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Knowledge and Attitude of Blood, Organ and Stem Cells Donation Among AlAhssa Population

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Abstract:

Background and Objectives: *Many lifesaving medical procedures involve blood transfusion and wouldn't be possible without a reliable blood supply, as well as organ donation and stem cells transplant which are tow surviving procedures that can increase life expectancy of end-stage or chronically ill patients. But donor numbers are lacking in AlAhssa. The main objective of this study was to measure the level of knowledge regarding blood donation, organ donation and stem cells transplant in AlAhssa population, find out positive and negative attitude, identify the obstacles and suggest some motivational factors.*

Methods: *A cross sectional study conducted in AlAhssa during October 2015. Total of 1017 participants answered questionnaire consist of 3 sections to assess the knowledge, attitudes towards blood donation, organ donation, and stem cells awareness. Data analysis was done using IBM SPSS.*

Results: *In the assessment of blood donation awareness 20.6% of the participants were blood donors, 95.9 % of participants are welling to donate in the future. Regarding organ donation 1.4% of participants reported history of organ donation or receiving an organ. Only 18.1 % participants show positive attitude, in addition there was significant differences in the attitude between people of medical or Para-medical specialties and non-medical specialties. Regarding stem cells 25.8% had never heard of stem cells before.*

Conclusion & recommendations*: We found a positive attitude toward blood donation but more knowledge is needed to increase the donation rate. The main reason identified was not having the time. Regarding organ donation and stem cell transplant there was poor knowledge and attitude in both of them. 54.3% of participants had never thought or consider organ donation probably due to misconceptions, poor knowledge. Therefore, we suggest that various educational programs should be implemented to improve the knowledge and encourage a more positive attitude.*

Keywords: *Stem Cells, AlAhssa Population*

1.Introduction

Many lifesaving medical procedures involve blood transfusion and wouldn't be possible without a reliable blood supply, as well as organ donation and stem cells transplant which are tow surviving procedures that can increase life expectancy of end-stage or chronically ill patients. Unfortunately, blood cannot be manufactured artificially, and can only be obtained from human resources, for that reason blood donation has become an important and essential process that every health care facility should take into consideration.

Based on previous Saudi studies [1][2] and other international literature reviews [3][4] regarding blood donation both awareness and knowledge were good (especially among health care workers) but attitude is not sufficient to meet the increased demand for blood transfusion.

A previous local study conducted by Abdel Gader et al [2] showed a strong positive attitude towards blood donation. However, after a recent incident of human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome transmission to a young Saudi girl following blood transfusion, the perception of the Saudi public towards blood donation has possibly changed.

On the other hand, the literature review regarding organ and stem cell donation is much worse in both knowledge and attitude. Although that organ transplantation has been a matter of great debate and dispute among the great contemporary Muslim scholars from around the world but Most of Muslim Scholars agree that organ donation is permissible only under the condition of not harming the donor's life, As one of the fundamental purposes of Islamic law is to preserve life of others which can be achieved by organ transplantation.

Previous Saudi [5] and other international researches [6][7] show that there is relatively good attitude regarding organ donation that is not consistent with the donation rate. This apply as will on stem cells transplant [8], which potentially generate cures and treatment for various diseases including cancers, cardiovascular disease, and igniting hopes of achieving stem cell-based replacement therapy in a medical setting.

Previous studies showed that education and good socioeconomic status [1] are two factors that have a positive impact on the awareness and knowledge, but more education is needed to increase the positive attitude and practice of donation in both developed and developing countries.

The aims of the current study were to assess the level of Al-Ahsaa public knowledge and attitude towards blood, organ, and stem cells donation and describe barriers to donation, Elaboration of the strategies that motivate people to donate and suggest some motivational factors.

2. Materials and Method

2.1. Study area and time

This study was carried out in Al-Ahssa (city in the eastern province of Saudi Arabia), in the period of October 2015 to March 2016.

2.2. Study subjects

General population of Al-Ahssa, both male and female in all age groups and different educational levels were participated.

2.3 Study design

This is a cross sectional, descriptive study.

2.4. Sample size and technique

Total of 1017 participants participated in this study. They were selected by randomized sampling technique.

2.5. Data collection tool

A self-created questionnaire was used for data collection. This questionnaire was designed by the research working team based on extensive review of available Saudi and other international literature, It was reviewed by an expert from king Feisal university (Al-Ahsaa city, Saudi Arabia) to confirm the content validity and to insure the relevance and clarity of questions. After highlighting some problematic items in our questionnaire, several amendments were maid to insure that it is valid to all age groups and educational levels.

