

Original article

## Assessing Blood Donation Awareness and Barriers Among Young Adults in Misurata, Libya: A Community-Based Study

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### ABSTRACT

Blood shortages and reliance on family or replacement donors remain important challenges in Libya. Evidence focusing on blood donation awareness, motivations, barriers, and donation behaviour in Misurata city is limited. This study aims to assess these factors among young adults in Misurata and to examine selected factors associated with previous donation and future willingness to participate in blood donation campaigns. A community-based cross-sectional study was conducted among Libyan adults aged 18-40 years residing in the city of Misurata between March 1st and August 15th, 2026. Participants were recruited using convenience sampling through field recruitment and electronic distribution. Data were collected using a researcher-developed Arabic questionnaire covering sociodemographic characteristics, previous donation experience, awareness, sources of information, motivations, barriers, and future donation intentions. Categorical variables were summarised using frequencies and percentages. Associations were assessed using Pearson's chi-square test, with Monte Carlo estimates of exact significance used when expected cell assumptions were not met. Statistical significance was defined as  $p < 0.05$ . A total of 267 participants were included in the final analysis. Of these, 170 (63.7%) were male, 83 (31.1%) were aged 28-35 years, and 140 (52.4%) were employed. 112 (41.9%) participants reported previous blood donation, and among previous donors, 82 (73.2%) had last donated more than six months earlier. General awareness was high, with 229 (85.8%) participants reporting that blood donation is safe and can save lives. Social media (137, 51.3%) was the most frequently reported source of information, while humanitarian responsibility (183, 68.5%) and saving a life (165, 61.8%) were the leading motivations for donation. Overall, 68.2% of participants reported at least one perceived barrier, with lack of time being the most frequently reported one. Previous donation was significantly associated with age group ( $p = 0.007$ ), sex ( $p < 0.001$ ), occupation ( $p = 0.016$ ), and weight category (Monte Carlo  $p < 0.001$ ). No statistically significant associations were identified between future willingness to participate in donation campaigns and previous donation, age, sex, general awareness, or reported barriers. Our study suggests there is a gap between positive donation perceptions and actual donation behaviour. Future blood donation campaigns in Misurata may benefit from combining reliable education with strong, accessible campaigns, digital outreach, and community involvement. Further studies using larger, more representative samples and validated instruments are needed to better identify factors preventing regular voluntary blood donation.

### Introduction

Blood transfusion is an essential part of any healthcare system and is required in the management of many critical and life-threatening conditions. Maintaining an adequate blood supply depends largely on having a stable group of regular volunteers, non-remunerated blood donors. Despite progress in blood collection worldwide, access to safe blood remains unequal, particularly in lower-income settings, and many countries continue to depend heavily on family or replacement donors [1]. The World Health Organisation therefore recommends the development of national blood systems based on regular voluntary, unpaid donation [1].

Blood availability remains an important challenge in Libya. Previous national research has reported chronic blood shortages and a strong dependence on family and replacement donation, with more than 90% of donations being made for relatives or friends rather than through regular voluntary donation [2]. A study conducted in Derna similarly highlighted limited voluntary donation and identified several barriers that may prevent people from donating blood [3]. These findings also suggest that increasing the number of regular voluntary donors requires understanding why people donate, why they do not donate, and what may encourage future participation. Previous research has examined blood donation knowledge, attitudes, and practices across several Libyan cities, including Misurata [2], while other work has focused specifically on populations such as that of Derna [3]. However, evidence focusing specifically on the awareness, motivations, perceived barriers, and donation behaviour of young adults in Misurata, to our knowledge, remains limited.

Local information is important because the factors affecting blood donation may differ between communities, and donor recruitment strategies are more likely to benefit when they address the concerns and motivations of the population, they are intended to reach. Therefore, this study aims to provide a fast community-based assessment of blood donation awareness, previous donation experience, sources of information, motivations, perceived barriers, and willingness to participate in future donation campaigns among Libyan adults aged 18-40 years residing in Misurata City. As a secondary practical objective, participants were given the option to express willingness to be contacted regarding future blood donation activities, supporting our local blood donation bank.

