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Investigating Knowledge and Attitudes of blood donors and Barriers concerning blood donation in Jordan

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Abstract

BACKGROUND: A range of socio-demographic, organizational, physiological and psychological factors may influence peoples' willingness to donate blood. Education had positive influence on attitudes towards blood donation as well as blood donors' satisfaction to the time and location of donation. The most common misconceptions about blood donation were the risk of infection; selling donated blood to patients, and that blood donation believed to cause physical weakness. **AIMS**: This paper is a report of a study of blood donation knowledge, attitudes and barriers. The aims of the study were to determine: (1) Jordanian blood donors' level of knowledge of blood donation. (2) Jordanian blood donors' attitudes towards donation. (3) Barriers influence blood donation in Jordan. **METHODS**: A cross-sectional survey design was used to collect data from 500 blood donors between August 2011 and November 2011 using self-reported questionnaire. **RESULTS**: Relatively inadequate knowledge about blood donation was found as only 28.6% of participants scored their knowledge above the average. Friends, encouraging media, and religion were influential factors affecting their knowledge and attitudes related to blood donation. **CONCLUSION**: Since educational programs about blood donation are not frequently used in Jordan, there is a need to emphasize education as a key to improve population knowledge and attitudes towards blood donation.

*Keywords:*Blood Donation, Knowledge, Attitudes, Jordan, Barriers

1. Introduction

Over a million blood units are collected from donors every year; nevertheless, many more millions still need to be collected to meet the global demand, ensure sufficient and timely provision of blood [Damesyn MA et al.,(2003)].The psychology and motivation of blood donors in developed countries is well understood. This knowledge established safe blood supply based on voluntary, non-remunerated donors in many countries across the world [Dhingra N, (2002)]. Identifying motivational factors affecting blood donation and recruitment of safe and low-risk donors is a challenge in the developing world [Sandborg E,(2000)], which calls governmental commitment and required the need to improve research evidence in this area of practice.

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The rise in human life expectancy and implementing new and aggressive surgical and therapeutic methods increased the demand for blood and blood products in most countries [Provan D, (1999); Gillespie TW et al., (2002); Currie CJ et al., (2004); Greinacher A et al., (2007); Mathew SM et al., (2007)].The fragile balance between blood supply and demand forces blood banks to constantly search for more efficient ways to recruit blood donors [Ferguson E, (1996)], such as covering part of donors' socio economic needs [Rouger P et al., (2005)]. However, a range of sociodemographic, organizational, physiological and psychological factors may influence people's willingness to donate blood [Masser BM et al.,(2008)]. Incentives offered to donors varied from health-related incentives such as free medical testing [McMahon R et al., (2008)] including cholesterol and prostate-specific antigen (PSA) screening, blood credit, [Glynn SA et al., (2003)] to economic incentives including tickets to events, lottery or raffle tickets , but certainly not money [Jacobs B et al., (1995)]. Education, had positive influence on attitudes towards blood donation.[Jacobs B et al., (1995); Olaiya MA et al., (2004)] Also, blood donors' satisfaction to the time and location of donation were found to be adherent to behaviours of blood donors [Nguyen DD et al., (2008); Schlumpf KS et al., (2008)] .

Knowledge level between donor and non-donor populations was well documented and donors tend to know more than non-donors about the need for and process of blood donation [United States Agency for International Development, (2011); Alam M et al., (2004); Zaller N et al., (2005)]. Studies from Saudi Arabia, Iran, Togo, and Trinidad and Tobago reported donors being more knowledgeable than non-donors [Sampath SS et al., (2007); Shahshahani H, (2007); Agbovi KK et al., (2006)]. The most common misconceptions about blood donation were the belief that the blood donor has a high risk of getting infected through the process of donation [United States Agency for International Development, (2011); Shashahani H et al., (2006), Mwaba K et al., (1995)]; blood banks sell donated blood to patients, and that blood donation believed to cause physical weakness [Vasquez M et al., (2007), Shahshahani H, (2007)].

