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Factors Leading to Reluctance of Blood Donors from Blood Donation in Saudi Arabia

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Abstract **Background:** Recruitment of safe blood donors is challenging in many countries, worldwide. Assessment of knowledge and attitude towards blood donation is a cornerstone in implementing a sustainable blood donation system. Therefore, the aim of the present study was to assess the factors leading to reluctance of blood donors from blood donation in Saudi Arabia. **Methodology:** This is a cross-sectional descriptive study conducted in city of Hail, Northern Saudi Arabia. Data about blood donation were obtained from 711 Saudi volunteers living in of Hail. **Results:** Approximately 293/711(27%) of the participants believed that absence of awareness campaigns is a major reluctance factor for blood donation. Around 143/711(20%) of the participants believed that Lack of awareness in the media is a major reluctance factor for blood donation. **Conclusion:** Addressing the factors leading to donor's reluctance towards blood donation can improve the development of positive attitude towards blood donation among Saudi population. Factors leading to donor's reluctance towards blood donation should be considered when designing a competent program for sustainable, safe and sufficient blood donation system.

Keywords Blood Donation, Donors, Saudi Arabia, Awareness

1. Introduction

Blood donation saves lives and recovers health, but numerous patients demanding transfusion do not have appropriately access to safe blood. A suitable and reliable supply of safe blood can be guaranteed by a stable base of regular, voluntary, unpaid blood donors. Regular, voluntary, unpaid blood donors are also the safest group of donors as the prevalence of blood borne infections is lowest among these donors [1].

Blood donation is a global highly important issue that requires the combinations of health services, government commitment, community awareness and research efforts [2,3]. While blood donation is traditionally described as a behavior motivated by pure altruism, the assessment of altruism in the blood donation literature has not been theoretically informed [4]. Here, a benevolence hypothesis for blood donation (both the donor and recipient benefit) rather than the altruism hypothesis (only the recipient gains) is proposed [5]. The benevolence hypothesis (both donor and recipient gain) suggests that blood donors, compared to non-blood donors have a general altruistic motivational preference based on warm glow (i.e., "I donate because it makes me feel good") [6].

However, there are three types of donors; voluntary, family replacement and remunerated. Moreover, donors are further classified according to the frequency of donation in to; new or first time and sporadic or regular donors [7]. The safest blood is found among donors who donate their blood voluntarily once or twice a year [8]. Knowledge, attitude and practice surveys have been used in many countries to understand factors that influence blood donation and as the basis for communication and donor mobilization strategies [9].

Due to considerable differences in the culture and demographics from country to another, thus it is essential to search for factors that encourage the attitude of voluntary blood donation. In Saudi Arabia, the Popularity of blood donation was less than the desired amount, perhaps due to mistaken beliefs, poor knowledge, and negative attitude to donation. Educational programs are necessary to increase the level of knowledge and improve the attitude of the Saudi public toward blood donation [10]. Therefore, the objective of the present study was to assess the factors leading to reluctance of blood donors from blood donation in Saudi Arabia.

2. Materials and Methods

This is a cross-sectional descriptive study conducted in

the city of Hail, Northern Saudi Arabia. Data about blood donation were obtained from 711 Saudi volunteers living in the city of Hail. Participants were randomly selected by simple random regardless to age, gender and education or occupation.

A Purposeful questionnaire was designed and used for obtaining of the necessary data. The following information were obtained from each participant: age, sex, and education level and occupation sector. Questions regarding awareness about blood donation were also included, which comprised: *I don't trust donation authorities; I'm afraid of unethical use of my blood; I'm afraid to get health problems; I use to donate but don't find it when I need it; I'm afraid my blood may harm the patient; I'm afraid from the needle puncture; I was prevented from donation due to health issues; I donate only to a known person; I'm living far away from donation sites; I don't donate due to absence of awareness campaigns; Lack of awareness in the media; Donation made only in need; I feel no safety for donor; No competent personnel care for donation process; No supportive values after donation; and Experienced bad treatment during a blood donation.*

Data Analysis

Statistical Package for Social Sciences (version 16) was used for analysis and to perform Pearson Chi-square test for statistical significance (P value). The 95% confidence level and confidence intervals were used. P value less than 0.05 was considered statistically significant.