## Method

### *Study Design, Setting, and Study Period*

A community-based cross-sectional study using paper and online questionnaires was conducted between March 01 and August 15 2026, among the Libyan population residing in Misurata city only. The Libyan Bureau of Statistics and Census estimated that as of 2020, Misurata city had a population of 663,853 people [4].

### *Sample Size and Sampling Procedures*

An initial target of 100 participants was established for a fast assessment of blood donation awareness, motivations, and barriers among young adults in Misurata city. But during the data collection period, the target was increased. Based on a 95% confidence level, a 5% margin of error, a 50% expected proportion, and the estimated population of Misurata City, the calculated sample size was approximately 384 participants. Participants were recruited using convenience sampling, and recruitment continued in intervals throughout the study period using both field recruitment and electronic distribution.

### *Instruments of the Study*

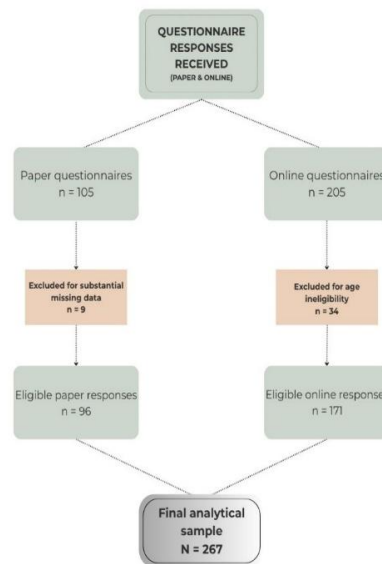
Our team used a questionnaire developed by an expert researcher to assess blood donation awareness, motivations and barriers, and to identify commonly reported problems quickly. The questionnaire was designed in the Arabic language and made to be simple, brief and quick to complete. It was assessed for relevance and clarity before data collection, as well as not adapted from a previously validated questionnaire. To add, it was developed for a fast assessment of blood donation behaviour and barriers in the local population. An electronic version of the questionnaire was created using Google Forms and was accessed through a web link or QR code. The questionnaire contained 21 items, including conditional questions that could be skipped in paper forms or become visible in the online form only when relevant to the participant's previous answers. The questionnaire was organised into five domains:

- Sociodemographic and health characteristics,
- Previous blood donation experience,
- Blood donation awareness and information sources,
- Motivations and perceived barriers to blood donation,
- Willingness to participate in future campaigns and receive further contact.

Participants who agreed to further contact were given the option to provide a phone number and blood group for potential future donor recruitment. Although the questionnaire underwent expert review, formal validation and reliability testing were not performed. It is therefore treated as an exploratory instrument developed for this particular research.

### *Study Participants and Data Collection Procedures*

The study included Libyan nationals, aged 18-40 years, who were residing in Misurata City during the study period. Individuals who were not Libyan, did not reside in Misurata City, or were outside the specified age range were excluded. Eligibility for nationality and residence was verbally confirmed by researchers during field recruitment, whereas age was obtained privately through the questionnaire using predefined age categories to protect responder privacy. First, the questionnaire was distributed in paper and electronic formats. Starting with field recruitment using paper questionnaires in public areas and passive recruitment with QR-code posters displayed at selected public and private locations throughout Misurata city. But the QR-code strategy yielded only two responses, so recruitment from that point was changed to electronic field recruitment. Afterwards, on multiple occasions, members of the research team conducted field recruitment using the online link/QR-code in shops, pharmacies, parks, cafés, restaurants, mosques, parking areas, and other public and private settings. The online questionnaire link was also shared through family, neighbourhood, and community networks within Misurata city. A total of 105 paper responses and 205 online responses were received. Of the paper responses, nine were excluded because of missing data, leaving 96 valid paper questionnaires. Of the online responses, 34 indicated an age below 18 or above 40 years and were excluded during eligibility screening, leaving 171 online responses. The 96 valid paper questionnaires and 171 eligible online responses were combined, resulting in a final analytical sample of 267 participants (Figure 1).