The questionnaire consists of 23 questions, divided into personal data questions and 3 main sections.

- In personal data questions we ask about age, sex, educational level, and specialty field.
- First section was about blood donation, which includes a total of 7 questions. Five questions assessing the awareness and attitude, including a yes\no question if they know there blood group or not, if they support donation or not, and whether they donated blood or not before. Another questions about the reasons for not donating, and how they donated if they have donated blood before, and 2 questions assessing the knowledge of blood donation.
- The second section was about organ donation consist of 6 questions, 4 of them for assessment of awareness and attitude including a yes\no questions if they support organ donation, if they are organ donors or receivers, if they assigned for organ donation after death, and additional question about reasons for not donating organ. The remaining 2 questions were assessing the knowledge about organ donation.

- The last section consists of six questions, 4 for the assessment of the knowledge about stem cells. One yes\no question about willingness to donate their stem cells in future, and one question about the sources of their information.

The questionnaire was distributed using pre-designed electronic form and up to 60% of the data collected by this form, and the other 40% of the data collected by hard copies of same questionnaire distributed manually by research team in universities, schools, and hospitals of Al-Ahssa.

2.6 Ethical considerations

Participation of this study was voluntary, the worker team explains the objectives of this study at the top of the survey and insured the security and confidentiality of the data of the participants.

2.7 Data analysis

Data entry and statistical analysis were performed using SPSS® version 24.0. Descriptive statistics, such as percentages, frequencies, were used to measure the demographic variables and the responses to knowledge and attitude statements. Analytical statistics were applied to investigate the association of knowledge and attitude with demographic variables. Statistical significance was set at $P<0.05$ for all analyses.

3. Results

Total of 1017 people participated in the study. Majority of participant were females (72.02%) and from age group from 20-29 years (51.15%) Medical & Para medical specialty represented 276 (27.1%), whereas scientific specialties represented 330 (32.4%), 271 (26.6%) were literary disciplines, and 140 (13.8%) represented others specialties.

3.1Blood Donation

In the assessment of blood donation awareness (86.6%) of the participants knew their blood type and the remaining didn't know it. The majority of the participants (95.9%) were supporting blood donation, and the minority didn't. Only (20.6%) of the participants were blood donors, the remaining majority hadn't experience the blood donation. (Table 1).

Table (1)

Do you know your blood type?	Frequency	Percent
No	136	13.4
yes	881	86.6
Do you support blood donation?		
No	42	4.1
yes	975	95.9
Have you ever donated blood?		
No	807	79.4
yes	210	20.6

A 139 (65.6%) of the blood donors went by themselves to the blood band and 73 (34.4%) donated there blood in the blood donation campaigns. (Figure 1).

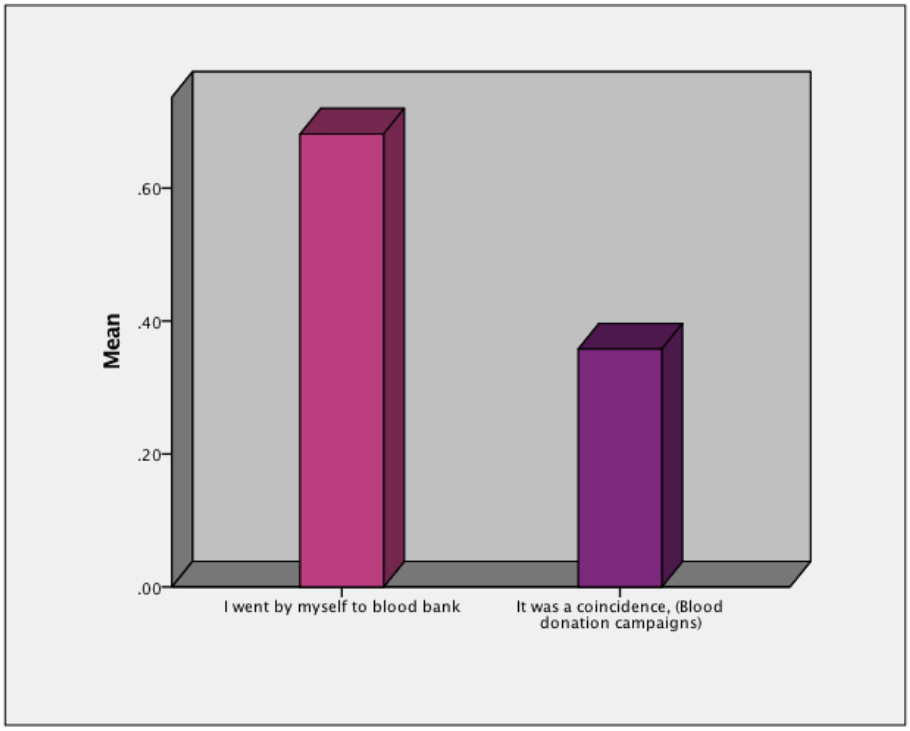

Figure 1. If you have donated blood before, How did you do it?