Ethical Consent

Each participant was asked to sign a written ethical consent during the questionnaire's interview. The informed ethical consent form was designed and approved by the ethical committee of the College of Medicine (University of Hail, Saudi Arabia) Research Board.

3. Results

In the present study 711 volunteers were enrolled, their ages ranging from 16 to 66 years with a mean age of 29 years. Out of the 711 participants, 440 (62%) were males and 271(38%) were females, giving males' females' ration of 1.62 to 1.00.

As described in Table 1, the great majority of the participants were at age group 19-25 years representing 255/711(36%), followed by age ranges 31-40, 26-30 and 41-50 establishing 222/711(31%), 95/711(13.4%), and 67/711(9.4%), correspondingly. For males, most of participants were at age group 19-25 years followed by 31-40, years representing 155(35%) and 148(33.6%), in that order. For females, most of participants were at age range 19-25 years followed by 31-40, representing 100(37%), and 74(27%), respectively, as shown Fig 1.

In respect to education level, the majority of the participants were at graduated level followed by secondary, constituting 357/711(50%), and 211/711(29.7%), in that order. For both males and females the majority of participants were found with graduated, secondary, representing 236/440(53.6%) and 121/271(44.6%), respectively, as showed in Table 1, in Fig 1.

Table 1. Distribution of the participants by demographical characteristics

Variable	**Category**	**Males**	**Females**	**Total**
Age				
	<18 years	34	17	51
	19-26	155	100	255
	26-30	51	44	95
	31-40	148	74	222
	41-50	43	24	67
	51+	9	12	21
	Total	440	271	711
Education				
	Basic	52	39	91
	Secondary	122	89	211
	Graduated	236	121	357
	Post-graduated	30	22	52
	Total	440	271	711
Occupation				
	Education	155	103	258
	Military	82	23	105
	Health	29	24	53
	Free work	53	36	89
	Others	121	85	206
	Total	440	271	711

With regard to the occupation, most of participants were at education sector followed by military sector, representing 258/711(36.3%), and 206/711(29%), respectively. For males, most of the study subjects were at education sector followed by military, constituting 155/440(35.2%) and 82/440(18.6%), in this order. For females most of the participants were at education sector followed by free work representing 103/271(38%) and 36/271(13%), in this order, as indicated in Table 1, Fig 1.

