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Interaction of Twitter Users with Blood Donation Requests in the Kingdom of Saudi Arabia: A Cross-Sectional Study

Saeed M Kabrah*, Akhmed Aslam, Duaa M Atas, Hanin A Qashqari, Ragad S Sever, Hebath Kabrah

Department of Laboratory and Blood Bank, Al Noor Specialist Hospital, Makkah, Kingdom of Saudi Arabia

ABSTRACT

Background: Twitter is currently one of the important social networking platforms worldwide and especially in the Arab community. In Saudi Arabia alone, there are more than 4.5 million users, among which, are those with Twitter accounts who promote the need for blood donors. The extent of public interaction with such requests and the awareness of the Saudi society, regarding blood donation requests and dissemination, remain unclear and have not been studied. This study made attempts to address how people interact with these requests on Twitter.

Materials and methods: A cross-sectional study was conducted from October 2017 to April 2018 using an electronic self-administrated questionnaire. The study included 865 individuals living in Saudi Arabia.

Results: the majority of participants in this study were female (86.2%). More than half of the participants were between 20-29 years of age. Most participants (89.6%) agreed that Twitter has a significant impact on blood donation, and 95.5% of participants believed Twitter could develop public attitude towards blood donation. A further 97.8% agreed that Twitter could increase public awareness about the importance of blood donation. Results showed interaction with blood requests is limited to reading and retweeting the requests. Furthermore, users were shown to have positive attitude towards blood donation through Twitter, which suggests social acceptance of the dissemination of blood donation requests using this platform.

Conclusion: The interactions towards blood donation is limited to within Twitter and not translated to an actual donation, highlighting the need for increased knowledge and awareness in this area.

Key words: Twitter, Interaction, Social media, Blood donation request, Transfusion services

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Corresponding author: Saeed M Kabrah
e-mail ✉ :smkabrah@uqu.edu.sa
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INTRODUCTION

Twitter is currently regarded as one of the most important social networking platforms worldwide and especially in the Arab community [1,2]. Its fundamental importance allows users to communicate and share their opinion on daily local and international topics using 280 characters or pictures and videos. In Saudi Arabia alone there are more than 4.5 million users [2,3], among which, are those with Twitter accounts who are interested in promoting the need for blood donors and the ways of improving the shortage of blood units. Moreover, some individuals tweet and retweeting requests to many users (including their relatives, friends, and work colleagues), on Twitter the social media platform, to promote blood donation and further encouraging the potential donors to fulfil the requirements of these demands. These requests are mainly made to attract healthy members of the public, to become voluntary non-remunerated blood donors, and in time to replace the required units for certain patients and dwindling supplies [4,5].

Recently, efforts have been undertaken to utilize social media platforms to make the blood donation requests and their dissemination more convenient, thereby creating communities around blood banks, and by providing additional services [6,7]. However, this way of requesting blood donation lacks effective communication channels, in addition to the inability to prevent confidential patient information being released to the public [6]. Nevertheless, the extent of public interaction with such requests and the awareness within the Saudi society, regarding blood donation requests and dissemination, remains unclear and have not as yet been studied.

Therefore, the purpose of this study is to evaluate how people interact with these blood donation requests on the social platform Twitter. In addition, it will also measure at what level the blood donation request influences the dissemination behaviour of Twitter users.

METHODS

A community based cross-sectional study was conducted among the Saudi population, using a well-structured and validated electronic self-administered questionnaire, to assess the impact of Twitter blood donation and how people interact with blood donation requests on the same platform. The questionnaire consists of five sections; sociodemographic characteristics, the activities of Twitter users, the impact of Twitter on blood donation, and the interaction of Twitter users with blood donation requests, and at what level they trust the disseminated blood donation requests.