For those who hadn't donate blood, 10 (1.0%) of them didn't see its important, 210 (21.5%) didn't have time, 180, (18.5%) had a disease preventing them, 127(13.1%) are afraid of the needle, 25 (2.6%) doesn't trust those in charge of the donation campaigns, 53 (5.5%) afraid of infection, and 367, (37.0%) had other causes. (Figure 2).

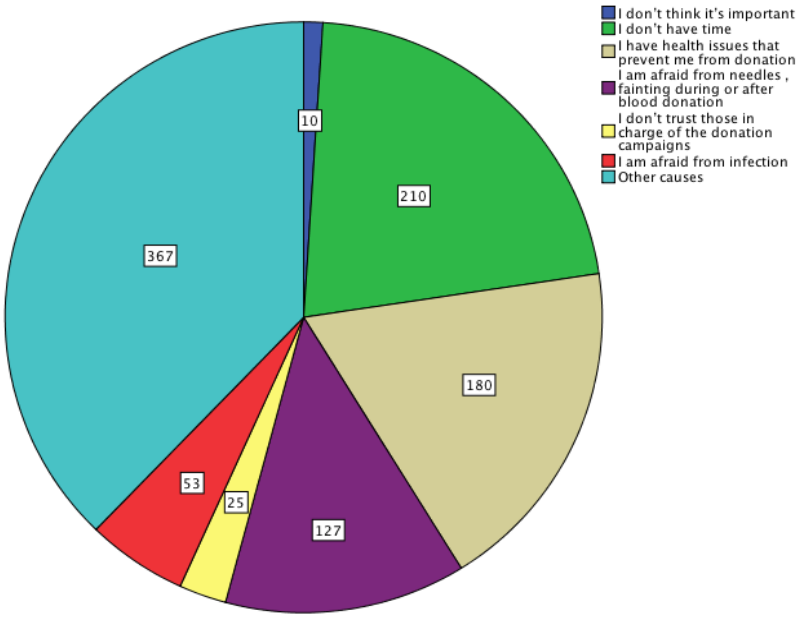

Figure 2. If you have never donated blood before, what is the reason?

Regarding their knowledge in blood donation, about one third (29.4%) think that age limit is between 18-70 years old, others think that the blood donator must wait at least 2 months before the other donation process, Minimum weight limit for the donor is 50Kg and Minimum hemoglobin level is 12.5 g/dl. (Table 2).

Table (2)

Please choose the correct of the following Phrases:	Responces	
	N	Percent
I think that blood donors must wait at least 2 months before they donate again	400	23.4%
Minimum weight limit for the donor is 50Kg	370	21.7%
Minimum Hemoglobin level is 12.5 g/dl	434	25.4%
Age limit is between 18-70 years old	502	29.4%

In the accessing their knowledge about the diseases that prevent blood donation, most of them (44.2%) choose "I don't know", others choose diabetes, cardiac diseases and blood diseases. (Figure 3).

