

## Knowledge about blood donation of attendants (donors and non-donors) to the National Blood Transfusion Center in Baghdad

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### Abstract

This is a cross-sectional study conducted in the National Blood Transfusion Center during the period from the 1<sup>st</sup> of November 2005 through November 2006. The of the study was to assess the Knowledge of a sample of donors and non-donors attending the National Blood Transfusion Center in Baghdad regarding the information about blood donation. A total of 500 individuals were interviewed, 292 were donors and 208 were non-donors. Data were collected using specially designed questionnaire. The questionnaire consisted of thirty questions assessing the knowledge regarding blood donation. Regarding the total scores of the answers; only 7 (2.4%) of donors but none of non-donors, had got good scores (>75%). Most of donors and non-donors got medium scores (56.8%) and (53.4%) respectively. While 119 (40.8%) of donors and 97 (46.6%) of the non-donors got poor scores (<50%). This study suggested that there is great deficiency in the basic knowledge of the Iraqi population regarding blood donation among doth donors and non-donors. The act of donating blood was associated with replacement rather than with the voluntary donation. Based on this study, an effective strategy can be made regarding motivated recruitment of voluntary non-remunerated blood donors in future.

**Keywords:** Blood donation etc.

### Introduction

Blood is vital. Loss of large volume of blood (about 75%) results in death unless transfusion is given. Blood can be obtained only from other people; there is no artificial substitute for it<sup>(1)</sup>. The most successful & most widely used transplant in the history of medicine is blood. Despite the enormous knowledge gathered over many decades about what is possible & what is impossible in blood transfusion, each transfusion of blood or of a blood component remains a therapeutic procedure involving risks<sup>(2)</sup>. Transfusion medicine may be defined as that part of the health care system which undertakes the appropriate provision and use of blood resources. It provides the essential scientific and clinical information for transfusion practice, and the link between the blood donor's altruistic donation and the patient<sup>(3)</sup>. The transfusion of blood, its component & its products is a widely used form of supportive therapy, which has expanded greatly due to the development of more sophisticated medical procedures requiring the transfusion of blood<sup>(4)</sup>. In general the potential risks associated with blood transfusions are well known and the application of methods to reduce hazards such as blood group incompatibility, transmission of blood borne

diseases, and alloimmunization to blood cell antigen is now routine in blood banks. However, as it is not realistic to expect "zero risk" situation it is important that transfusion practices are not liberalized and that the decision to transfuse is not taken lightly<sup>(5)</sup>.

A safe blood transfusion is an extremely cost-effective measure in developed countries such as the USA, where 2% of the health care budget which is spent on blood transfusion services benefits 50% of the health services. Yet the quality and safety of blood transfusion therapy is of continuing concern, particularly in developing countries where 80% of the world population lives. This concern is related to the risk of transfusion-transmissible infections (TTIs) due to unsafe transfusions. This result from blood collected from unsafe donors, the lack of quality systems in blood transfusion services, poor laboratory procedures in blood group serology and inadequate testing of donated blood for TTIs, errors in the administration of blood, and a lack of access and appropriate clinical use of blood and blood products for patients requiring transfusion<sup>(6)</sup>.

### Objective of the study

To assess the knowledge of people regarding the bases and process of blood donation through a sample of

donors and non-donors attending the National Blood Transfusion Center in Baghdad.

### Subject and methods

This is a cross-sectional study with analytic element conducted in the National Blood Transfusion Center in Baghdad.

### The National Transfusion Center

It is the main center of blood donation in Iraq. It is located in Baghdad City. It was established since 1956. It receives about 250-350 donor/day (the mean number of donors is 78652/year which is equal to 201 donor/day). The center contains many units including Clinical unit, donation room unit, laboratory unit which includes ABO grouping, blood cell separator to separate blood into its components, bacteriology unit for (TPHA, malaria), virology unit for (HBsAg, AntiHIV & AntiHCV), quality control unit, library and internet units.

### Sample and sampling technique

The sample is a convenient one taken by pooling all the 'attendants to the national blood transfusion center' during a specialized period of time. A total of 500 individuals were interviewed, 292 were donors, and 208 were non-donors. The non-donors group was taken to compare them 'as a general population' with the donors to see if there is difference in the knowledge between them regarding the basis and the process of blood donation.