The sociodemographic section includes ten questions that cover the necessary participant information including; gender, age, nationality, marital status, religion, highest education level, occupation, and monthly income. Activity questions were used to assess the users' activities to blood donation requests on Twitter. The impact of Twitter section contained four questions that covered the benefits of Twitter for increasing the number of blood donors. The interaction of Twitter users with blood donation requests section measured how people interact with these requests, and this was assessed using 11 specific questions. This involved user input on how often they interacted, for example, when following an account, asking for more information before donating, mentioning to others who may be interested, sending to a friend/family member, tweeting with a blood donation hash tag, replying positively, liking, retweeting, reading, or no contact at all. The trust of blood donation requests section assessed the level of trust through 12 questions with scale options, these questions were divided into trust (six questions) and opinion (five questions). The level of trust options ranged from blind trust to total mistrust, for blood donation certified accounts, and those for celebrities, hospitals, ministries, doctors, academics, and research groups. The opinion section involved the users' responses ranging from strongly agreeing to strongly disagreeing with important factors regarding blood donation requests on Twitter. These involved whether blood donation awareness was sufficient, how effective it is to encourage people to donate blood, whether tweets requesting blood donation would encourage non-donors to donate, or a participant would be more likely to donate to a governmental hospital than to a private institution, and finally that the interaction on Twitter with blood donation is sufficient.

The participation in this survey was on a voluntary basis. All participants were provided with a briefing about the objective of the research and assured confidentiality in the collection of personal information. They were only allowed to continue to complete the questionnaire after confirming their consent to participate.

The study was implemented between November 2017 and July 2018, where e-questionnaires, in both Arabic and English, were distributed through the social media platform Twitter. The sample size of this study was calculated to be a total of 384 individuals living in Saudi Arabia, aged 18 and higher, including both Saudi and non-Saudi nationals. This sample size was estimated as described by Kadam et al. [8], based on a confidence interval of 95% and 5% marginal error, with a 0.05 alpha level.

All data was analysed using the statistical package for social sciences (SPSS Inc., Chicago, IL, USA). Data were presented as frequencies and percentages.

RESULTS

865 recruited participants were residing in Saudi Arabia, and of these only 755 were included (Table 1). A total of 110 individuals were excluded from the study, 30 of whom were due to either age restriction or failure in completing of the survey, and the remaining 90 participants were removed because they did not use Twitter. The majority of the participants were under 30 years of age (86.2%), students (55.9%), female (87.6%), and Saudi (95.2%). Furthermore, a large proportion were not in a relationship (76.4%), approximately half had a minimum diploma and university level education (50.5%), whilst most identified themselves as Muslim (99.5%). Moreover, the majority designated their employment as student (55.9%), with the largest proportion of participants in the lowest salary bracket of 0-8699 Saudi Riyal (2319 $) (83.0%).

Table 1: Demographic information of the participants, data were presented as number (N) and percentage (%) for the total number of 755 individuals.

	Group	N (%)
Age	<20	249 (32.1)
	20-29	424 (54.7)
	30-39	50 (6.5)
	40+	52 (6.7)
Gender	Male	96 (12.4)
	Female	679 (87.6)
Marital status	Single	592 (76.4)
	Engaged	35 (4.5)

	Married	132 (17.0)
	Divorced	14 (1.8)
	Widowed	2 (0.3)
Highest education	Uneducated	0 (0%)
	Elementary	2 (0.3)
	Intermediate	31 (4.0)
	High school	351 (45.3)
	Diploma	30 (3.9)
	Bachelor	330 (42.6)
	Higher Diploma	6 (0.8)
	Master	21 (2.7)
	PhD	4 (0.5)
Nationality	Saudi	738 (95.2)
	Non-Saudi	37 (4.8)
Religion	Non-Muslim	5 (0.5)
	Muslim	771 (99.5)
Monthly income	0-8699	643 (83.0)
	8700-11999	42 (5.4)
	12000-15299	42 (5.4)
	15300-20159	28 (3.6)
	>20160	20 (2.6)
Occupation	Student	433 (55.9)
	Unemployed	224 (28.9)
	Employed	118 (15.2)

The results of participation in social media section (Table 2) showed that 48.3% of participants considered themselves active on Twitter. Also, 91.6% of the total number of participants agreed in promoting blood donation knowledge, whilst 83.5% agreed in promoting blood donation requests. With regards to the activities of participants on Twitter, only 11.6% tweeted a blood donation request, 43.1% retweeted blood requests, and 15.2% liked or added tweets requesting blood donation. For following of accounts on Twitter that request blood donation, the results showed that 31.4% of the participants follow an account that belongs to an Arab and in the Arabic language, and 8.1% follow non-Arab accounts. Additionally less than 20% of the respondents had been in a situation that made them interested in blood donation accounts on twitter.