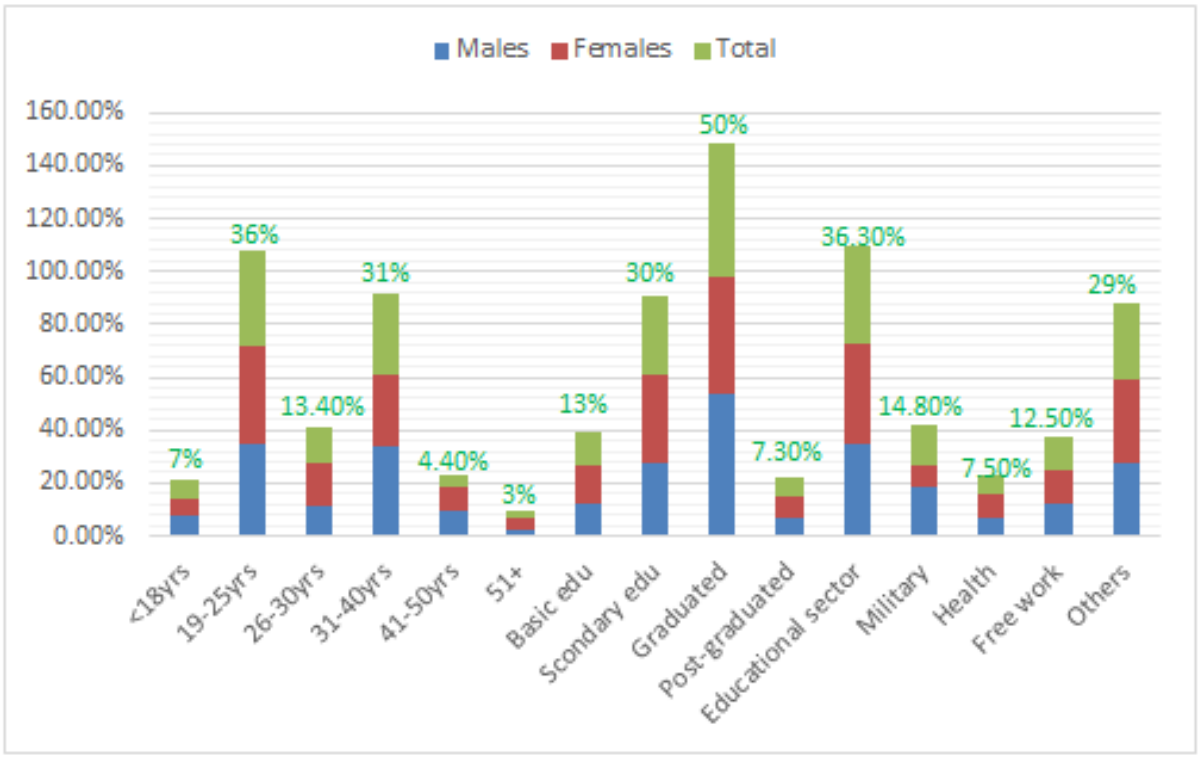

Figure 1. Description of study subjects by sex and demographical characteristics

The distribution of the study population by sex and personal factors leading to reluctance in blood donation was summarized in Table 2. About 117/603(19.4%) participants have indicated that, they don't donate blood because they don't trust donation authorities. Out of the 117 participants, 75/360(20.8%) were males and 42/243(17.3%) were females. About 93/603(15.4%) participants have indicated that, they don't donate blood because they afraid of unethical use of their blood. Out of the 93 participants, 56/360(15.6%) were males and 37/243(19.3%) were females. About 88/603(24.4%) participants have indicated that, they don't donate blood because they afraid to get health problems. Out of the 88 participants, 47/360(13%) were males and 41/243(17%) were females. About 92/603(15.3%) participants have indicated that, they don't donate blood because they use to donate but don't find it when they need it. Out of the 92 participants, 58/360(16%) were males and 34/243(17%) were females. About 38/603(6.3%) participants have indicated that, they don't donate blood because they use to donate but don't find it when they need it. Out of the 38 participants, 20/360(5.6%) were males and 18/243(17%) were females. About 107/603(17.4%) participants have indicated that, they don't donate blood because they afraid from the needle puncture. Out of the 107 participants, 50/360(14%) were males and 57/243(23.5%) were females, as shown in Fig 2. Females were significantly avoiding blood donation because the afraid of needle puncture $p < 0.05$.

Table 2. Distribution of the study population by sex and personal factors leading to reluctance to donate

Variable	*Category*	*Males*	*Females*	*Total*
I don't trust donation authorities				
	Yes	75	42	117
	Other factors	285	201	486
	Total	360	243	603
I'm afraid of unethical use of my blood				
	Yes	56	37	93
	Other factors	304	206	510
	Total	360	243	603
I'm afraid to get health problems				
	Yes	47	41	88
	Other factors	313	202	515
	Total	360	243	603
I use to donate but don't find it when I need it				
	Yes	58	34	92
	Other factors	302	209	511
	Total	360	243	603
I'm afraid my blood may harm the patient				
	Yes	20	18	38
	Other factors	338	225	563
	Total	358	243	601
I'm afraid from the needle puncture				
	Yes	50	57	107
	No	309	186	495
	Total	359	243	602

The distribution of the study population by sex and personal external factors leading to reluctance in blood donation was summarized in Table 3. Around 34/602(5.6%) participants have specified that, they don't donate blood because they were prevented from donation due to health issues. Out of the 34 participants, 26/359(7.2%) were males and 8/243(3.3%) were females. Around 56/602(9.3%) participants have specified that, they don't donate blood because they donate only for known person. Out of the 56 participants, 37/359(10.3%) were males and 19/243(7.8%) were females, as shown in Fig 2. Around 63/602(10.4%) participants have specified that, they don't donate blood because they were living far away from donation sites. Out of the 63 participants, 41/359(11.4%) were males and 22/243(9%) were females, as shown in Fig 2.

