Blood Donation Patterns in The Light of COVID-19 Pandemic Distress: A Cross-Sectional Study From Syria

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Abstract

Introduction Syria has suffered for nine years of war and there were huge demands for blood during and after the lockdown from Coronavirus disease of 2019 (COVID-19).

Methods Online questionnaires were distributed to Social Media groups after two weeks of the 10-week full lockdown to determine blood donation patterns. They also included stress, anger, and COVID-19 distress questions.

Results The study included 1423 participants, 899 (63.2%) of which were females. Around 48.5% have donated blood, of which 33.3% donated only once in their lifetime. Not having a good reason to donate blood was the main declared reason for not donating, and obtaining a document was the main reason for donating in (64.8%) of participants who had donated blood. Stress, anger, and being distressed to get infected did not have a crucial effect on blood donation, and its patterns. Losing someone close and being endangered from war were associated with more frequent blood donation in contrast to being distressed from war which was more associated with distress from getting infected.

Conclusion Distress from COVID-19 was not the main reason for not donating blood. Spreading the culture of volunteer blood donating is crucial as COVID-19 exposure with blood donation can be avoided.

Introduction

Blood donation is an act of solidarity. In most countries, it is stationed on a voluntary basis that differs widely according to circumstances, and the culture of societies. For example, while most of the blood donation is a voluntary unpaid act, in some countries donors usually donate blood when a family member or a friend is in need by a process called “directed donation” while in other countries there might be some amount of payments in exchange for the blood donation (1). The most common method for blood donation in Syria is mostly to get a document as payment for blood donation is illegal. However, direct blood donation is one of the methods in Syria which was particularly prominent after the Coronavirus disease of 2019 (COVID-19) (2).

To donate blood means to save a life as many patients require blood for survival such as in trauma, cancer, and many other medical disorders (3). World Health Organization (WHO) declared a gap in the access to blood between high- and low-income countries. In general, the amount of general blood donation is an indicator of the availability of blood in a country. There are 118.5 million blood donations collected around the globe, 40% of these donations are collected in high-income countries. Approximately, in low-income countries, half of the transfusions are conducted in children at the age of 5 years and younger. In contrast, around 75% of blood transfusions are for 60-year-old patients or older in high-income countries (4).

In Syria, the nine-year-old war has affected all aspects of life as over 80% were under poverty line, millions suffered from mental distress, and millions had to flee the country and were dependent on humanitarian

assistance (5). The reduced ability to earn and to provide food were among the major concerns despite not having high numbers of cases in Syria (6). A full lock down was enforced for 10 weeks when blood donation numbers sharply decreased, causing a huge demands for blood (2). Worldwide, sickness and restrictions have caused a step reduction in donations and staff. However, sharing experience of countries in different stages can help transfusion services to be prepared and meet the demands during the pandemic (7). Therefore, this study was conducted two weeks after the termination of the full 10-week lockdown to assess blood donation patterns while assessing different variables that could have affected these patterns including anger, stress, and distress from being infected.

Methods

This study was a country-wide cross-sectional study across Syria. It was conducted in the period between 08/06/2020 and 17/08/2020. Online Arabic surveys were distributed in multiple online Social Group several times each day and included participants from all across Syria.

Informed consent was taken from participants before continuing with the survey. It explained in detail about the research, its goals, and it assured anonymity for participants. It included using and publishing the data. Ethical aspects of this research were reviewed and approved by Damascus University Deanship according to the principles embodied in the Declaration of Helsinki. This research has received no funding and data can be made available upon reasonable request.

Blood donation questions were mandatory, but other questions were not. No compensation methods were used for the missing data. No subjects under the age of 18 were included as the law prevents them from donating blood.

We assessed the demographics and asked indirectly about the socioeconomic status as it is inconvenient to ask about the monthly salaries in Syria, and there is no valid methods to use in the Syrian community (5). We asked if the place of living was rented, living in a city or a countryside, monthly-income adequacy, and educational level. Other questions related to demographics, COVID-19 and blood donation are demonstrated in Table 1, and Table 2.

To check if stress or anger in the last period affected blood donation patterns, we used a validated Arabic questionnaire about stress, extracted from the Depression Anxiety Stress Scale-21 (DASS-21) (8). We also used an Arabic version of Dimensions of anger reactions 5 (DAR-5) to assess for problematic anger and its effects on social functioning (9-11). We used scores of these scales, not cut-off points as it would be easier comparisons.

We used IBM SPSS software version 26 for Windows to analyse the data. Chi-square, and one-way analysis of variance (ANOVA) were used and values of less than 0.05 for the two-tailed P values were considered statistically significant.