All approvals were taken from Ministry of Health. Contact the director managers and agreement of the National Blood Transfusion Center administration office was obtained. The respondents were given briefing on the objective of the study, and the respondents were ensured regarding confidentiality. A verbal consent was taken prior to each interview.

### Pilot study

It was implemented on a sample that included six patients, to estimate the time needed for the interview and the possible difficulties in the questions. According to the outcome of this pilot, modifications were made to the questions of the 'questionnaire' to make them clearer & easier to understand. This sample was excluded from the study target.

The interviews with the donors were done by visiting the center two days per week, (10 respondents/day), each interview lasted about 10-15 minutes.

### The questionnaire

Data were collected using a specially designed questionnaire constructed by the researcher and evaluated by the supervisor. Some of the questions were

burrowed from global researches<sup>(5-15)</sup>. We tried our best to put questions that are related to information of general knowledge (not highly specialized) to meet the level of the lay people.

The questionnaire consisted of six parts;

**Part I** contains information on demographic and professional data like, age, sex, marital status, education level and employment status. These demographic data were used to identify the relationship between the knowledge regarding blood donation and specific individual characteristics including age, sex, educational level, and employment status.

**Part II** is a set of 5 questions regarding the general information (types of blood groups, the components of blood, amount of blood loss leads to death, blood formation site and blood volume in the body).

**Part III** is a set of 11 questions regarding the donation procedure: age limit and minimum weight of donors, inter-donation interval, total blood replacement in the body, amount of blood taken in each donation, time of the donation procedure, amount transfused to the recipient per time, eating before donation, smoking withdrawing before donation, storage temperature and expiration time of blood pint).

**Part IV** is a set of 4 questions regarding the donation and health.

**Part V** digs for the motivation for blood donation (reason of blood donation 'for donors', reasons for non-donation 'for non-donors', number of previous donations, donor experience of post donation reaction, source of information about this issue and motives for voluntary blood donation).

**Part VI** (4 questions) includes the indications and contraindications of blood transfusion.

The responses were put in the form of selection of the right answer from multiple choices given for direct questions and in the form of a list for open questions. A scoring agreed about by assigning a score of 2 for the right answer and 1 for the incomplete answer and score of 0 for the wrong answer, the scale of score was transformed as parts of total of 100 (total score =54) for each individual. Then the score was categorized into 3 groups: poor (<50%), medium (50-74.9%) and a cut-off point of 75% of correct responses were considered as good. For analysis, distribution of donors and non-donors into two groups and associations with different variables were studied.

### Statistical analysis

The data were analyzed by using SPSS (11.5). The frequency distributions were obtained. T test was used to

ascertain significant association between two means and Chi-square test was used to test for significant association between the data of the variable studied. The level of P value 0.05 was the cut-off value for significance.

**Results**

Regarding the age, two thirds of the sample 326 (65.2%) were between 18-30 years of age, 101 (20.2%) and 45 (9%) were between 30-40 years and 41-50 years of age respectively. Only 28 (5.6%) were more than 50 years of age. Males formed 53.4% (267) of the sample while females constituted 46.6%. Married individuals were (190) which represented (38%) while 310 (62%) were unmarried.

**Table 1:** Distribution of the studied sample by age, sex & marital status

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Age</b>						
18-30 years	170	58.2	156	75	326	65.2
31-40 years	74	25.3	27	13	101	20.2
41-50 years	30	10.3	15	7.2	45	9
>50 years	18	6.2	10	4.8	28	5.6
Total	292	100	208	100	500	100
<b>Gender</b>						
Female	90	30.8	143	68.8	233	46.6
Male	202	69.2	65	31.3	267	53.4
Total	292	100	208	300	500	100
<b>Marital status</b>						
Married	133	45.5	57	27.4	190	38
Unmarried	159	54.5	151	72.6	310	62
Total	292	100	208	100	500	100

Only 3 (0.6%) of the individuals included in the study were illiterate, while 8 (1.6%) can read and write only, 48 (9.6%) had completed primary school, 103 (20.6%) had completed secondary school. The highest proportion 198 (39.6%) are college students and 140 (28%) are graduated.