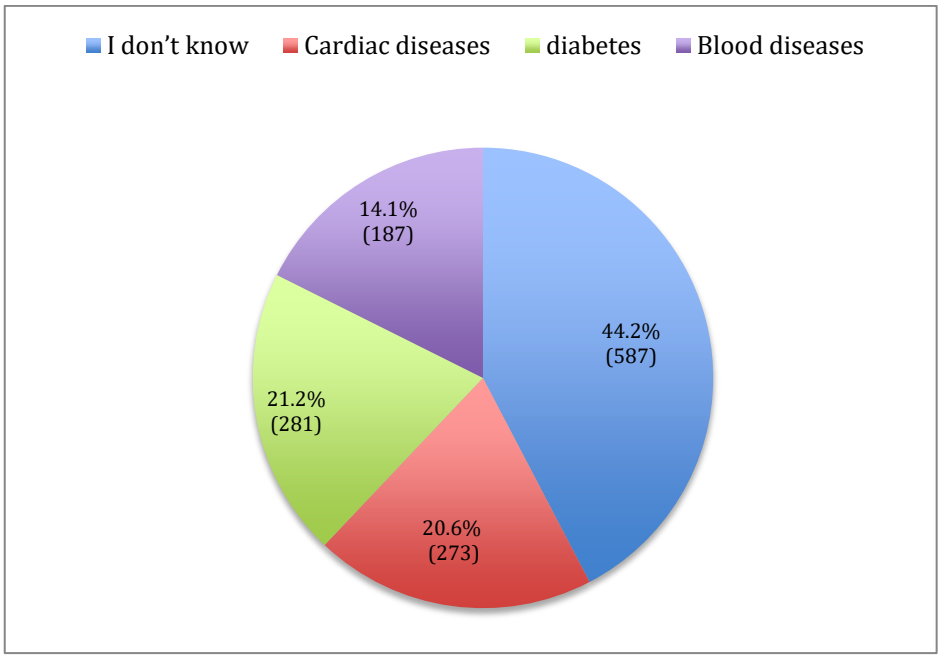

Figure 3. I can donate blood if I have

3.2 Organ donation

Regarding organ donation 184 (18.1%) of participants show positive attitude to organ donation, 365 (36.1%) show negative attitude, and the remaining 468 (45.6%) were neutral. Majority of the participant (98,3%) had never donated or received any organs. Only (4%) of the participants carried donor cards and (96%) didn't have It. (Table 3).

Table (3)

Have you ever :	**Frequency**	**Percent**
Donated any of your organs	14	1.3
Received any organ	4	.4
None	999	98.3
did you fill out the after death organ donation consent form?	**Frequency**	**Percent**
No	976	96.0
Yes	40	4.0

About the reasons that prevent them from donation were mainly because they never think about it 401 (53.1%) Other reasons like, I am afraid my family opposition to the subject 100(13.5%) ,I think I am young for organ donation 88 (12.5%) , I have diseases prevent me for that 38 (4.6%) , Organ donation conflict with religion 62 (8.6%),I think the body should remain intact after death 163(22.7%) and other causes 142 (20.2%) . (Figure 4).

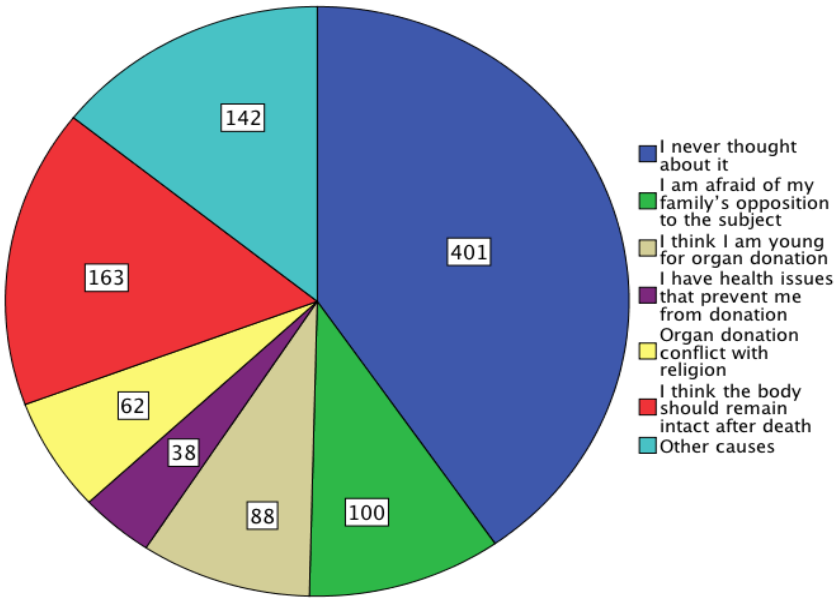

Figure 4. why you don't support organ donation?

The greatest willingness to organ donation was related to the kidney 509 (50%), followed by the heart 259 (25.5%), liver 81 (8%) ,lungs 14 (1.4%) and pancreas 10 (1%) while 144 (14.2%) no nothing about that. (Figure 5)