**Figure 1. Participant Recruitment, Eligibility Assessment, and Derivation of the Final Analytical Sample**

### Data Analysis

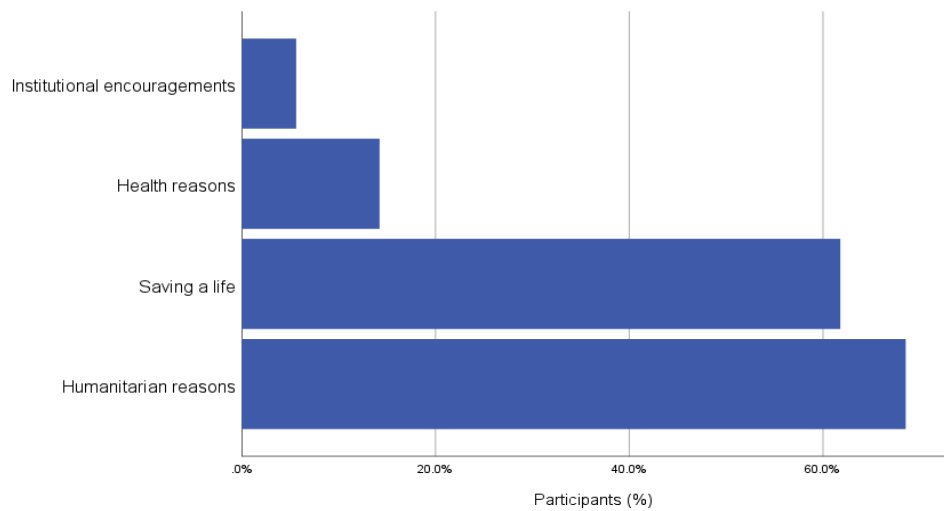
Statistical Package for the Social Sciences (SPSS) (version 27) was used. Categorical variables were summarised using frequencies and percentages. Because age and weight were collected in predefined categories, they were analysed as categorical variables rather than as continuous variables. Associations between categorical variables were assessed using the chi-square test. Monte Carlo significance was used when expected cell counts were insufficient to meet the assumptions of the chi-square test. Statistical significance was defined as a p-value of less than 0.05.

### Ethical Considerations

The study was approved by the Institutional Ethics Committee. Participation was voluntary, and consent was obtained before questionnaire completion. No identifying information was collected except for the phone number of participants who agreed to be contacted for future donation activities.