In respect to the occupation; 124 (24.8%) were clerks, 92 (18.4%) were workers, 136 (27.2%) were students and 148 (29.6%) includes others (retired, housewives, with no work and military subjects).

**Table 2:** Distribution of the studied sample by education and occupation

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Education</b>						
Illiterate	3	1	-	-	3	0.6
Read & write	6	2.1	2	1	8	1.6
Primary	34	11.6	14	6.7	48	9.6
Secondary	50	17.1	53	25.5	103	20.6
College	99	33.9	99	47.6	198	39.6
Higher education	100	34.2	40	19.2	140	28
Total	292	100	208	100	500	100

Occupation	Donor	%	Non-donor	%	Total	%
Clerk	58	19.9	66	31.7	124	24.8
Worker	71	24.3	21	10.1	92	18.4
Student	32	11	104	50	136	27.2
Others	131	44.9	17	8.2	148	29.6
Total	292	100	208	100	500	100

184 (63.0%) of donors and 177 (85.1%) of non-donors knew the (ABO) blood grouping. In respect to the blood components (cells as RBCs, WBCs, Platelets & plasma) 115 (39.4%) of donors and 125 (60.1%) of non-donors, gave correct answers. About blood loss, both donors; 137 (46.9%) and non-donors; 97 (46.6%) believed that loss of 75% of whole body blood lead to death. Bone marrow was known to be the blood formation site to 162 (55.5%) of donors and to 161 (76.4%) of non-donors.

**Table 3:** Distribution of the sample regarding their general information about blood

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Blood group</b>						
Wrong	51	17.5	24	11.5	75	15
Incomplete	57	19.5	7	3.4	64	12.8
Correct	184	63	177	85.1	361	72.2
<b>Blood components</b>						
Wrong	83	28.4	33	15.9	116	23.2
Incomplete	94	32.2	50	24	144	28.8
Correct	115	39.4	125	60.1	240	48
<b>Blood loss</b>						
20%	42	14.4	22	10.6	66	13.2
50%	113	38.7	89	42.8	202	40.4
75%	137	46.9	97	46.6	234	46.8
<b>Blood formation</b>						
Bone marrow	162	55.5	161	77.4	323	64.6
Liver	77	26.4	29	13.9	106	21.2
Spleen	53	18.2	18	8.7	71	14.2
<b>Blood volume</b>						
2Liters	6	2.1	8	3.8	14	2.8
5 Liters	189	64.7	169	81.3	358	71.6
10 Liters	97	33.2	31	14.9	128	25.6

Only 44 (15.1%) of donors and 32 (15.4%) of non-donors replied that a person between 18-65 years old can donate blood. The minimum weight for donation is 50 kg of weight which was correctly answered by only 102 (34.9%) of donors and 103 (49.5%) of non-donors. Blood could be extracted from human body every three months (minimum inter-donation interval) which was the opinion of 137 (46.9%) of donors and 115 (55.3%) of non-donors. The process of blood donation does not affect blood replacement time in the body, this was correctly answered by 158 (54.1%) of donors and 84 (40.4%) of non-donors, i.e. 124 (59.6%) non-donors thought that blood donation prolong the time for blood replacement which is normally three months. Only 54 (18.5%) of donors and 43 (20.7%) of non-donors knew that less than half Liter (one pint<500mL) of blood is taken from the donor in each donation session. Time of blood donation procedure was correctly answered by 237 (81.2%) of donors and 166 (79.8%) of non-donors. The majority, 213 (72.9%) of donors and 141 (67.8%) of non-donors, agreed that the amount of blood given to the patient (recipient) is according to need. It is preferable to eat at least 2

hours before donation process. About half of donors 151 (51.7%) accepted that while only 62 (29.8%) of non-donors knew that. It is also preferable to stop smoking at least 2 hours before donation process. About half of donors 151 (51.7%) answered that while only 78 (37.5%) of non-donors knew that. Storage temperature of blood pint was known by 178 (61%) of donors and 122 (58.7%) of non-donors and expiration time of drawn blood pint by 111 (38%) of donors and 90 (43.3%) of non-donors.