Majority of studies across the world found overall positive attitudes towards blood donation among respondents [Jacobs B et al., (1995); Shashahani H, (2006)]. While no studies reported negative perception about blood donation process, a substantial portion of the population was not willing to donate blood [Jacobs B et al., (1995); Hosain GM et al., (1997); Olaiya MA et al., (2004); Mwaba K et al., (1995)]. Physical fear of harm and/ or infection was the most common reason for not donating blood across most studies [United States Agency for International Development, (2011); Uganda Red Cross Society, (2003); Jacobs B et al., (1995); Wiwanitkit V, (2002); Hosain GM et al., (1997); Olaiya MA et al., (2004); Shahshahani H, (2007); Agbovi KK et al., (2006); Mwaba K et al., (1995)]. Other significant deterrents to donating blood among non-donors were individual was already sick or anemic [Vasquez M et al., (2007); Shashahani H et al., (2006)], the individual did not know where to donate blood [Hosain GM et al., (1997)], the blood collection site was too far away [Cho M et al., 2005; Vasquez M et al., (2007); Shashahani H et al., (2006); Shahshahani H, (2007)], and the individual did not have time [Wiwanitkit V, (2002); Shashahani H et al., (2006); Shahshahani H, (2007); Mwaba K et al., (1995)]. Interestingly, non-donor respondents in Pakistan, Saudi Arabia, and Trinidad and Tobago indicated that the primary reason they had not donated blood was because no one had ever asked [Sampath SS et al., (2007); Gilani I, (2007); Alam M et al., (2004)].

Among non-donors, individuals indicated they would be motivated to donate if a friend or family member was in need and the appeal to altruism [Sampath SS et al., (2007); Vasquez M et al., (2007); Zaller N et al., (2005); United States Agency for International Development, (2011); Cho M et al., (2005); Uganda Red Cross Society, (2003); Alam M et al., (2004); Goncalez TT et al., (2008); Nebie KY et al., (2007); Shahshahani H, (2007)]. In addition, a negative perception of remunerated donation was evident [Hosain GM et al., (1997); Agbovi KK et al., (2006)]. Respondents indicated that they would be unlikely to give blood without an incentive [Jacobs B et al., (1995); Olaiya MA et al., (2004)].

In Jordan, donating blood and organs is a prominent tradition among Jordanian population. According to Ministry of Health statistics, only 3.3% of Jordanians (6.5 million people) donate blood, which places Jordan on a WHO list of nations considered "developed" [Ali al-Rawashdah, (2011); WHO office in Jordan, (2012)].

The figures on blood donation knowledge and attitudes towards donation in Jordan are unknown. The implementation of educational programs on blood donation in Jordan is new and emerging part in clinical practice which required the need of evidence based knowledge and robust research findings.

The current study provides an insight and opportunity to evaluate Jordanian donors' knowledge and attitudes towards blood donation. This study explores knowledge, attitudes, and barriers associated with blood donation in Jordan. The findings of this study can be baseline for health care professionals and may also contribute to develop an educational platform on blood donation at national and global levels.

2. Methods

2.1. *Aims*

The aims of the study were to determine (1) Jordanian blood donors' level of knowledge of blood donation. (2) Jordanian blood donors' attitudes towards donation. (3) Barriers influence blood donation in Jordan.

2.2. Design

Descriptive cross-sectional survey design was used to collect data of knowledge and attitudes of Jordanian blood donors, and barriers towards blood donation in Jordan between August 2011 and November 2011.

2.3. Setting

Since blood donation demonstrated in national blood banks affiliated by Ministry of Health in Jordan, the present study was conducted at the three central blood banks in Jordan. These main national blood banks represent majority of Jordanian population blood donors. Approximately 100 blood donors /day with approximately 230 blood units/ day were delivered through these units.