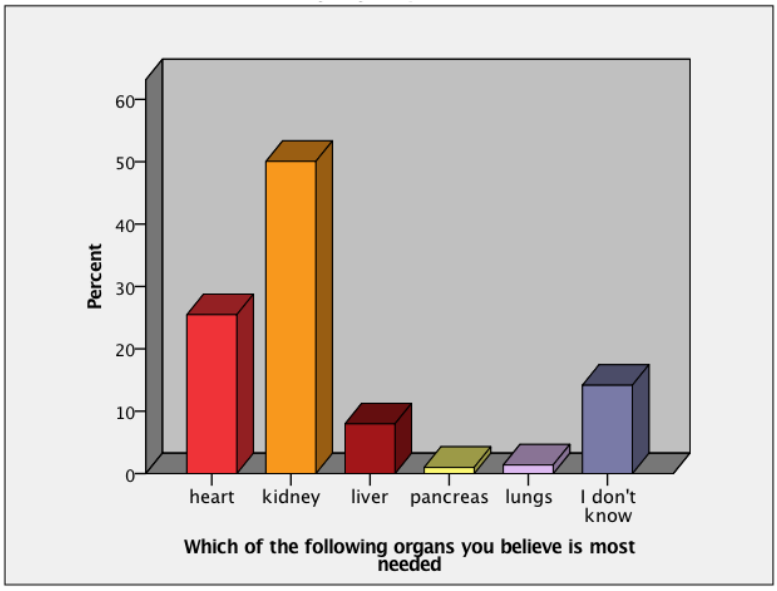

Figure 5. Which of the following organs you believe is most needed?

Regarding the risk involved in the process of organ donation for the donor ,they answered : Severe can result in death 212(20.8%) ,Severe can lead to chronic injures 300 (29.5%), Normal doesn't exceed dangerous in any other surgeries 403 (39.6%), No dangerous 102 (10%). (Figure 6).

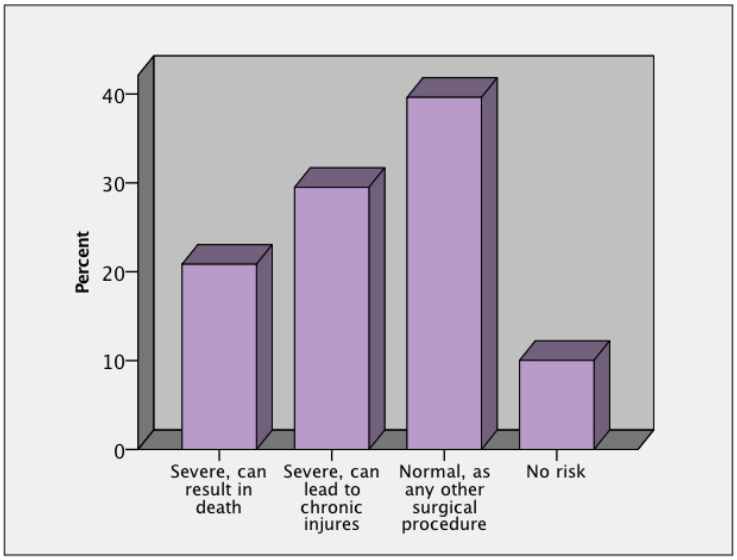

Figure 6. What is the risk involved in the process of organ donation for the donor?

3.3 Stem cells

Particularly, there were 3 questions in which almost all participants didn't know the answers. Q3: Do you think that stem cells can replace medications? (42.8%) , Q4:Do you think stem cells can be applied to all ages? (41.1%) , Q5:Are you going to keep your child's stem cells for the future ?(66.6%) . (Table 4) . On the other hand, large majority of participants was familiar with the term of stem cells (59,4%) of them said its have the ability to produce other types of cells. (Figure 7) And (68,7%) think that stem cells could cure many diseases in the future**.** (Table 4).