Table 3. Distribution of the study population by sex and external factors leading to reluctance to donate

Variable	*Category*	*Males*	*Females*	*Total*
I was prevented from donation due to health issues				
	Yes	26	8	34
	No	333	235	568
	Total	359	243	602
I donate only to a known person				
	Yes	37	19	56
	No	322	224	546
	Total	359	243	602
I'm living far away from donation sites				
	Yes	41	22	63
	No	318	221	539
	Total	359	241	601

Table 4 described the study subjects by sex and awareness associated factors leading to hesitancy to donate. Approximately 293/711(27%) of the participants believed that absence of awareness campaigns is a major reluctance factor for blood donation. Out of 293 participants, 193/440(44%) were males and 100/271(40%) were females. Males were significantly escape donation due to lack of awareness campaigns P <0.05. Around 227/711(32%) of the participants believed that no blood donation campaigns where suitable donors exist. Out of 227 participants, 161/440(37%) were males and 66/271(24.4%) were females. Around 143/711(20%) of the participants believed that Lack of awareness in the media is a major reluctance factor for blood donation. Out of 143 participants, 90/440(20.5%) were males and 53/271(20%) were females. Around 141/711(19.8%) of the participants believed that donation made only in need. Out of 141 participants, 89/440(20%) were males and 52/271(19.8%) were females. Around 63/711(8.9%) of the participants believed that they feel that no safety for donor. Out of 63 participants, 38/440(8.6%) were males and 25/271(9.2%) were females. Around 73/711(10.3%) of the participants believed that they feel that no competent personnel care for donation process. Out of 73 participants, 44/440(10%) were males and 29/271(10.7%) were females. Around 128/711(18%) of the participants believed that they feel that no supportive values after donation. Out of 128 participants, 83/440(18.9%) were males and 45/271(16.6%) were females. Around 83/711(11.7%) of the participants claimed that they experienced bad treatment during a blood donation. Out of 83 participants, 53/440(12%) were males and 30/271(11%) were females.