Table 2: Participants activities on twitter, data were presented as number (N) and percentage (%) for the total number of 755 individuals.

Question	Yes (%)	No (%)	Total (%)
Do you consider yourself an active user on Twitter	374 (48.3)	401 (51.7)	755 (100)
Do you agree in promoting blood donation knowledge	710 (91.6)	65 (8.4)	755 (100)
Do you agree in promoting blood donation request	647 (83.5)	128 (16.5)	755 (100))
Have you ever tweeted a blood donation request	90 (11.6)	685 (88.4)	755 (100)
Have you ever retweeted a blood donation request tweet	334 (43.1)	441 (56.9)	755 (100)

Have you ever "liked", or added as "favorite", a blood donation request tweet	118 (15.2)	657 (84.8)	755 (100)
Do you follow any Arabic Twitter accounts that promote blood donation request	243 (31.4)	532 (68.6)	755 (100)
Do you follow any Twitter account in languages other than Arabic that promote blood donation requests	63 (8.1)	712 (91.9)	755 (100)
Have you ever been in a situation that made you more interested in blood donation accounts on Twitter	143 (18.5)	632 (81.5)	755 (100)

The participants agreed that social media including twitter has a positive impact on blood donation, as demonstrated in (Figure 1), where 97.7% see that social media can increase public awareness about the importance of blood donation. Additionally, 95.6% of respondents believed that Twitter could develop the public attitude towards blood donation. The vast majority of the participants thought that Twitter can be used to promote the needs of blood banks to donors (86.6%) and they believed that Twitter could increase the public knowledge about blood donation (96%).

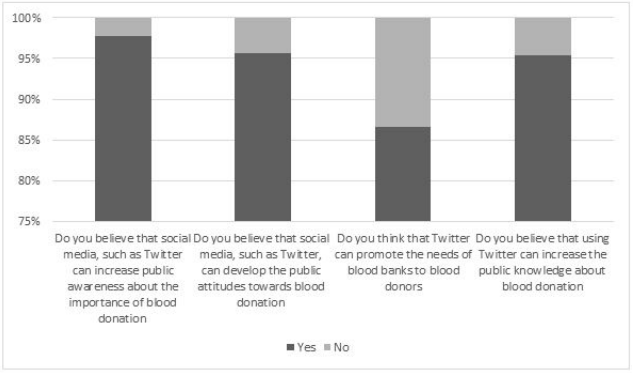

Figure 1: The thoughts and beliefs about the impact of social media and twitter on blood donation. Results were indicated as percentage of the participants' answers for each question (N=775).

Measuring the interactions of the participants with blood donation requests on Twitter (Figure 2) showed that only 10.7% "always" do not interact with these requests. Moreover, the responses indicated that Twitter users will less often interact with blood donation requests by the following; the requested account (57.2%), requesting more information (60.4%), mention someone interested in blood donation (57.9%), send the request by direct message (44.3%), using blood donation hash tags (62.3%), replying to the requests (53.3%), linking the request (55.6%), and retweeting the request (29.6%). However, the responses indicated that Twitter users will most often read these requests, with only 14.9% preferring not to read the requests at all.

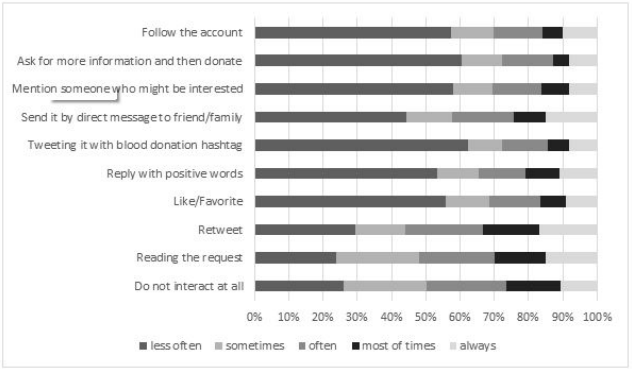

Figure 2: How often participants interact with blood donation requests on twitter. Results were indicated as percentage of the participants' answers for each question (N=775).