**Table 4:** Knowledge of the sample regarding donation and health

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Age limit for donation</b>						
18-35 years	54	18.5	51	24.5	105	21
18-45 years	194	66.4	125	60.1	319	63.8
18-65 years	44	15.1	32	15.4	76	15.2
<b>Minimum weight of donor</b>						
50 Kg	102	34.9	103	49.5	205	41
51-60 Kg	73	25	72	34.6	145	29
61-70 Kg	81	27.7	21	10.1	102	20.4
>71 Kg	36	12.3	12	5.8	48	9.6
<b>Minimum interdonation interval</b>						
3months	137	46.9	115	55.3	252	50.4
6 months	121	41.4	86	41.3	207	41.4
12 months	34	11.6	7	3.4	41	8.2
<b>Blood replacement time</b>						
3 moths if not donate	134	45.9	124	59.6	258	51.6
3monthsevenif donate	158	54.1	84	40.4	242	48.4
<b>Amount of blood taken per a time</b>						
<500 mL	54	18.5	43	20.7	97	19.4
500-1000 mL	149	51	118	56.7	267	53.4
Do not know	89	30.5	47	22.6	136	27.2
<b>Time of donation procedure</b>						
5-10 minutes	237	81.2	166	79.8	403	80.6
30 minutes	55	18.8	42	20.2	97	19.4
<b>Amount given to the patient per a time</b>						
According to need	213	72.9	141	67.8	354	70.8
2pints	38	13	34	16.3	72	14.4
Do not know	41	14	33	15.9	74	14.8
<b>Eating before donation</b>						
Immediate	102	34.9	125	60.1	227	45.5
2 hours	151	51.7	62	29.8	213	42.6
6 hours	39	12.9	21	10.1	60	12
<b>Smoking withholding before donation</b>						
Immediate	67	22.9	95	45.7	162	32.4
1 hour	74	25.3	35	16.8	109	21.8
2 hours	151	51.7	78	37.5	229	45.8
<b>Storage temperature</b>						
4-6 C°	178	61	122	58.7	300	60
0 C°	70	24	63	30.3	133	26.6
Room temperature	44	15.1	23	11.1	67	13.4
<b>Expiration time</b>						
10 days	131	44.9	96	46.2	227	45.4
35 days	111	38	90	43.3	201	40.2
100 days	50	17.1	22	10.6	72	14.4

Blood donation was thought to be good for health by most 282 (96,6%) of donors and 181 (87%) of non-donors. The process of blood donation is aseptic technique through which no diseases are transmitted to donors. Wrongly, 70 (23.9%) of donors and high percentage 86 (41.3%) of non-donors, thought that there are diseases transmitted to donors through blood donation process. Majority, 240 (82.2%) of donors and 181 (87%) of non-donors, accepted the fact that there are diseases transmitted to recipients through blood transfusion process. Harmful risks of blood transfusion include blood group incompatibility, alloimmunization to blood cell antigen and transfusion-transmissible infections (including HIV, hepatitis viruses, syphilis, malaria).Only 14 (4.8%) of donors and 7 (3.4%) of non-donors had complete correct answers while 189 (64.7%) of donors and 138 (66.3%) of non-donors did not know about the risks.

**Table (5):** Knowledge of the sample regarding donation and health

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Donation for health</b>						
Good	282	96.6	181	87	463	92.6
Bad	10	3.4	27	13	37	7.4
<b>Diseases transmitted to donor</b>						
Wrong	70	23.9	86	41.3	156	31.2
Correct	222	76.1	122	56.7	344	68.8
<b>Diseases transmitted to recipient</b>						
Wrong	52	17.8	19	9.1	71	14.2
Correct	240	82.2	189	90.9	429	85.8
<b>Risks of transfusion</b>						
Wrong	189	64.7	138	66.3	327	65.4
Incomplete	89	30.5	63	30.3	152	30.4
Correct	14	4.8	7	3.4	21	4.2