2.4. Sample/ Participants

Population of the current study represents Jordanian blood donors. A convenience sampling design was used to select participants. The sample consists of all Jordanian donors who were involved in blood donation procedure regardless their age, gender, religion, cultural background, educational background, area of residence, income, or history of blood donation at the three selected settings. Eligible blood donors were selected after they passed donation criteria according to national blood donation policy which includes physical assessment and blood investigations including grouping, cross matching and specific blood investigations such as HIV and Hepatitis. Additionally, selected donors were able to read and speak Arabic fluently.

2.5. Instrument

A questionnaire was developed and used to collect the data about Jordanian donors' knowledge and attitudes, and barriers towards blood donation in Jordan. The Questionnaire was designed on the basis of theoretical foundations of the Theory of Planned Behaviour and literature review [Gillespie TW et al., (2002); Greinacher A et al., (2007); Ferguson E, (1996); Boulware LE et al., (2008); Masser BM et al., (2008); McMahon R et al., (2008); Glynn SA et al., (2003); Jacobs B et al., (1995); Olaiya MA et al., (2004); Nguyen DD et al., (2008); United States Agency for International Development, (2011); Alam M et al., (2004); Zaller N et al., (2005); Agbovi KK et al., 2006; Shashahani H et al., (2006); Mwaba K et al.,(1995); Vasquez M et al., (2007); Hosain GM et al., (1997); Goncalez TT et al., (2008)]. An initial Questionnaire of 56 items was subjected to validation process by researchers and expert academics (n=10) that assessed the level of comprehensiveness, clarity, avoidance of ambiguity and content validity. This involved circulating the draft items until there was consensus on content, order and wording. As a result, four items were modified as not properly understood by three evaluators.

A pilot study was then conducted using this questionnaire among a sample of 40 Jordanian blood donors after an access was sought from the directors of selected settings. Thirty two completed questionnaires were received. Some items were re-worded to add more clarity and then the questionnaire was revised to combine similar items and to remove misleading or repeated items.

Thus, 39-item questionnaire was produced whose content validity was assessed by expert panel consists of three experts who are dealing with blood donors and having 5 years of experience as laboratory specialist; two PhD holders who have published work of current study interest. The final questionnaire was translated into Arabic language and back translated, which then validated by the expert panel. The reliability of the final questionnaire was assessed using internal consistency (Cronbach's alpha test) (α=0.87). The participants who have been involved in the pilot study had reported no corrections with the wording, length, and format of the questionnaire and they were not included as part of the main study.

The questionnaire was divided into four categories:
1. Personal and situational related characteristics: include gender, age, blood group, education, history of blood donation, reasons of donation and reasons for not donating blood, sources of knowledge about blood donation, place of donation, place of residence, income, past medical history. 2. Blood donation knowledge including 10 items. It includes a visual analogue scale (1 to 5) to rate participants' knowledge on blood donation, blood groups, universal donors, and additional awareness items. 3. Attitudes and behaviors towards blood donation and includes 17 items. 4. Factors and barriers influence blood donation which includes two open ended questions.

2.6. Ethical considerations

Ethical approval was sought and granted by the Research and Ethics Committee at the University of Jordan and by the Research and Ethics Committee at each setting involved in the study. Participation was voluntary and anonymous (no personal identification was recorded) and confidentiality of the participants were ensured. The researchers assigned participants using identification numbers rather than their names to access actual research information which was restricted to the research team. Furthermore, detailed information about the objectives of the study was contained through the questionnaire and if the participant agreed returned questionnaire implied consent.

2.7. Data collection

A detailed explanation about the aims and procedure of the study was given to administrators at participating settings. A list of an estimated number of available participants was prepared from the selected settings one day before data collection. At the time of data collection, questionnaires were distributed and handed to participants by the researchers and by assistance of the departments' managers. Each questionnaire had a cover letter explaining the nature of the study, aims, and way of completion and return. Self-completed questionnaires were then handed over together in an envelope to the researchers.