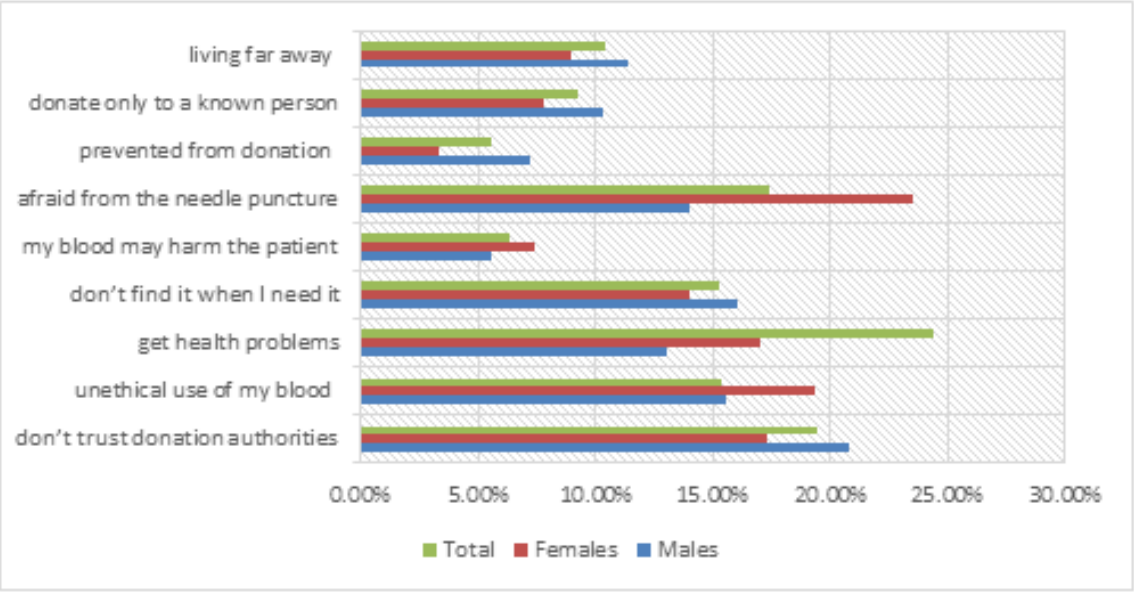

Figure 2. Description of the study subjects by sex and factors leading to reluctance to donate

Table 4. Distribution of the study subjects by sex and awareness associated factors leading to reluctance to donate

Variable	*Category*	*Males*	*Females*	*Total*
I don't donate due to absence of awareness campaigns				
	Yes	193	100	293
	No	247	171	418
	Total	440	271	711
No blood donation campaigns where suitable donors exist				
	Yes	161	66	227
	No	279	205	484
	Total	440	271	711
Lack of awareness in the media				
	Yes	90	53	143
	No	348	218	566
	Total	437	271	709
Donation made only in need				
	Yes	89	52	141
	No	350	219	569
I feel no safety for donor				
	Yes	38	25	63
	No	397	246	643
No competent personnel care for donation process				
	Yes	44	29	73
	No	395	242	637
No supportive values after donation				
	Yes	83	45	128
	No	356	226	582
Experienced bad treatment during a blood donation				
	Yes	53	30	83
	No	317	186	503

Education

With regard to the education and personal factors leading to reluctance to donate, as described in Table 5, the majority of those don't trust donation authorities were with graduated level of education followed by secondary representing 49 and 40 participants, respectively. The majority of those afraid of unethical use of their blood were with graduated level of education followed by secondary representing 49 and 21 participants, respectively. The majority of those afraid to get health problems were with graduated level of education followed by secondary representing 47 and 20 participants, respectively. The majority of those use to donate but don't find it when they need it were with graduated level of education followed by secondary representing 46 and 31 participants, respectively. The majority of those afraid that their blood may harm the patient, as well as, those afraid from the needle puncture were with graduated level of education followed by secondary, as showed in Table 5.

Table 5. Distribution of the study population level by education and personal factors leading to reluctance to donate

Variable	*Category*	*Basic*	*Secondary*	*graduate*	*Post-graduate*	*Total*
I don't trust donation authorities						
	Yes	17	40	49	11	117
	No	65	144	246	31	486
	Don't know	9	27	62	10	108
	Total	91	211	357	52	711
I'm afraid of unethical use of my blood						
	Yes	10	21	49	13	93
	No	72	163	246	29	510
	Don't know	9	27	62	10	108
I'm afraid to get health problems						
	Yes	13	20	47	8	88
	No	69	164	248	34	515
	Don't know	9	27	62	10	108
I use to donate but don't find it when I need it						
	Yes	8	31	46	7	92
	No	74	153	249	35	511
	Don't know	9	27	62	10	108
I'm afraid my blood may harm the patient						
	Yes	5	16	17	0	38
	No	77	168	276	42	563
	Don't know	9	27	63	10	109
I'm afraid from the needle puncture						
	Yes	12	24	56	15	107
	No	70	160	238	27	495
	May be	9	27	63	10	109

The distribution of the study population by education level and external factors leading to reluctance to donate were summarized in Table 6. All factors were predominantly expressed by gradated level followed by secondary level.