**Table 6:** Knowledge regarding indications and contraindications of blood transfusion

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Indications for blood transfusion</b>						
Wrong	59	20.2	40	19.2	99	19.8
Incomplete	208	71.2	152	73.1	360	72
Correct	25	8.6	16	7.7	41	8.2
<b>Contraindications for blood transfusion</b>						
Wrong	95	32.5	60	28.8	155	31
Incomplete	182	62.3	128	61.5	310	62
Correct	15	5.1	20	9.6	35	7
<b>Cross matching</b>						
Wrong	257	88	196	94.2	453	90.6
Correct	35	12	12	5.8	47	9.4
<b>Compatibility</b>						
Wrong	70	24	44	21.2	114	22.8
Incomplete	99	33.9	67	32.2	166	33.2
Correct	123	42.1	97	46.6	220	44

Out of 292 donors, 144 (49.3%) donated blood for their family members or friends (replacement donors), 67 (22.9%) were volunteer blood donors, 43 (14%) cited that blood donation is good for health and 40 (13.7%) donated blood for religious duty. Out of 208 non-donors, 107 (51.7%) replied that they were 'not approached by any body' for blood donation, 70 (33.8%) considered themselves 'unfit' for donation due to weakness (but none of them was aware of their hemoglobin level), 11 (5.3%) unwilling to donate because of 'fear of needle' and 19 (9.2%) did not donate because of 'fear of disease transmission'. Regarding frequency of blood donation by donors, 178 (61%) of them donated blood once, 83 (28.4%) donated 2-5 times and 31 (10.6%) donated more than six times. Post-donation reactions were experienced by 59 (20.1 %) of donors while 233 (79.9%) of donors did not develop these reactions.

Out of 292 donors, 233 (79.9%) said that they received information about blood donation from friends and relatives, 46 (16.8%) declared that they have got their knowledge from the mass media broadcasts (Radio/TV). The rest 13 (4.5%) were informed through newspapers and blood donation campaigns. Regarding motives (incentives) for blood donation, most 269 (92.1%) of donors donated blood for the sake of humanity, 12 (4.1%) to get the 'blood credit card' and 11 (3.7%) were professionals or paid blood donors. Those who knew almost all the indications of blood donation were only 25 (9.6%) of donors and 16 (7.7%) of non-donors. While those who knew almost all the contraindications of blood donation were only 15 (5.1%) of donors and 20 (9.6%) of non-donors. Cross matching was unknown to majority, 257 (88%) of donors and 196 (94.2%) of non-donors. Complete correct answers about compatibility were done by 123 (42.1%) of donors and 97 (46.6%) of non-donors.

**Table 7:** Motivation for blood transfusion

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Reason for donation</b>						
Replacement	144	49.3	-	-	144	28.8
Voluntary	67	22.9	-	-	67	13.4
Good for health	41	14	-	-	41	8.2
Religious duty	40	13.7	-	-	40	8
<b>Reason for non-donation</b>						
Not approached	-	-	107	51.7	107	21.4
Not fit	-	-	70	33.8	70	14
Fear of needle	-	-	11	5.3	11	2.8

**Table 9:** Distribution of the donors by age, sex, education, occupation and knowledge score

	Scoring							
	Poor (<50%)		Medium (50-47.9%)		Good (>75%)		Total	
	No.	%	No.	%	No.	%	No.	%
<b>Age :</b> 18-30 years	78	45.9	88	52.8	4	2.4	170	58.2
31-40 years	23	31.1	51	68.9	-	-	74	25.3
41-50 years	8	26.7	19	63.3	3	10	30	10.3
>50 years	10	55.6	8	44.4	-	-	18	6.2
<b>Total</b>	119	40.7	166	56.8	7	2.3	292	100

$X^2=18.043$ ; d.f.=6 ; P=0.006

Fear of disease transmission	-	-	19	9.2	19	3.8
<b>Number of previous donations</b>						
1 donation	178	61	-	-	178	35.6
2-5 donations	83	28.4	-	-	83	16.6
6 donations & more	31	10.6	-	-	31	6.2
<b>Post-donation reactions</b>						
Developed	59	20.1	-	-	59	11.8
Not developed	233	79.9	-	-	233	46.6
<b>Source of information</b>						
Friend/relative	233	79.9	-	-	233	46.6
Radio/TV	46	15.8	-	-	46	9.2
Newspapers/campaigns	13	4.5	-	-	13	2.6
<b>Motives for voluntary donation</b>						
Humanity	269	92.1	-	-	269	53.8
Blood credit card	12	4.1	-	-	12	2.4
Money	11	3.7	-	-	11	2.2

Only 7 (2.4%) of donors, but none of non-donors, had good scores (>75%). Most of the donors and non-donors got medium scores (56.8%) and (53.4%) respectively, while 119 (40.8%) of the donors and 97 (46.6%) of the non-donors got poor scores (<50%). This table also showed mean of the total score of the donors and non-donors, which were 27.72 and 27.07 respectively. Minimum-maximum scores were (7-44) and (14-39) for the donors and non-donors respectively. Median of the answers was 27 for both donors and non-donors.