2.8. Data analysis

Descriptive statistics was used to analyze data obtained from participants using SPSS (16.0)

3. Results

Of the sample (n=500), majority of participants (n=422, 84.4%) were male, half of them (n=248, 49.6%) don't know there blood group, aged 25 to 39 years (n=239, 47.8%). Table (1) shows demographic and contextual characteristics of the participants including: 83.2% from rural areas, 30% having Bachelor education,68.6% donate before, 78% come from medium socioeconomic status, and 69.6% (n=348) donate blood voluntarily.

Table 1 Demographic and contextual characteristics of the participants (N=500)

Demographic and Contextual Characteristics	N (%)
Blood groups of participants	
Don't know	248 (49.6%)
O^+	110 (22%)
Other groups	142 (28.4%)
Gender	
Male	422 (84.4%)
Female	76 (15.2%)
Age of participants in years	
Less than 14	16 (3.2%)
15-24	199 (39.8%)
25-39	239 (47.8%)
40-64	44 (8.8%)
More than 65	2 (0.4%)
Area of residence	
Rural	416 (83.2%)
Urban	73 (14.6%)
Level of education	

Less than secondary school	12 (2.4%)
Secondary school level	84 (16.8%)
Secondary school student	48 (9.6%)
University student	150 (30%)
Having Baccalaureate	206 (41.2%)
History of donation (N=470)	
Yes	343 (68.6%)
No	127 (25.4%)
Sources of knowledge on blood donation (N=456)	
Television	56 (11.2%)
Internet	154 (30.8%)
Newspaper	73 (14.6%)
People	132 (26.4%)
Books	15 (3.0%)
Others	26 (5.2%)
Participation in blood donation campaigns	
Yes	242 (48.4%)
No	258 (51.6%)
Socio-economic status	
High	60 (12%)
Medium	390 (78%)
Poor	50 (10%)
Categories of donation	
Remunerated	152 (30.4%)
Family replacement or voluntary	348 (69.6%)
Received written material on blood donation (n=291)	
Read it	167 (57.3%)
Do not read it	124 (42.6%)

Table (2) shows participants' attitudes towards blood donation. 58.6% of participants were either permanent donors and will stay so or intended to donate in future. Despite that participants feel blood donation is necessary (42.8%, n=214) and about 70.8% (n=354) of them donate in emergencies with no hesitation; more than half of them will accept donation for remuneration. A major (61.2%, n=226) reason stated by participants for blood donation was to help others and to save their lives even those unknown (Table 3).

Table 2 Participants' attitudes towards blood donation (N=500)

Attitudes	N (%)
Intentions towards donation	
A permanent donor and will stay so	131 (26.2%)
A permanent donor but will not stay so	59 (11.8%)
Not a donor but I am intend to be	162 (32.4%)
Not a donor and I am not intend to be	148 (29.6%)
Participants' feelings after donation	
A sense of joy as born again	192 (38.4%)
Normal, Routine, or necessary	214 (42.8%)
No specific feeling	86 (17.2%)
Un happy, irritated, bad experience	8 (1.6%)
Donation blood and remuneration	
I do not like donation and will not do so if money is offered	179 (35.8%)
I do not like donation and will accept if money is offered	134 (26.8%)
I like donation and will not accept money if offered	47 (9.4%)
I like donation and will accept money if offered	140 (28%)
Participation in blood donation projects or campaigns	
I like to do so	242 (48.4%)
I do not like to do so	258 (51.6%)
Personal opinion in blood donation	
Important and necessary	237 (47.4%)
Not important	184 (36.8%)
Desirable	79 (15.8%)
Donation to others in emergencies	
Yes with no hesitation	354 (70.8%)

Yes but I'll be forced to do so	96 (19.2%)
Not at all	14 (2.8%)
Looking for others to offer such help	36 (7.2%)
Asking professionals about not understood issues in blood donation	
Yes	312 (62.4%)
No	188 (37.6%)
Would donate in a declared national day for blood donation	
Yes	228 (45.6%)
No	272 (54.4%)