Table 6. Distribution of the study population by education level and external factors leading to reluctance to donate

Variable	*Category*	*Basic*	*Secondary*	*graduate*	*Post-graduate*	*Total*
I was prevented from donation due to health issues						
	Yes	1	14	16	3	34
	No	81	170	278	39	568
	Don't know	9	27	63	10	109
I donate only to a known person						
	Yes	13	13	28	2	56
	No	69	171	266	40	546
	Don't know	9	27	63	10	109
I'm living far away from donation sites						
	Yes	3	13	41	6	63
	No	79	171	253	36	539
	Don't know	9	27	63	10	109

Table 7 summarized the distribution of the study subjects by education level and awareness associated factors leading to reluctance to donate. All factors were predominantly expressed by gradated level followed by secondary level (see Fig 3).

Table 7. Distribution of the study subjects by education level and awareness associated factors leading to reluctance to donate

Variable	Category	Basic	Secondary	Graduate	Post-graduate	Total
	I don't donate due to Absence of awareness campaigns					
	Yes	29	72	166	26	293
	No	62	139	191	26	418
	Total	91	211	357	52	711
	No blood donation campaigns where suitable donors exist					
	Yes	27	51	126	23	227
	No	64	160	231	29	484
	Lack of awareness in the media					
	Yes	22	46	63	13	144
	No	69	165	294	39	567
	Donation performed only in need					
	Yes	15	49	69	9	142
	No	76	162	288	43	569
	I feel no safety for donor					
	Yes	4	21	38	3	66
	No	87	190	317	49	643
	No competent personnel care for donation process					
	Yes	6	13	49	6	74
	No	85	198	308	46	637
	No supportive values after donation					
	Yes	25	44	53	7	129
	No	66	167	304	45	582
	Experienced bad treatment during a blood donation					
	Yes	10	19	43	11	83
	No	81	192	314	41	628

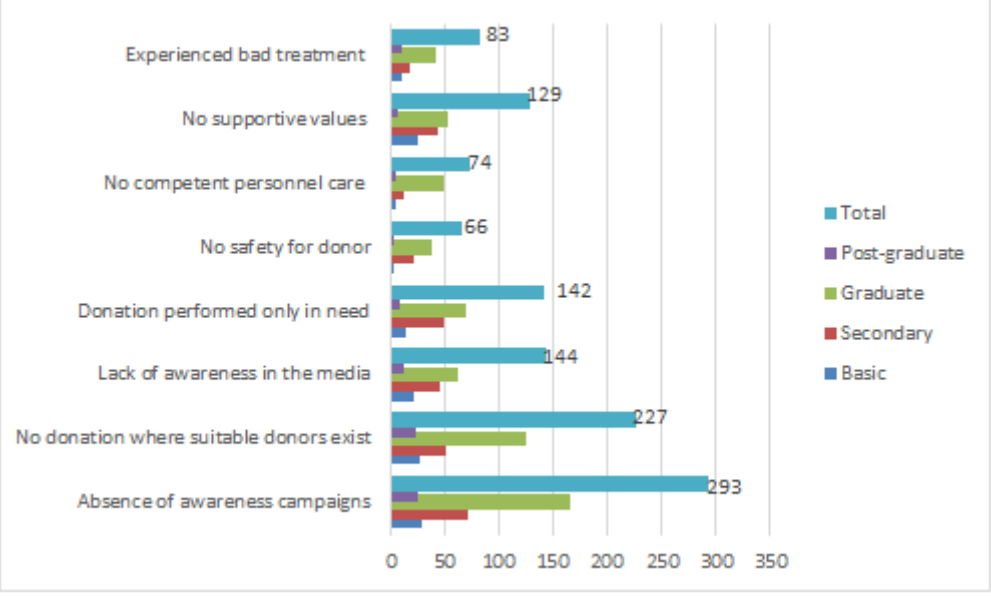

Figure 3. Description of the study subjects by education level and awareness associated factors leading to reluctance to donate

Occupation

Table 8 summarized the distribution of the study population by occupation sector and personal factors leading to reluctance to donate. The majority of those don't trust donation authorities were in education sector followed by military representing 44 and 21 participants, correspondingly. The majority of those afraid of unethical use of their blood were with education sector followed by free work, representing 47 and 16 participants, respectively. The majority of those afraid to get health problems were in education sector followed by military representing 41 and 11 participants, respectively. The majority of those use to donate but don't find it when they need it were in education sector followed by military representing 47 and 15 participants, respectively. The majority of those afraid that their blood may harm the patient were in education sector followed by free work representing 12 and 10 participants, respectively. The majority of those afraid from the needle puncture were in education sector followed by free workrepresenting 47 and 15 participants, respectively.