**Table 8:** Total scores and mean of answers

	Donor		Non-donor		Total	
	No.	%	No.	%	No.	%
<b>Scoring</b>						
Poor (<50%)	119	40.8	97	46.6	216	43.2
Medium (50-47.9%)	166	56.8	111	53.4	277	55.4
Good (>75%)	7	2.4	-	-	7	1.4
<b>Total</b>	292	100	208	100	500	100
$X^2=6.225$ ; d.f.=2 ; P=0.044*						
	Donor		Non-donor			
<b>Mean+SD</b>	27.72+6.05		27.07+5.15			
<b>Min-Max</b>	7.00-44.00		14.00-39.00			
<b>Median</b>	27.00		27.00			
T=1.262; P=0.207; Total score (Max=54)						

<b>Gender:</b> Female	36	40	51	56.7	3	3.3	90	30.8
Male	83	41.1	115	56.9	4	2	202	69.2
Total	119	40.7	166	56.8	7	2.3	292	100
$X^2=0.494$ ; d.f.=1 ; P=0.781								
<b>Education:</b> Illiterate	2	66.7	1	33.3	-	-	3	1
Read & write	3	50	3	50	-	-	6	2.1
Primary	12	35.3	22	64.7	-	-	34	11.6
Secondary	21	42	29	58	-	-	50	17.1
College	38	38.4	58	58.6	3	3	99	33.9
Higher education	43	43	53	53	4	4	100	34.2
Total	119	40.7	166	56.8	7	2.3	292	100
$X^2=5.650$ ; d.f.=10 ; P=0.844								
<b>Occupation:</b> Clerk	19	32.8	35	60.3	4	6.9	58	19.9
Worker	23	32.4	48	67.7	-	-	71	24.3
Student	14	43.8	17	53.1	1	3.1	32	11
Others	63	48.1	66	50.4	2	1.5	131	44.9
Total	119	40.7	166	56.8	7	2.3	292	100
$X^2=13.625$ ; d.f.=6 ; P=0.034								

**Table 10:** Distribution of the non-donors by age, sex, education, occupation and knowledge score

	Scoring							
	Poor (<50%)		Medium (50-47.9%)		Good (>75%)		Total	
	No.	%	No.	%	No.	%	No.	%
<b>Age:</b> 18-30 years	66	42.3	90	57.7	-	-	156	75
31-40 years	13	40.1	14	51.9	-	-	27	13
41-50 years	11	73.3	4	26.7	-	-	15	7.2
>50 years	7	70	3	30	-	-	10	4.8
Total	97	46.6	111	53.3	-	-	202	100
$X^2=7.689$ ; d.f.=3 ; P=0.053								
<b>Gender:</b> Female	72	50.3	71	49.7	-	-	143	68.8
Male	25	38.5	40	61.5	-	-	65	31.2
Total	97	46.6	111	53.3	-	-	202	100
$X^2=2.538$ ; d.f.=1 ; P=0.111								
<b>Education:</b> Illiterate	-	-	-	-	-	-	-	-
Read & write	2	100	-	-	-	-	2	1
Primary	11	78.6	3	21.4	-	-	14	6.7
Secondary	29	54.7	24	45.3	-	-	53	25.5
College	35	35.4	64	64.6	-	-	99	47.6
Higher education	20	50	20	50	-	-	40	19.2
Total	97	46.6	111	53.3	-	-	202	100
$X^2=14.662$ ; d.f.=4 ; P=0.005								
<b>Occupation:</b> Clerk	28	42.4	38	57.6	-	-	66	31.7
Worker	13	61.9	8	38.1	-	-	21	10.1
Student	43	41.3	61	58.7	-	-	104	50
Others	13	76.5	4	23.5	-	-	17	8.2
Total	97	46.6	111	53.3	-	-	202	100
$X^2=9.687$ ; d.f.=3 ; P=0.021								

The highest proportion of donors who got medium score were (68.9%) with age 31-40 years of age, (56.9%) males, (64,7%) those who had completed the primary school and (67.6%) were workers.

