 times and those who had donated 4 or more times. Facilitating the transition of repeat donors to the latter classification was found to be critical in generating long-term repeat donors. The result of our survey shows that half of the people who had donated blood were in the first category.

In conclusion, the majority of respondents believed that they did not give blood for their

[9] Lee, C.K., J. Hong and A.T. Hung, 2008. An update of blood donor recruitment and retention in Hong Kong. Asian J Transfus Sci, 2(2): 47- 50

[10] Karen S. Schlumpf, Simone A. Glynn, George B. Schreiber, David J. Wright, Whitney Randolph Steele, Yongling Tu, Sigurd Hermansen, Martha J. Higgins, George Garratty, and Edward L, 2008. Factors influencing donor return; Transfusion 2008;48:264-272.

[11] Polonsky, M. J., Renzaho, A. M. N., & Brijnath, B. (2011). Barriers to blood donation in African communities in Australia: The role of home and host country culture and experience. Transfusion, 51, 1809–1819. Doi:10.1111/ j.1537-2995.2010.03053.x

[12] Renzaho, A. M. N., & Polonsky, M. J. (2013). The influence of acculturation, medical mistrust, and perceived discrimination on knowledge about blood donation and blood donation status. Transfusion, 53, 162S–171S. doi:10.1111/trf.12476

[13] Robbins, M. L., Paiva, A. L., Amoyal, N. R., Brick, L., Kessler, D. A., Burditt, C., … Shaz, B. H. (2015). Acceptability and feasibility of a culturally tailored internet-delivered intervention to promote blood donation in Blacks. Health Promotion Practice, 16, 227–235. doi:10.1177/ 1524839914533344

[14] Tran, N. Y., Charbonneau, J., & Valderrama-Benitez, V. (2013). Blood donation practices, motivations and beliefs in Montreal's Black communities: The modern gift under a new light. Ethnicity & Health, 18, 508–529. doi:10.1080/ 13557 858.2012.734279

[15] Boulware, L. E., Ratner, L. E., Ness, P. M., Cooper, L. A., Campbell-Lee, S., LaVeist, T. A., & Powe, N. R. (2002). The contribution of sociodemographic, medical, and attitudinal factors to blood donation among the general public. Transfusion, 42, 669–678. doi:10.1046/j.1537- 2995.2002. 00120.x

[16] Grossman, B., Watkins, A. R., Fleming, F., & Debaun, M. R. (2005). Barriers and motivators to blood and cord blood donations in young African-American women. American Journal of Hematology, 78, 198–202. doi:10.1002/ajh.20308

[17] McQuilten, Z. K., Polonsky, M. J., & Renzaho, A. N. (2015). Blood donation by African migrants and refugees in Australia. ISBT Science Series, 10, 257–262. doi:10.1111/voxs.12162

[18] Renzaho, A. M. N., & Polonsky, M. J. (2013). The influence of acculturation, medical mistrust, and perceived discrimination on knowledge about blood donation and blood donation status. Transfusion, 53, 162S–171S. doi:10.1111/trf.12476

[19] Mathew, S. M., King, M. R., Glynn, S. A., Dietz, S. K., Caswell, S. L., & Schreiber, G. B. (2007). Opinions about donating blood among those who never gave and those who stopped: A focus group assessment. Transfusion, 47, 729–735. doi:10.1111/j.1537- 2995.2007.01177.x

[20] Alsalmi MA, Almalki HM, Alghamdi AA, Aljasir BA, 2019. Knowledge, attitude and practice of blood donation among health professions students in Saudi Arabia; A cross-sectional study. J Family Med Prim Care 2019; 8:2322-7.

[21] Piliavin J, 1990. Why do they give the gift of life? A review of research on blood donors since 1977. Transfusion, 1990, 30:444-459

blood because they will have low blood volume or didn't know where to donate their blood or either because of illnesses. The main reason for the rejection of blood donation is the stereotypical "male blood doesn't reproduce". Other reasons are: Family doesn't allow; risk of infection and busy schedule. Also, respondents failed to donate their blood because family is not allowed, afraid, risk of infection, doesn't want to and busy. The main factors to becoming a blood donor are education level, gender, attitude of working environment, and willingness to do good deeds. Thus, actions should be done to encouraging donors to continuing donation could have an important influence on maintaining the overall donor pool.

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