Figure 3 summarizes how participants trust the Twitter accounts that promote blood donation requests. Results indicated that respondents trust certified accounts fare more than the uncertified accounts. Furthermore, they specified that they trust accounts linked to the following in order of preference; hospitals (92.7%), ministries (89.6%), doctors (88.5%), research groups (76.1%), academics (69.5%), and finally celebrities (57.5%).

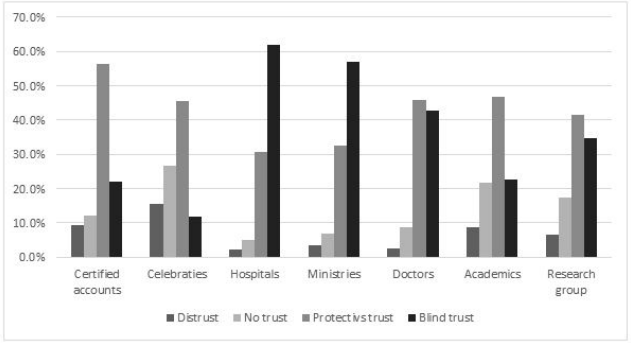

Figure 3: How participants trust Twitter accounts that promote blood donation requests on twitter. Results were indicated as percentage of the participants trusting each account type (N=775).

Figure 4 exhibits the participants' agreement to blood donation on the social media platform Twitter. A combined total of 34.6% either agreed or strongly agreed that there is adequate awareness of blood donation on Twitter. More than 55% of the participants either agreed or strongly agreed that encouraging people to donate

blood via social media is effective and can encourage non-donors to donate blood. Furthermore, a large proportion of respondents agreed that interactions with governmental hospitals would promote blood donation more than the interactions with private hospitals (40.4%). However, they disagreed that the interaction on Twitter with blood donation requests is sufficient (44.1%).

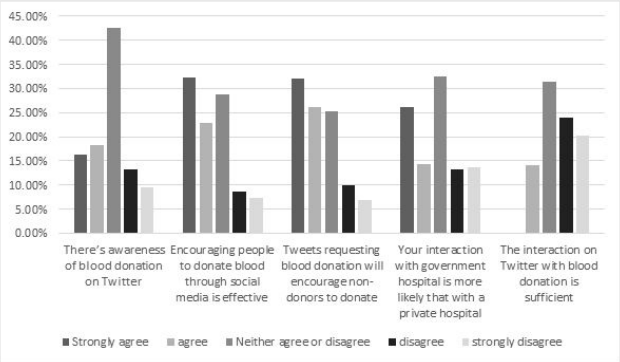

Figure 4: How participants agree with the indicated statements regarding twitter. Results were indicated as percentage of the participants' agreement to each statement (N=775).

DISCUSSION

The current study discussed the behaviours of Twitter users living in Saudi Arabia toward blood donation through social media, specifically the Twitter platform. The results indicated that the majority of participants believe that using Twitter can increase public awareness, knowledge, and attitude of blood donation. This finding promotes the requirements for blood bank verified Twitter accounts to disseminate blood donation requests. This is in agreement with a study in 2011, conducted in the Johns Hopkins Bloomberg school of public health (USA), who found that 67.4% of researchers agreed that social media is important for disseminating information regarding blood donation [4]. In fact, and more locally, researchers at King Saud University (Saudi Arabia) are aiming to develop a blood donation system that promotes direct dispersal of blood donation requests, from the place of need to the donation centres and different institutes in the country, and through social media platforms with minimal time and effort [9]. This stresses the need for understanding public attitudes toward blood donation information, and for enhancing the effectiveness and reliability of the use of social media platforms [5].

The large majority of the participants interacted less often with blood donation requests by either following disseminating accounts, requesting more information, mentioning people, replying to the tweet, and liking and by not sending these tweets to anyone else. However, the participants often interacted with these requests by re-tweeting them to reach a wider audience.