No significant association was found between knowledge score and age, sex and education. Significant association was found between knowledge score and occupation of donors only.

The highest proportion of non-donors with medium score (57.7%) was found in donors with age 18-30 years, (61.5%) was found in males, (64.6%) of college students and (58.7%) were students.

No significant association was found between age and sex of non-donors and their knowledge score while a significant association was found between knowledge score and education/occupation of non-donors.

### Discussion

For satisfactory donor recruitment, the first essential step is to initiate Knowledge, Attitude and Practice (KAP) studies among a sample of blood donors and non-donors to understand the prevailing misconceptions, beliefs and fears leading to negative attitude towards blood donation (7). The information so obtained could be helpful in creating and strengthening positive attitudes towards blood donation and developing and implementing focused awareness programs for target population (8,9).

In this study; most of the respondents were young adults, two thirds were between 18-30 years of age. Almost all individuals were educated; two thirds of them were college students and higher with different occupations.

Most of the studied individuals had good general information about blood (ABO blood groups, blood components, blood formation site, blood volume and blood loss lead to death). This may be related to the fact that this knowledge was gained during years of schooling. In respect to answers about donation procedure, the majority of both donors and non-donors replied that only young adults could donate, whereas no upper age limit exists for donation but a person between 18-65 years old can donate blood<sup>(9)</sup>.

A study from KSA, 94.2% including donors and non-donors replied that a person more than 45 years of age could not donate blood<sup>(10)</sup>.

In this study about two thirds of donors and half of non-donors had misconception that donor should have body weight more than 50 kg.

Minimum donor weight of 50 kg is recommended to donate the usual 450-500 mL (pint) of blood because a 50 kg person has a blood volume of approximately 3750 mL, donation of a pint would represent approximately 10-13% of the donor's blood volume. Symptoms of hypovolemia can begin to occur only with the loss of 15% or greater of the total volume<sup>(11)</sup>. A study from KSA, 63% of non-donors were of the opinion that donor should be of >70 kg of weight<sup>(10)</sup>. A high proportion of the sample did not know how much blood is extracted in each donation session i.e. only half of donors and about quarter of non-donors knew that less than half Liter (one pint =450mL) of blood is taken from donor in each donation session because of their thought that the blood bag volume is one Liter (1000 mL)<sup>(12)</sup>. A study from KSA, 73.2% of non-donors did not know how much blood is extracted in each donation<sup>(10)</sup>.

Recommendations like 'to eat'<sup>(13)</sup> and 'to stop smoking'<sup>(14)</sup> at least two hours before donation process were more accurately answered by donors may be because they learnt them through donation process.

The vast majority of the individuals agreed with the fact that 'blood donation is good for health'<sup>(15)</sup> but none of them knew exactly why it is so.

Near half of non-donors had misbelieved that there are diseases transmitted to donors during the process of blood donation and this may form a big obstacle against blood donation. The process of blood donation is 'aseptic technique' through which no diseases are transmitted to donors<sup>(16)</sup>.

The majority of donors and of non-donors did not know about the risks, although they accepted the fact that there are diseases transmitted to recipients through blood transfusion process. Fear of disease transmission was regarded as a cause for non-donation<sup>(17)</sup>.

Approximately one tenth of donors and non-donors knew the indications and contraindications of blood transfusion. Cross matching was ignored by the majority i.e. they thought that blood they give is the same blood that will be transfused directly to their patients. While compatibility was known to about half of the sample.