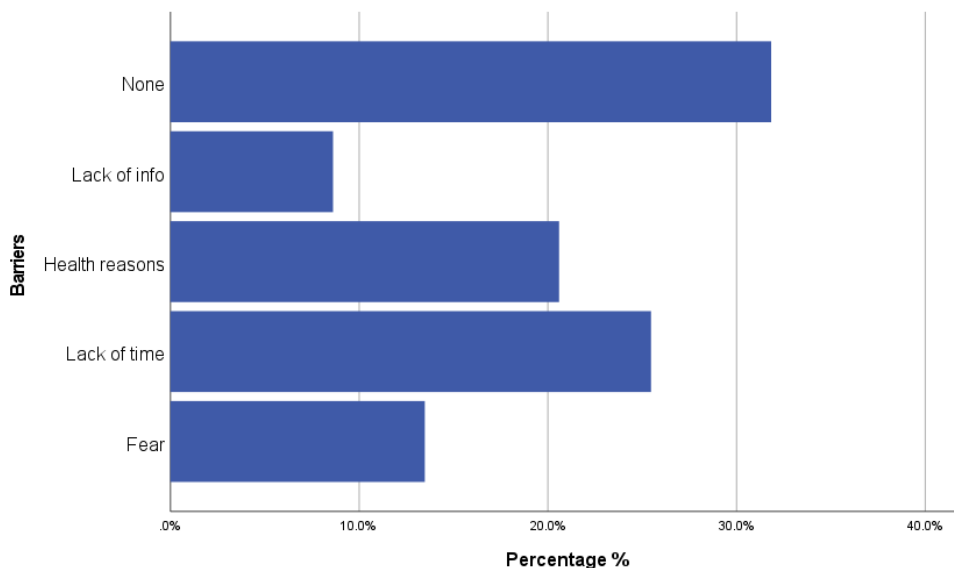
### Results

Among the final 267 participants in the study, most participants were male, 170 (63.7%), while the largest age group was 28–35 years, 83 (31.1%). More than half of the participants were employed, 140 (52.4%), and 112 (41.9%) reported having previously donated blood (Table 1). Significant associations were observed between previous blood donation status and age group, sex, and occupation. The association with age group was statistically significant,  $\chi^2(3) = 12.15$ ,  $p = 0.007$ . Similarly, statistically significant associations were observed with sex,  $\chi^2(1) = 50.98$ ,  $p < 0.001$ . And occupation,  $\chi^2(3) = 10.34$ ,  $p = 0.016$  (Table 1). The most common reported weight category was  $>70$  kg, comprising 173 (64.8%) participants. Weight category showed a statistically significant association with previous blood donation status,  $\chi^2(2) = 20.75$ , Monte Carlo  $p < 0.001$  (Table 1). Regarding health characteristics, 30 (11.2%) participants reported having a chronic disease, 46 (17.2%) reported regular medication use, and 23 (8.6%) reported undergoing surgery during the previous six months. Chronic disease showed no association with previous blood donation,  $\chi^2(1) = 0.39$ ,  $p = 0.53$ . Similarly, no statistically significant associations were observed for regular medication use,  $\chi^2(1) = 0.53$ ,  $p = 0.82$ , or recent surgery,  $\chi^2(1) = 1.37$ ,  $p = 0.24$  (Table 1). Only 30 (11.2%) participants of the study population reported having a chronic disease. Among these, eight (26.7%) reported diabetes mellitus type 1 or 2, while nine (30.0%) participants did not specify their condition (Table 2). Among the 112 (41.9%) participants who had previously donated blood, 82 (73.2%) reported their last donation was more than six months ago, and only nine (8.0%) previous donors reported experiencing complications following blood donation (Table 2). Most participants, 229 (85.8%), reported knowing that blood donation is safe and can save lives, whereas 36 (13.5%) reported awareness only to some extent and 2 (0.7%) reported no awareness (Table 3). Social media was the most frequently selected source of information, 137 (51.3%), followed by awareness campaigns, reported by 115 (43.1%). Respectively, the most frequently selected encouragement for blood donation was humanitarian responsibility, 183 (68.5%), followed by the motivation of saving a life, reported by 165 (61.8%) (Table 3 and Figure 2).



**Figure 2. Factors encouraging blood donation in the study population**

The most commonly reported barrier to blood donation was Lack of time, 68 (25.5%), followed by Health reasons, reported by 55 (20.6%) participants. Overall, the most frequently answered by the study population was no barriers to blood donation, reported by 85 (31.8%) participants (Table 4; Figure 3).



**Figure 3. Reported barriers to blood donation in the study population**

Regarding future participation, 113 (42.3%) participants agreed that they would participate in future blood donation campaigns, while 120 (44.9%) selected depends, and 34 (12.7%) refused. Among a total of 148 (55.4%) participants who agreed to future contact, only 73 (49.3%) participants provided a phone number and blood group (Table 4). Associations between future willingness to join donation campaigns and selected participant characteristics, previous donation history, awareness, and reported barriers were examined (Table 5). No statistically significant associations were identified between willingness to participate in future donation campaigns and previous donation history,  $\chi^2(2) = 3.35$ ,  $p = 0.19$ ; age group,  $\chi^2(6) = 5.22$ ,  $p = 0.51$ ; or sex,  $\chi^2(2) = 3.30$ ,  $p = 0.19$ . Also, awareness that blood donation is safe and saves lives was not significantly associated with future willingness,  $\chi^2(4) = 7.29$ , Monte Carlo  $p = 0.08$ . Similarly, no statistically significant association was observed between reported barriers and future willingness,  $\chi^2(8) = 9.50$ ,  $p = 0.30$  (Table 5).