Furthermore, participants were more likely to interact with trusted certified Twitter accounts. Additionally, they were more likely to trust the blood donation requests that had been requested by hospitals, ministries of the political establishment, and medical professionals. A small percentage also trusted the accounts of prominent celebrities, which was often more likely as the celebrities in Saudi Arabia have a greater influence and reach than the governmental accounts, with a larger following and hence a wider audience. The social media community in Saudi Arabia is divided into several categories, such as health professionals, celebrities, and social media influencers. For instance, some Twitter influencers who have over million followers, and therefore have the ability to reach a much higher audience with their tweets. The results also showed that participants agreed that there is awareness of blood donation on Twitter. Most respondents also agreed that using social media, such as Twitter, can increase the public awareness about blood donation and the need of blood units, in a way that could encourage non-donors to donate blood. This is in agreement with Teoh et al. [10], who showed that Twitter is an effective platform to increase the public awareness by analyzing tweets during the cervical cancer awareness month. Another study emphasized the fact that people do not donate blood because of the reason that blood donation did not cross their mind and they were not in receipt of reminders [11]. The current data indicates that disseminating blood donation requests via social media can increase the numbers of blood donors substantially, strongly suggesting that Twitter can be used as reminder to the public to donate blood more often.

Blood donation is a global issue; the participants in the current study did not agree that interaction on Twitter with blood donation requests is sufficient in Saudi Arabia. Furthermore, the data suggests that blood donation and blood donation requests should be more widely promoted than at present by the higher authorities in Saudi Arabia. This also encourages the authorities to begin using official channels for the Ministry of Health and its hospitals, to increase the public awareness and knowledge regarding blood donation. These channels could then be used to disseminate the blood donation requests. The data also suggests the launching of online blood donation campaigns involving medical professionals, including doctors, researchers, academics and celebrities, to promote the blood donation requests. Moreover, due to the fact that participants were of a relatively young age, this suggested that online campaigns should target the youth segment to become blood donors. This finding is supported by other research that indicated that young social media users have high pro-social tendencies to donate blood [12,13].

CONCLUSION

In Saudi Arabia blood banks are hospital based and not central, and the current results indicate the important role of hospital Twitter accounts in promoting blood donation requests, as they were most trusted by the users of this social media platform. These accounts would help notify the public blood bank supply shortages or for blood required for emergency cases. Indeed, the

acceptance of "Twitter" users about blood donation can indicate a solution for increasing blood donors, this could be for example by to the design of an application for blood donors based on information of the donor and a GPS module to track the location. In summary, regarding blood donation requests, individuals have a positive attitude towards using social media platform (Twitter) to promote the needs of blood donor, in contrast the interaction in "Twitter" with blood donation requests is insufficient and limited using the social media platform Twitter by either retweeting and liking, or both. Increased knowledge and awareness about blood donation requests is required and this can easily be disseminated using social media, especially Twitter.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Participation in this survey was voluntary and all contributors were given a briefing about the objective of the research and assured of confidentiality in the collection of personal information. Additionally, the contributors agreed on consent prior to completing the survey. Ethical approval was optioned from the Faculty of Applied medical Sciences Ethics Committee, Umm Al-Qura University, Makkah – Saudi Arabia (AMSEC 2-10.10.2017).

CONSENT FOR PUBLICATION

The manuscript has not been published elsewhere and that it has not been submitted simultaneously for publication elsewhere nor has been presented in conferences anywhere. Also, all co-authors listed below have agreed to have seen and approved the manuscript for submission.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request. However, the raw/processed data required to reproduce these findings cannot be shared at this time as the data also forms part of an on-going study.

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This section is not applicable because no other persons have made substantial contributions to this manuscript.

AUTHORSHIP CONTRIBUTIONS

Saeed Kabrah and Akhmad Aslam conceived of the presented idea, designed the study, developed the questionnaire and validated it, and carried out the experiment. Both authors contributed to the final version of the manuscript. Saeed Kabrah conducted the statistical analysis and designed the figures and tables. Doaa Al-Tas, Haneen Qashqari and Raghad Sawar contributed to data collection and cleaning. All authors discussed the results.

DISCLOSURE OF CONFLICTS OF INTEREST

The authors listed in this manuscript certify that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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