Table 9 summarized the distribution of the study population by occupational sector and external factors leading to reluctance to donate. The great majority of those prevented from donation due to health issues were in education sector (n=14) followed by free work (n=6). Most of those donate only to a known person were in education sector (n=20) followed by free work (n=8). Most of those living far away from donation sites were in education sector (n=33) followed by free work (n=11).

Table 8. Distribution of the study population by Occupation sector and personal factors leading to reluctance to donate

Variable	*Category*	*Education*	*Military*	*health*	*Free work*	*Others*	*Total*
	I don't trust donation authorities						
	Yes	44	21	17	12	23	117
	No	204	51	21	9	142	486
	Don't know	10	33	15	89	41	108
	Total	258	105	53	89	206	711
	I'm afraid of unethical use of my blood						
	Yes	47	12	7	16	11	93
	No	201	60	31	64	154	510
	Don't know	10	33	15	9	41	108
	I'm afraid to get health problems						
	Yes	41	11	6	10	20	88
	No	207	61	32	70	145	515
	Don't know	10	105	15	9	41	108
	I use to donate but don't find it when I need it						
	Yes	47	15	7	11	12	92
	No	201	57	31	69	153	511
	Don't know	10	105	15	9	41	108
	I'm afraid my blood may harm the patient						
	Yes	12	0	0	10	16	38
	No	236	71	38	70	148	563
	Don't know	10	34	15	9	41	109
	I'm afraid from the needle puncture						
	Yes	14	3	0	6	11	34
	No	234	68	38	74	154	568
	May be	10	34	15	9	141	109

Table 9. Distribution of the study population by occupational sector and external factors leading to reluctance to donate

Variable	*Category*	*Education*	*Military*	*Health*	*Free work*	*Other*	*Total*
	I was prevented from donation due to health issues						
	Yes	14	3	0	6	11	34
	No	234	68	38	74	154	568
	Total	248	71	38	80	165	602
	I donate only to a known person						
	Yes	20	3	1	8	24	56
	No	228	68	37	72	141	546
	Total	248	71	38	80	165	602
	I'm living far away from donation sites						
	Yes	33	7	4	11	8	63
	No	215	64	34	69	157	539
	Total	248	71	38	80	165	603

Table 10. Distribution of the study subjects by occupational sector and awareness associated factors leading to reluctance to donate

Variable	*Category*	*Education*	*Military*	*Health*	*Free work*	*Others*	*Total*
I don't donate due to absence of awareness campaigns							
	Yes	82	77	31	28	75	293
	No	176	28	22	61	131	418
	Total	258	105	53	89	206	711
No blood donation campaigns where suitable exist							
	Yes	77	68	19	30	33	227
	No	181	37	34	59	173	484
Lack of awareness in the media							
	Yes	48	15	15	14	52	144
	No	210	90	38	75	154	566
Donation performed only in need							
	Yes	52	24	14	17	35	142
	No	206	81	39	72	171	569
I feel no safety for donor							
	Yes	10	5	2	10	6	33
	No	248	100	51	79	200	678
No competent personnel care for donation process							
	Yes	40	10	4	9	11	74
	No	218	95	49	80	195	637
No supportive values after donation							
	Yes	45	13	6	13	52	129
	No	213	92	47	76	154	582
Experienced bad treatment during a blood donation							
	Yes	44	11	15	8	5	83
	No	214	94	38	81	201	628

Table 10 summarized distribution of the study subjects by occupational sector and awareness associated factors leading to reluctance to donate. In factors including: "I don't donate due to absence of awareness campaigns", "No blood donation campaigns where suitable exist", "Lack of awareness in the media", "Donation performed only in need", "I feel no safety for donor", "No competent personnel care for donation process", and "No supportive values after donation", the predominant participants were in education sector followed by military. However, for "Experienced bad treatment during a blood donation" the majority were in education sector followed by health sector.