In response to questions to donors regarding why they had donated blood, 49.3% donated blood for their family members or friends, 22.9% were volunteer blood donors, 14% cited that blood donation is good for health and 13.7% donated blood for religious duty. This response reflects a situation in which blood is donated largely for a family member in need (replacement) and implies that donation for any other reason is a low priority (voluntary blood donation). This is in accordance with studies that have observed a low percentage of voluntary donors in developing countries compared to more developed nations<sup>(9)</sup>. A study from KSA revealed 14.8%, 48.7% and 36.5% volunteer, replacement and statutory blood donors<sup>(10)</sup>. In the United States, the majority of fresh blood products are collected from unpaid volunteers, the paying of donors for blood was discontinued after studies in the early 1970s demonstrated that paid donors had a substantially higher prevalence of hepatitis<sup>(18)</sup>, it is well established that replacement and paid donors have a higher incidence and prevalence of transfusion - transmitted infections in the recipients, despite this replacement and paid donors still make up over 50% of blood donations in the developing countries<sup>(9)</sup>.

Similarly, in response to questions to non-donors regarding why they had not donated blood, 51.7% replied that they were 'not approached for blood donation by anyone'. Other major reason for non-donation was the 'perception of a harmful effect' such as weakness(33.8%), fear of needle ( 5.3%) and fear of disease transmission (9.2%). Other studies assessing reasons for non-donation from other parts of the world also cited this as one of the major factors for non-donation<sup>(19)</sup>. A study from KSA revealed reasons for non-donation were, not approached by anybody (42.6%), unfit to donate due to weakness (38.3%), might have to donate in future to relatives (7.6%), fear of needle (6.7%) and of disease transmission (4.8%)<sup>(10)</sup>.

In our study only 61 % of the donors donated blood once. It is becoming increasingly difficult to retain first-time donors, with over half of all new donors failing to donate a second time<sup>(20)</sup>. Globally, it has been found that 80% of first time donors every year give up the practice of blood donation<sup>(21)</sup>.

Post-donation reactions were experienced by (20.1%) of donors. Blood donation reaction is a relatively rare phenomenon that affects less than 1% of donors<sup>(22)</sup>. The occurrence of unpleasant physical reactions during the donation process is believed to be a particularly impediment to retention 'donor non-return'<sup>(23)</sup>.

Friends and relatives were a major source of information regarding the voluntary blood donation. Only minority declared that they heard about blood donation on the mass media (Radio/TV). Regular programs advertisement regarding safe voluntary blood donation should held on television/radio and other mass media resources<sup>(24)</sup>.

The various incentives (motives) for voluntary blood donation (blood donor certificate/blood credit card, work

off/extra leave and money) have been evaluated in different parts of the world<sup>(25)</sup>. In our study 4.1% donated blood to get the 'blood credit card' and 3.7% were paid blood donors. Issuances of blood donor certificate/blood credit card were claimed to be the best incentives for voluntary donation so that if they would require blood in future they could get after showing the card<sup>(26)</sup>. A study from KSA, the major incentive for 65.3% of donors were blood donor certificates, 29.9% asked for blood credit cards, 4.8% persons asked for extra leave and none to get money<sup>(10)</sup>.

Approximately half of the donors and non-donors had poor scores only (2,4%) of donors, but none of non-donors, had good scores and low mean of the answers (but the mean was generally higher in donors may be because they learnt the information about blood through the donation process). The overall knowledge was very poor related to the fact that the issue of blood donation is not included in the cumuli of the primary and secondary schools and that this subject is not focused upon through the mass media and no education courses about it are done or practiced in the health facilities. In KSA, there are misconceptions regarding blood donation among the Saudi population<sup>(10)</sup>.

## Conclusion

This study found that there is a noticeable weakness in the basic Knowledge of people in addition to misconceptions regarding the blood donation process among both donors and non-donors. The large lacunae in the basic knowledge about blood donation among the people may be attributed to the fact that the culture has no relation with knowledge about blood donation may be because that this subject is specific and is not taught during years of schooling or through the mass media and other education tools.

## Recommendations

Improve people knowledge towards blood donation to increase their enthusiasms to participate this vital process and to remove their fears from this practice by knowing all the needed measures and details related to it. This could be achieved by initiating a special programme of education in the blood bank in the form of teaching sessions on weekly or monthly basis in a way that is interesting to the people, using posters, video films, lectures, group discussion, simulation and other methods, also investing the mass media and even the school to distribute this knowledge to the largest number of people.

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