**Table 1. Association between previous blood donation and basic characteristics of the study population**

| Variables                             | Study Population<br>N= 267 |             | Donated Blood<br>N= 112 (41.9%) | Never Donated<br>Blood<br>N= 155 (58.1%) | $\chi^2$ | p-<br>value  |
|---------------------------------------|----------------------------|-------------|---------------------------------|------------------------------------------|----------|--------------|
|                                       | n (%)                      |             | n (%)                           | n (%)                                    |          |              |
| General Characteristics               |                            |             |                                 |                                          |          |              |
| Age group                             | - 18-22 years              | 70 (26.2%)  | 17 (15.2%)                      | 53 (34.2%)                               | 12.15    | 0.007**      |
|                                       | - 23-27 years              | 69 (25.8%)  | 33 (29.5%)                      | 36 (23.2%)                               |          |              |
|                                       | - 28-35 years              | 83 (31.1%)  | 40 (35.7%)                      | 43 (27.7%)                               |          |              |
|                                       | - 36-40 years              | 45 (16.9%)  | 22 (19.6%)                      | 23 (14.8%)                               |          |              |
| Sex                                   | - Male                     | 170 (63.7%) | 99 (88.4%)                      | 71 (45.8%)                               | 50.98    | ><br>0.001** |
|                                       | - Female                   | 97 (36.3%)  | 13 (11.6%)                      | 84 (54.2%)                               |          |              |
| Occupation                            | - Student                  | 90 (33.7%)  | 29 (25.9%)                      | 61 (39.4%)                               | 10.34    | 0.016**      |
|                                       | - Employed                 | 140 (52.4%) | 65 (58.0%)                      | 75 (48.4%)                               |          |              |
|                                       | - Freelancer               | 22 (8.2%)   | 14 (12.5%)                      | 8 (5.2%)                                 |          |              |
|                                       | - Jobless                  | 15 (5.6%)   | 4 (3.6%)                        | 11 (7.1%)                                |          |              |
| Weight                                | - <50 kg                   | 6 (2.2%)    | 2 (1.8%)                        | 4 (2.6%)                                 | 20.75    | ><br>0.001‡  |
|                                       | - 50-70 kg                 | 88 (33.0%)  | 20 (17.9%)                      | 68 (43.9%)                               |          |              |
|                                       | - >70 kg                   | 173 (64.8%) | 90 (80.4%)                      | 83 (53.5%)                               |          |              |
| Chronic disease                       | - Yes                      | 30 (11.2%)  | 11 (9.8%)                       | 19 (12.3%)                               | 0.39     | 0.53         |
|                                       | - No                       | 237 (88.8%) | 101 (90.2%)                     | 136 (87.7%)                              |          |              |
| Regular medication                    | - Yes                      | 46 (17.2%)  | 20 (17.9%)                      | 26 (16.8%)                               | 0.53     | 0.82         |
|                                       | - No                       | 221 (82.8%) | 92 (82.1%)                      | 129 (83.2%)                              |          |              |
| Recent surgery<br>(previous 6 months) | - Yes                      | 23 (8.6%)   | 7 (6.3%)                        | 16 (10.3%)                               | 1.37     | 0.24         |
|                                       | - No                       | 244 (91.4%) | 105 (93.8%)                     | 139 (89.7%)                              |          |              |

†Monte Carlo estimate of exact significance was used because the expected cell assumptions of the Pearson chi-square test were not satisfied.