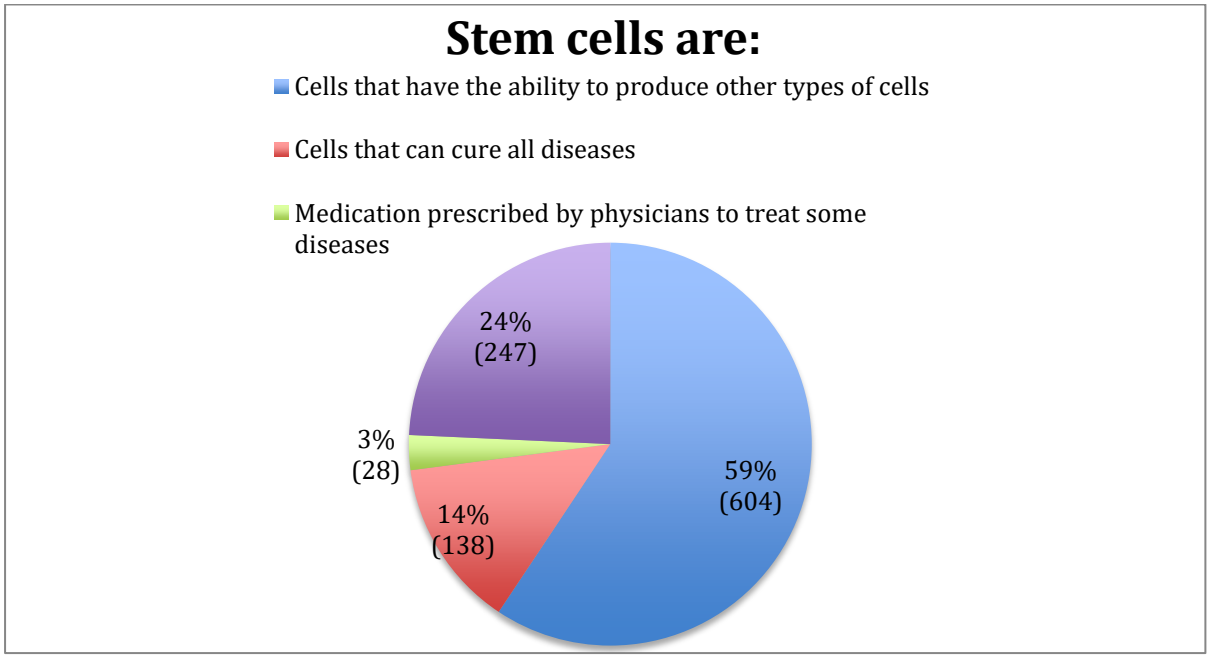

Figure 7.

Table (4):

Q2.Do you think that stem cells could cure many diseases in the future?	Frequency	Percent
no	20	2.0
yes	699	68.7
I don't know	298	29.3
Q3.Do you think that stem cells can replace medications?		
no	398	39.1
yes	184	18.1
I don't know	435	42.8
Q4.Do you think stem cells can be applied to all ages?		
no	214	21.0
yes	385	37.9
I don't know	418	41.1
Q5.Are you going to keep your child's stem cells for the future?		
no	81	8.0
yes	259	25.5
maybe	677	66.6

About 316 (31.1%) aware people heard about stem cells through Other sources, 302(29.8%) from websites, 256 (15.8%)not heard about it , 226 (22.2%) from (TV , newspapers, magazine) ,161 (15.8%)from social media (twitter, Facebook, instagram, etc.….) and 154 (15.8%) from Family & friends. (Figure 8).

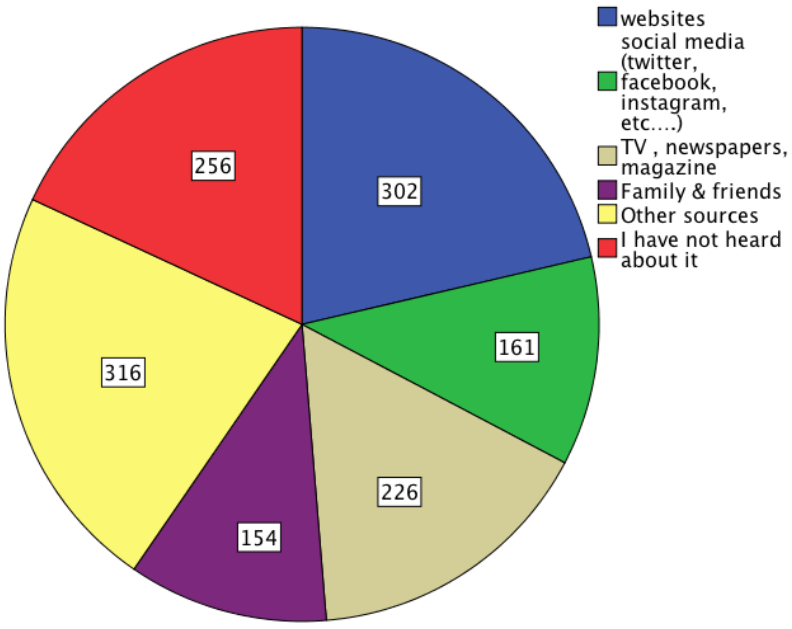

Figure 8. From where you got your stem cells information?

4.Discussion

4.1.blood donation

The increase in population size and the increase in the number of medical facilities in Saudi Arabia with few people coming to donate voluntarily is causing shortage of blood supply and tissue transplant. People's motivation should be improved to meet the urgent need for blood supply and organs and stem cells. For this emerging challenge, this study has been conducted in AlAhssa city in Saudi Arabia in order to understand the various factors contributing to beliefs, attitudes, and level of knowledge associated with blood, organs, and stem cells donation.