4. Discussion

In Saudi Arabia, blood donation is a combination of involuntary donors (mainly relatives, friends and workmates of patients), and a growing number of voluntary non-remunerated donors [11]. Within this system the prevalence of blood donation still far under the desired target which might be attributed to misconceptions regarding blood donation among the Saudi population [12]. Therefore, in the present study we investigated a number of factors, which might be involved in reluctance of Saudi people from blood donation.

In the present study about 19.4% of the participants have indicated that, they don't donate blood because they don't trust donation authorities. The health system in Saudi Arabia is composed of governmental sector and private sector. Due to strong structure of the governmental system, these concerns might be inked to private sector. Moreover, about 15.4% participants have indicated that, they don't donate blood because they afraid of unethical use of their blood. However, the only misconception in this context is that they may think that their blood might be sold.

About 24.4% participants have indicated that, they don't donate blood because they afraid to get health problems. Due to lack of awareness and knowledge regarding blood donation, some people think that removed blood from the body may deteriorate the functions of different organs resulting in health consequences. Furthermore, a group of participants have reported factors that can be manipulated by donation system. Such factors include; living far away from the donation centers, afraid from needle puncture, as well as, future concerns of the donors. The most effective way to resolve these issues is by excess knowledge and delivering of appropriate donors' registry system in each area.

In the present study, approximately 27% of the participants believed that the absence of awareness

campaigns is a major reluctance factor for blood donation. Additionally, around 32% of the participants believed that no blood donation campaigns where suitable donors exist. Also around 20% of the participants believed that Lack of awareness in the media is a major reluctance factor for blood donation. Although these percentages reflect a positive move towards better awareness levels regarding the available efforts, but still more work in this context is required. These results are in line with previous reports from Saudi Arabia, which reflect an encouraging strong positive attitude toward blood donation [11, 10]. Further future planning with emphasis on educational/publicity programs and careful organization of donor recruitment campaigns could see the dream of total voluntary non-remunerated blood donations should not take long to be true [11]. Consequently increasing the awareness efforts through awareness campaigns or through different means of media will significantly improve the level of voluntary blood donation in Saudi Arabia.

With regard to the sex, the positive attitude toward blood donation was apparently more common among males compared to females. Saudi females constitute less than 5% of blood donors and as demand for blood is ever increasing there is a need to identify the factors that discourage them from donating their blood and subsequently to find approaches to enhance their share as blood donors [13]. This indicates that more efforts are deemed crucial regarding females with regard of raising awareness towards blood donation.

With regard to the education and factors leading to reluctance to donate, the great majority of participants in the present study were with graduated level of education followed by secondary level. This let most of assessed factors to appear among these levels of education, which migh be considered as drawback in this study. In general, the positive attitude towards blood donation is considerable apparent among more educated people. Such emphases were previously suggested. Education, whether the level of school education or general health education of the public about blood donation had positive influence on the attitude of toward blood donation [14, 15].

With regard to the occupation and factors leading to reluctance to donate, the great majority of participants in the present study were found in educational sector followed by Military. This also signify the assessed factors within these two factors, which could be considered as limitation in the current study.

5. Conclusions

Addressing the factors leading to donor's reluctance towards blood donation can improve the development of positive attitude towards blood donation among Saudi population. Factors leading to donor's reluctance towards blood donation should be considered when designing a competent program for sustainable, safe and sufficient blood donation system. An inclusive valuation of awareness and attitude towards blood donation are still in need in Saudi Arabia. The findings of the present study can be used as platform for further efforts in this context. The collaboration between media and donation centers, as well as, correction of some perceptions can rapidly increase the levels of blood donation in Saudi Arabia.

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