Results

Questionnaires were distributed to 1611 participants, but 141 refused and 47 later withdrew. The study included 1423 participants, 524 (36.8%) of which were males and 899 (63.2%) were females. The mean age was 25.3 years. Characteristics of the subjects are demonstrated in (Table 1). Furthermore, only 478 (33.6%) of participants did not donate blood without having a medical reason not to. Individual response to each of COVID-19 and blood donation question is demonstrated in (Table 2).

Males donated blood more frequently than women ($p < 0.001$). Not donating blood because of fears of COVID-19 was not significantly different between the two genders. However, declaring that the medical centre was far or hard to reach was more common among males ($p = 0.013$). Furthermore, males donated blood to get a document more frequently than females who donated to help people more often ($p = 0.009$). Participants from Damascus, Tartus, and Rif-Dimashq significantly donated blood more frequently than Latakia, Homs, and Aleppo ($p = 0.023$). However, reasons for blood donations did not vary between the governorates ($p > 0.05$). Higher number of times donating blood every year was associated with lower DAR-5 score ($p = 0.020$) and stress scores ($p = 0.018$). Other characteristics of DAR-5 and stress scores are demonstrated in (Table 3). Although not donating blood because being afraid of acquiring COVID-19 or because it was hard or far had higher stress scores ($p = 0.012$), number of participants in these two categories were only 30 (2.6%), and therefore the majority was not affected.

Blood donation and reasons to do it was slightly affected by educational level but with a statistical significance ($p < 0.001$), and being a student ($p < 0.001$), but not by monthly income adequacy, living in a rented house, or living in the city or the countryside ($p > 0.05$). All previous factors were not associated with not donating blood because of the lockdown or the centre being far or hard to reach ($p > 0.05$). Change place of living due to war was not associated with change of blood donation patterns. Although distress from war noise was associated with less blood donating ($p < 0.001$), more blood donation was associated with life being endangered from war ($p = 0.013$), and losing someone due to war ($p = 0.001$). Furthermore, losing someone due to war was associated with other reasons to donate blood instead of donating for a document ($p = 0.015$) while those who were distressed did not donate because of COVID-19 and it was hard to leave or reach the centre more frequently ($p = 0.002$).

Being worried to get infected was associated with not donating blood, but not in big numbers ($p = 0.029$). Blood donation in those who were afraid to get infected were less likely to donate blood to get a document when compared to others, but they were significantly affected by the quarantine ($p = 0.021$). Among those who declared that monthly income adequacy cannot cover essentials, they more frequently declared that they did not donate blood because of the lockdown or the centre being far or hard to reach ($p = 0.058$). Smoking was associated with more blood donations ($p < 0.001$), but this was not observed for shisha smoking. Donating blood or not was positively correlated with age ($p < 0.001$) with a different mean age of three years between the two groups. Not donating blood because of the lockdown or the centre being far were not associated with being endangered directly from war, losing someone close, and changing place of living due to war ($p > 0.05$), but they were associated with being distressed from war noise was ($p = 0.002$).

Discussion

Although blood donation requirements when having COVID-19 are low even in severe cases, there is a gap between demands and donation worldwide (7). Special concerns were with patients with anaemia and coagulation dysfunction who might need more transfusion with severe COVID-19 and needed extracorporeal membrane oxygenation or suffered from multiple organ failure (12). Furthermore, blood group A might be more susceptible to COVID-19 while blood group O might have a lower risk (12). The number of volunteer donors has decreased substantially which put a strain on local blood supplies (12) similar to what have occurred in Syria (2). Results demonstrated that most people who did not donate blood in the last period because they did not want to or did not have a reason to do it. We speculated when conducting this study that distress from acquiring COVID-19 is the major reason for not blood donating. However, this study demonstrated that the regular reasons in Syria to donate blood, which is for a government document, was no longer necessary during COVID-19 and the lockdown, and therefore people did not have any reason to donate blood. Number of people who did not donate blood because of fears of COVID-19 was not significant and the number of people who donate bloods only to obtain a document was (64.8%). Blood donation campaigns failed in the last period to reach most people who remained unaware of the drastic needs of blood donation across Syria. A need so severe that some hospitals only had around 30% of their blood demands met (2). Losing someone close or being endangered from war were associated with more blood donation. In contrast, being distressed from war noise was associated with less blood donations, and more concerns to get infected.