Although donated blood is the only source of blood in Saudi Arabia, in this study only 296 participant reported previous history of donating blood. 245 of the donors were males and 51 only were females, which indicate significant difference in donation rate between men and women in AlAhssa (*P < .001*) (Figure 9). This result is similar to other Saudi study [1] where gender played significant difference in the donors rate where 66% of donors were males and only 13.3% were females with a *P value of <0.001*. Other Iranian study has also a similar result where they have 1000 participants, 28% of them were donors and gender significantly associated with one's attitude towards blood donation (*P < 0·001*) [9]. Other Indian study also with similar finding where they have 530 donors, 436 (93%) were males and 36 (7%) were female donors [10].

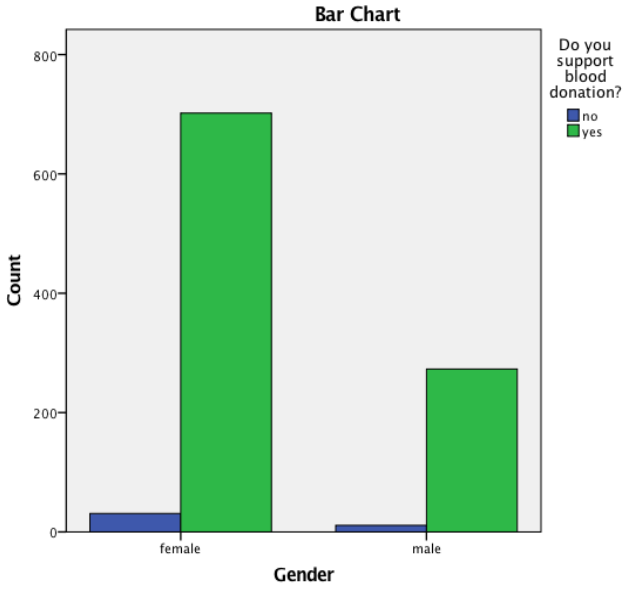

Figure 9.

However, in this study there were good attitude towards blood donation from both male and females, where 95.8% of female and 96.1% of males were supporting blood donation. Which indicate no difference in gender regarding attitude of blood donation [*P*= 0.79]. This difference in donation rate between the tow genders could be attributed to the lack of transportation for Saudi females as they can't drive, as previous study done in AlRyiadh found out that The most prominent reason preventing Saudi women from donating is the difficulty of reaching the blood bank. [11]

In this current study the main identified reasons that prevent people form donating are lacking of time (21.5%), health issues (18.5%) and fear of needles or blood (13.1%). However, fear from infection represented only 5.5% of the reasons while not trusting those who are in charge of blood banks and blood donation process represented only 2.6% of the responses which indicate good

awareness level since Blood banks always follow screening guidelines and eligibility requirements to make sure that blood donation will not harm the donor. In addition, new sterile disposable consumables are used for each donor to eliminate the risk of transmitting a blood-borne infection.

It was reported that age and educational level are important identifiers of those how are less likely to donate [1][12] similarly in our results we found that 74.3% of donors was from age groups between 20-40, and the least donating rate was in the age groups less than 20 (10%) and more than 40 (15.7%) therefore more motivational programs for blood donation should be dedicate for these age groups. However, we found that age, played no significant difference in the attitude of blood donation (*P = 0.16)* but educational level and specialty did differ significantly (*P=0.02, P> 0.01* respectively), In contrast to other Saudi study where specialty didn't play much role in the attitude of population [2].

Regarding knowledge the overall results are not satisfactory and it could explain the gap between the attitude towards blood donation and the donation rate, however, the current study found that Age, educational level and specialty play significant role in the knowledge of blood donation, but no significant difference detected regarding gender except in one question about Minimum Hemoglobin level accepted for blood donors where the responses from females differs significantly from male (*P= 0.002*) which could be attributed to the high prevalence of iron deficiency anemia in AlAhsa as previous local study[13] and other Saudi study [14][15] indicated.

4.2.organ donation

Organ donation is a unique process that can improve only through the cooperation of several parties including donors, families, medical staff, government, and society. Our aim is to compare knowledge, attitudes regarding organ donation.