Table 3 Reasons of blood donation among participants (N=500)

Reasons	N (%)
Reasons of donation (n=370)	
To help others and save their lives even those unknown	226 (61.2%)
To secure blood to only those close to me	71 (19.1%)
To hear compliments and praise from others	23 (6.2%)
Self use when I need blood my self	14 (3.7%)
Having free blood tests	19 (5.1%)
Other reasons	17 (4.6%)

Factors influencing blood donation in Jordanian population were ranked in order in Table (4). These factors include friends, media, and religion. The major factor affects blood donation among participants was friends (76.2%, n=381).

Table 4 Factors influence blood donation

Factors	N (%)
Friends' influence to encourage blood donation	
Yes	381 (76.2%)
No	119 (23.8%)
Influence of encouraging media to donate blood	
Yes	198 (39.6%)
No	301 (60.2%)
Religion influence on blood donation (n=440)	
Yes	173 (39.3%)
No	161 (36.6%)
I do not know	106 (24%)

Results also show those barriers may influence blood donation among Jordanian population (Table 5). Results show that not receiving blood when need it (78.4%, n=392) is the single major barrier affecting blood donation among Jordanian population. Additional barriers include: side effects of receiving blood or blood components, having health problems, fear of blood, medical errors, time restraints, lack of required conditions to donate, fear of having blood borne infections such as HIV, and were not allowed to donate blood by parents.

Table 5 Rank order of barriers to blood donation in Jordan (N=500)

Barriers	N (%)
Did not receive blood when need it	392 (78.4%)
Side effects of blood extraction	94 (18.8%)
Having health problems	48 (9.6%)
Fear from blood	39 (7.8%)
Medical errors	30 (6%)
Do not like to help others	24 (4.8%)
Time restraints and having hectic time	23 (4.6%)
Lack of required conditions to donate	22 (4.4%)
Fear of blood borne diseases such as HIV	14 (2.8%)
Not allowed by parents	8 (1.6%)

Table 6 shows results of participants' knowledge about blood donation. Overall knowledge about blood donation was relatively inadequate. Only 28.6% of participants scored their knowledge about blood donation above (≥3) the average (R=0-5). Of the participants, only 6.2% (n=31) rate their knowledge excellent, 9.2% (n=47) very good, and 13.2% (n=66) within average. Furthermore, although 42.6% (n=213) of the participants know the compatibility of blood groups, 28% (n=140) have no knowledge about blood components and 31.8% (n=159) do not know the amount of blood in humans.

Table 6 Participants' knowledge on blood donation

Items	N (%)
Knowledge on scale 0 to 5	
0	56 (11.2%)
1	134 (26.8%)
2	166 (33.2%)
3	66 (13.2%)
4	47 (9.2%)
5	31 (6.2%)
Knowledge of compatibility blood groups	
O-AB	213 (42.6%)
O-A	99 (19.8%)
O-B	41 (8.2%)
I don't know	145 (29%)
Knowledge of blood components	
One component	50 (10%)
Two components	148 (29.6%)
Three components	46 (9.2%)
Four components	116 (23.2%)
I don't know	140 (28%)
Knowledge about the amount of blood in humans (N=495)	
1-2 Liters	
5-6 Liters	15 (3%)
10-15 Liters	216 (43.2%)
I don't know	105 (21%)
	159 (31.8%)

4. DISCUSSION

The current study reported Jordanian blood donors' knowledge about blood donation, Jordanian blood donors' attitudes towards donation, and the barriers influence blood donation in Jordan. The findings of the present study contribute to the growing body of evidence supporting the assertion that the knowledge about blood donation established safe blood supply based on voluntary, non-remunerated donors in many countries across the world [Dhingra N, (2002)].