There are concerns should be addressed for blood donation practices. First of all, blood staff and donors' concerns from being exposed to a COVID-19 case. Should be addressed Furthermore, as COVID-19 is still new, transmission through blood transfusion, mainly asymptomatic carriers, is still uncertain (7), especially COVID-19 has a long incubation period and many remain asymptomatic for a long time (12). A change in blood inventory, processing, and storage is also required, so forward planning is essential (7). More careful use of blood and its products should also be considered as around 20-30% of blood components usage is not indicated and therefore wasted (7). Therefore, the inventory should be managed as efficiently as possible with a full evaluation of demands (12). This should be especially important in Syria where it is very hard to get blood products (2). Authentic information about COVID-19 and blood donation should be distributed to encourage blood donation and make appointments to ensure social distancing. That is particularly important for Syrians as they rely deeply on search engines to get information and they rarely depend on official sources (13). Furthermore, up-to-date and accurate data can reduce distress from COVID-19 (14). Donors who were exposed to a possible COVID-19 case or from a region with high COVID-19 burden should refrain from blood donating for at least 4 weeks (12). Furthermore, predonation procedures should be carried out such as physical examination and temperature measuring (12). Finally, effective campaigns and spreading awareness on the importance of blood donation should be especially addressed in Syria because having concerns from being infected was not major as we saw in this study, but the lack of motivation was prominent.

Limitations

This study was online based and could not target blood donors from centres. Moreover, the relatively high socioeconomic status of participants and their relatively younger age may make it difficult to generalise the results to the entire population. Recall bias was also a factor in our study. Finally, we could not interfere or do an intervention to demonstrate a change in blood donation patterns.

Conclusion

In conclusion, stress and anger from COVID-19 were not the main reasons that caused a reduction in blood donation practices. Although it is practical to make donating blood necessary for documents without depending on volunteer blood donation, this cannot work in crisis. Syria provides a unique model to blood donation patterns as it has suffered from nine years of war and a 10-week full lockdown. Stress from being infected did not decrease the frequency of blood donation in a setting where people strive to get by. Many procedures should be practiced improving blood donation reality, and to make it safer and more practical.

Declarations

Ethics approval and consent to participate:

Our study protocol and ethical aspects were reviewed and approved by Damascus University deanship, Damascus, Syria.

Consent for publication:

Consent for using and publishing the data were taken.

Availability of data and materials:

The data can be made available upon reasonable request.

Data sharing statement:

No additional data is available.

Competing interests:

All authors have no conflict of interest to declare.

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Author contributions:

AK: First and senior author; Original draft; Methodology; Supervising; data collection; reviewing the draft; analysis; statistics; software.

SM: Methodology; data collection; reviewing the draft

AG: Methodology; data collection; reviewing the draft

OHA: Methodology; reviewing the draft.

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Tables

Table 1
Characteristics of responders and their responses to COVID-19 questions

Characteristic	Frequency	Percentage %	Characteristic	Frequency	Percentage %
Gender	524	36.8	House that you currently live in	933	65.7
Male	899	63.2		375	26.4
Female	876	62.3	Owned	112	7.9
Change place of living due to war	226	16.1	Rented or given by the government	596	42.0
	267	19.0	Living in friends\relatives house	180	12.7
No	36	2.6		248	17.5
Within the same city	216	15.3	Smoking cigarette or shisha	42	3.0
To another city	1200	84.7	no	353	24.9
Both	520	36.7	Regular shisha smoker	334	23.6
Distress from war noises	46	3.2	Regular cigarette smoker	855	60.4
	851	60.1		226	16.0
No	264	18.6	Smoke both regularly	4	0.3
Yes	1154	81.4	Smoker but not regularly	11	0.8
Being a student	170	12.0	Monthly Income adequacy	208	14.6
No	971	68.3		1016	71.4
In a school	280	19.7	It cannot cover buying the essentials	184	12.9
In a university of high institute	649	45.8	It is only enough for essentials from food and drink		
Living in:	769	54.2	It is enough for essentials and other things		
Countryside			Education		
City			Elementary		
Life Endangered from war			Until grade 9		
No			High School		
Yes			University, or high institute		
Not sure			Master or higher		
Losing someone close due to war					
No					

Yes Characteristic	Frequency	Percentage %	Characteristic	Frequency	Percentage %
			Characteristic	Mean	Std. Deviation
			Age	25.3	6.5
			Stress Score	17.8	10.3
			DAR-5 Score	11.7	4.4