In this study, only 18.1 % of the studied people agreed with organ donation and 1.3% had donated their organs, while 45.6% of them are not sure weather they are going to donate in the future or not. In fact, only 4% of the participants carried donor cards. In another study was done in donating organs specifically for relatives showed that 73.1% of their population agreed with organ donation. [16]

The main reason of disagreement was that they never think about it at all. Other reasons like, I am afraid my family opposition to the subject 13.5%, I think I am young for organ donation 12.5%, I have diseases prevent me for that 4.6%, organ donation conflict with religion 8.6%, I think the body should remain intact after death 22.7% and other causes represented the remaining 20.2% of the responses.

Understanding refusal reasons could help devising strategies to increase the rate of organ donation. For the reasons of refusal to be prospective donors in our study, the majority of participants had an unclear vision of the grounds for refusal. We have also found that fear and ignorance of subsequent complications were among the main causes.

Level of education is very important for decision making as knowledge coming from reliable source create much positive influence on once choice. In our study, population with higher educational level showed more positive attitude toward organ donation. Also The source of knowledge may affects the outcome, for example: we asked about the safety of process of donation, and the majority of the studied sample think that it is a dangerous process, while only 10% think it's safe.

In the present study, questions related to knowledge of organ donation, medical & paramedical groups showed significantly better mean score, which is similar to a study was conducted for Saudi nursing % medical students. [17]

Finally, the religious argument as a reason for refusal is not specific in our study among AlAhsa society. The same observation was made by other study in Morocco [18]

4.3.stem cell

An overall Poor knowledge and attitude regarding stem cells in this study was noted among the participants, Where only (59.4%) of population did know what is the term stem cells really mean, and only (25.5%) are willing to donate their stem cells in the future. In contrast to a previous study that measured Knowledge and Attitude about Stem Cells in Malaysia, where the majority of participants (92%) had moderate knowledge score about stem cells and positive (76.1%) attitude towards its therapeutic potential [8].

Unfortunately, this result is even un satisfactory when compared with reports from developed countries. In a study conducted in 2007 by Chakrabarti and Bareford in the United Kingdom, 93% of their respondents were aware of BMT [19]. This overall poor knowledge about stem cells however found to be affected by many factors, in this study we found age, educational level and specialty play significant difference in the knowledge about stem cells (P=0.005, P>0.01, P>0.01 respectively), in contrast to a previous Nigerian study [20] where they found no significant difference regarding age $P=0.08$ .In this we also noticed a slight difference in knowledge between males and females where female had better knowledge (p=0.008), in contrast to the previously mentioned Nigerian study. [20]

However, this difference in knowledge influenced by the previously mentioned factors is not noticed in the attitude of the population, where this study found gender, educational level and specialty play no role in the attitude of the individuals (p=0.92, p=0.38, p=0.28 respectively).

Finally, although this research was carefully conducted, the researchers team is still aware of its limitations and shortcomings. First of all, as this study is a cross sectional study, a clear relationship between the exposure and outcome couldn't be assessed. For example, we can't asses if the good knowledge about blood donation lead to increased donation rate or if the previous history of blood donation leads to a better knowledge about donation.

Second, the small number of the study sample might not be representative of AlAhssa population, the research working team adapted an electronic form to collect data and tried to overcome this by adapting the hard form of the surveys, however considering the results of the study which has some significant values, seemingly low sample size had no effect on the results.

Third, the small number of male who participated in the study may not be representative of the whole male population in Saudi Arabia, and this would affect the generalizability of the results, the research working team tried to overcome this by distributing hard forms of the survey in male schools and male sections of hospitals. Self-reporting bias is another limitation in the present research. lastly the lack of prior research studies on the topic was a major limitation to the current study.

6. Conclusion & recommendations

The current study found a positive attitude toward blood donation but more knowledge is needed to increase the donation rate. The main reason identified was not having the time so efforts should be directed to ease the donation process by improving the location and timing of donation. The

educational programs should also take into account social and educational variables that determine donor attitude and behavior and to be directed to motivate nondonors to donate and become regular donors. Regarding organ donation and stem cell transplant there were poor knowledge and attitude in both of them. 54.3% of participants had never thought or consider organ donation probably due to misconceptions, poor knowledge. Therefore, we conclude that appropriate knowledge and positive attitude of AlAhsa population could play a key role in shaping the public opinion about organ and stem cells donation and transplantation.

To improve the knowledge and encourage a more positive attitude in our population it is essential to initiate specific training about ethical, moral, and religious issues and we suggest that various educational programs should be implemented. Ministry of Health should emphasize on the future of stem cell by frequently organizing stem cell awareness campaigns to encourage a more positive attitude towards stem cells in terms of research and treatment.

Acknowledgment
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