The current study shows positive attitudes and a great deal of interest in blood donation phenomenon in Jordanian population. The findings of this study are consistent with studies across the world, which found overall positive attitudes towards blood donation among respondents [Jacobs B et al., (1995); Shashahani H et al., (2006)]. According to the results of this study, 61.2 % of the participants demonstrated that their main cause of donation is to help others and save their lives even those unknown. This comes from their firm culture of sustaining social relationships with others and being generous to help anytime anywhere where as 92% of blood donors in Saudi Arabia will donate if a relative/friend needs blood [Alam M et al., (2004)]. Incentives to donate in Greece were considered important and included future availability of blood for self or family, paid leave from work and free blood tests [O Marantidou et al., 2007]. Compared to Lithuania, only 29.6 % of donors do it only in emergencies and 29.6 % would donate blood merely for their family or friends [Ilona Buciuniene et al., 2006].

Furthermore, the study showed 68.8 % of the participants had a history of blood donation and 26.2 % were permanent donors with an intention to stay on such pathway versus 32.4 % who aren't permanent yet and they have the intention to become like so. This denotes additional evidence on the positive attitudes towards blood donation in Jordan.

About the factors affecting blood donation; a range of socio-demographic, organizational, physiological and psychological factors may influence people's willingness to donate blood [Masser BM et al., (2008)]. Participants in the current study admitted the influence of friends, media, and religion on their decision to donate blood. While influence of friends was ranked superior to religion and media in Jordan, 91 % of blood donors in Saudi Arabia agree that blood donation is a religious obligation rather than cultural or any other significant factors such as media [Alam M et al., (2004)].

Among Jordanian population, not receiving blood when need it was the single major barrier affecting blood donation while lack of time and fear of blood donation were the main barriers in Saudi Arabia and some developing countries [Alam M et al., (2004)]. The findings of this study were different to those barriers reported in several studies. People refuse to donate blood because the belief that the blood donor has a high risk of blood borne infection [United States Agency for International Development, (2011); Shashahani H et al., (2006); Mwaba K et al., (1995)] and that blood donation believed to cause physical weakness [Vasquez M et al., (2007); Shahshahani H:, (2005)].

In fact that education had a positive influence on attitudes towards blood donation.[Jacobs B et al., (1995); Olaiya MA et al., (2004)], knowledge of donors' population is necessary in relation to blood donation. While the results of the current study revealed only 28.6% of Jordanian blood donors scored their knowledge about blood donation above the average (≥3) (R=0-5), blood donors tend to know more than non-donors about the need for and process of blood donation [United States Agency for International Development, (2011); Alam M et al., (2004); Zaller N et al., (2005)] and studies from Saudi Arabia, Iran, Togo, and Trinidad and Tobago reported donors being more knowledgeable than non-donors [Sampath SS et al., (2007); Shahshahani H, (2007); Agbovi KK et al., (2006)]. Although 41.2% (n=206) of the participants having Baccalaureate and 68.6% (n=343) donated blood previously, and had various sources of knowledge on blood donation such as media, internet, and television; Jordanian blood donors had inadequate knowledge about blood donation. These findings necessitate the need for educational program specific to blood donation. Authors believe that increased knowledge about blood donation through education and blood donation campaigns may encourage and motivate Jordanian population and subsequently establishing safe blood supply based on voluntary, non-remunerated donations.

This study is limited in several ways. First, the study relies on participants' self-reports, future drafts can include questionnaire interview which indicates communication with participants. Second, questionnaire was designed to yield information regarding the donors only. Future research should collect data from donors and non-donors and from different types of institutions in order to determine quality data of different institutions. Furthermore, future Additional correlations between participants' characteristics, factors influence donation, barriers and their knowledge about blood donation is needed.

5. CONCLUSION

Authors believe that the figures on blood donation knowledge and attitudes towards donation in Jordan required the need of improvement and empowerment. The implementation of educational programs in terms of educational sessions, media presentations, Brochures distribution, and raising awareness of students on blood donation in Jordan is new and emerging part in health care practice. The findings of this study can be baseline for health care professionals and may also contribute to develop an educational platform on blood donation at national and global levels.

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