Table 2: Characteristics of COVID-19 worries, and blood donation responses

Characteristic	Frequency	Percent%	Characteristic	Frequency	Percent %
How worried have you been from in the last 2 weeks:			What is your main reason for donating blood in the last period?		
1. Being infected					
Not at all	355	25.8	For a medical reason	35	5.1
Slightly	586	42.6	To help others	163	23.9
Moderately	304	22.1	For a document	442	64.8
Very	130	9.5	For thalassemia patients	36	5.3
				6	0.9
2. Friends or family being infected			As I believe it is good for my health		
Not at all	107	7.7	The usual number of times for blood donating a year?		
Slightly	340	24.6		295	43.8
Moderately	355	25.7	Less than one time	276	40.9
Very	580	42.0	One time	69	10.2
			Two time	34	5.0
3. That you get infected from the traffic and crowds			Three and more		
Not at all	112	8.2	Can you estimate the total number of time you donated blood?		
Slightly	228	16.6		226	33.3
Moderately	401	29.2	One	145	21.4
Very	630	46.0	Two	107	15.8
			Three	66	9.7
Do you recall seeing blood donation campaigns?			Four	134	19.8
No	66	4.6	Five and more		
Yes, on Social Media for blood donation	175	12.3		112	17.2
Yes, on Social Media for thalassemia patients			Was your blood donation affected by?		
Yes, I recall seeing both	478	33.6		52	8.0
	254	17.8	Not having a reason or a motive	160	24.5
Have you ever donated blood?			Blood donation campaigns		
No, I have never donated blood	665	46.7		109	16.7
No as I have used medical certificate	26	1.8	Quarantine and COVID-19-related distress	219	33.6

Yes, I have donated			The blood-donation
Yes, I am a frequent			centre was not close
blood donator for			to where I live
thalassemia patients	511	45.4	Other
What is your reason for			
not donating before	208	18.5	
COVID-19?	283	25.2	
I have no reason			
I feel light-headed from	14	1.2	
seeing blood/needle			
I have a medical reason	55	4.9	
Afraid from acquiring			
COVID-19 from the	38	3.4	
hospital	16	1.4	
I do not like to			
It is of no benefit for me			
It was difficult for me to			
leave the house or it is			
far			

Table 3
demonstrates anger and stress scores with each blood donation response.

Characteristic	DAR-5			Stress		
	Mean	Std. Dev.	P value	Mean	Std. Dev.	P value
Have you ever donated blood?	11.99	4.42	0.161	18.29	10.43	0.159
No, I have never donated blood	11.80	4.56		18.48	10.10	
No as I have used medical certificate	11.44	4.25		17.08	10.06	
Yes, I have donated	10.96	4.35		17.17	12.41	
Yes, I am a frequent blood donator for thalassemia patients						
What is your reason for not donating before COVID-19?	11.64	4.52	0.557	17.08	9.99	0.012
I have no reason	11.78	4.02		18.52	10.02	
I feel light-headed from seeing blood/needle	11.94	4.50		19.61	10.61	
I have a medical reason	11.85	5.19		19.85	11.53	
Afraid from acquiring COVID-19 from the hospital	12.93	5.14		17.67	10.86	
I do not like to	12.37	4.01		18.43	8.45	
It is of no benefit for me	11.73	4.17		24.00	11.90	
It was difficult for me to leave the house or it is far						
What is your main reason for donating blood?	10.93	4.13	0.739	18.93	12.62	0.090
For a medical reason	11.09	4.16		15.09	10.27	
To help others	11.56	4.32		17.60	9.77	
For a document	11.11	3.89		17.65	10.78	
For thalassemia patients	11.50	4.18		17.00	9.01	
As I believe it is good for my health						

Characteristic	DAR-5			Stress		
	Mean	Std. Dev.	P value	Mean	Std. Dev.	P value
The usual number of times for blood donating a year?	11.51	4.41	0.020	17.85	9.85	0.018
Less than one time	11.84	4.22		17.46	10.11	
One time	10.37	3.46		13.56	10.02	
Two time	10.00	4.26		15.80	11.51	
Three and more						
Can you estimate the total number of time you donated blood?	11.62	4.57	0.756	17.44	10.30	0.025
One	11.61	4.10		18.65	10.88	
Two	11.32	4.12		16.56	8.77	
Three	10.90	3.65		18.00	9.03	
Four	11.26	4.24		14.67	10.21	
Five and more						
Was your blood donation affected by?	11.17	4.50	0.216	15.78	8.69	0.063
Not having a reason or a motive	10.25	4.09		14.50	9.87	
Blood donation campaigns	11.78	4.33		18.75	10.74	
Quarantine and COVID-19-related distress	11.47	4.04		17.24	9.57	
The blood-donation centre was not close to where I live	11.60	4.16		17.22	10.50	
Other						
* One-way ANOVA was used in this table						