**Table 2. Responses to conditional questionnaire items**

| Participants reporting chronic disease                |                    | Study Population N= 30  |       |
|-------------------------------------------------------|--------------------|-------------------------|-------|
| Type of chronic disease                               | - Diabetes (1&2)   | 8                       | 26.7% |
|                                                       | - Asthma           | 4                       | 13.3% |
|                                                       | - Hypothyroidism   | 4                       | 13.3% |
|                                                       | - Other conditions | 5                       | 16.7% |
|                                                       | - Did not specify  | 9                       | 30%   |
| Previous blood donors                                 |                    | Study Population N= 112 |       |
| Time since last donation                              | - < 3months        | 15                      | 13.4% |
|                                                       | - 3-6months        | 15                      | 13.4% |
|                                                       | - > 6months        | 82                      | 73.2% |
| Reported complications<br>following previous donation | - Yes              | 9                       | 8%    |
|                                                       | - No               | 103                     | 92%   |

**Table 3. Blood donation awareness, sources of information, and factors encouraging donation**

| Variables                                                   |                                | Study Population N= 267 |       |
|-------------------------------------------------------------|--------------------------------|-------------------------|-------|
|                                                             |                                | n                       | %     |
| <b>Awareness</b>                                            |                                |                         |       |
| <b>Knows donation is safe &amp; saves lives?</b>            | - Yes                          | 229                     | 85.8% |
|                                                             | - To some extent               | 36                      | 13.5% |
|                                                             | - No                           | 2                       | 0.7%  |
| <b>Information*</b>                                         |                                |                         |       |
| <b>Selected source of information about blood donation?</b> | - Campaigns                    | 115                     | 43.1% |
|                                                             | - Social media                 | 137                     | 51.3% |
|                                                             | - Friends                      | 70                      | 26.2% |
|                                                             | - Medical staff                | 71                      | 26.6% |
| <b>Encouragements*</b>                                      |                                |                         |       |
| <b>Selected encouragements to donate blood?</b>             | - humanitarian responsibility  | 183                     | 68.5% |
|                                                             | - Saving a life                | 165                     | 61.8% |
|                                                             | - Health reasons               | 38                      | 14.2% |
|                                                             | - Institutional encouragements | 15                      | 5.6%  |

\* Participants could select more than one response; therefore, combined percentages may exceed 100%.

**Table 4. Barriers and future blood donation intentions in the study population**

| Variables                                                                |                                          | Study Population= 267 |       |
|--------------------------------------------------------------------------|------------------------------------------|-----------------------|-------|
|                                                                          |                                          | n                     | %     |
| <b>Barriers</b>                                                          |                                          |                       |       |
| <b>Barriers that stop you from donating?</b>                             | - Fear                                   | 36                    | 13.5% |
|                                                                          | - Lack of time                           | 68                    | 25.5% |
|                                                                          | - Health reasons                         | 55                    | 20.6% |
|                                                                          | - Lack of information                    | 23                    | 8.6%  |
|                                                                          | - None                                   | 85                    | 31.8% |
| <b>Future intentions</b>                                                 |                                          |                       |       |
| <b>Willingness to participate in future campaigns?</b>                   | - Yes                                    | 113                   | 42.3% |
|                                                                          | - Depends                                | 120                   | 44.9% |
|                                                                          | - No                                     | 34                    | 12.7% |
| <b>Agrees to future contact?</b>                                         | - Yes                                    | 148                   | 55.4% |
|                                                                          | - No                                     | 119                   | 44.6% |
| <b>Contact information among participants agreeing to future contact</b> | <b>(N= 148)</b>                          |                       |       |
|                                                                          | - Agreed but did not provide information | 75                    | 50.7% |
|                                                                          | - Provided phone number and blood group  | 73                    | 49.3% |

**Table 5. Association between different factors and willingness to participate in future blood donation campaigns in the study population**

| Variables                                     |               | Study Population<br>N= 267 | Willing<br>N= 113 | Depends<br>N= 120 | Not willing<br>N= 34 | $\chi^2$ | p-<br>value |
|-----------------------------------------------|---------------|----------------------------|-------------------|-------------------|----------------------|----------|-------------|
|                                               |               | n (%)                      | n (%)             | n (%)             | n (%)                |          |             |
| General Characteristics and previous donation |               |                            |                   |                   |                      |          |             |
| Previous<br>donation                          | - Yes         | 112 (41.9%)                | 53 (46.9%)        | 43 (35.8%)        | 16 (47.1%)           | 3.35     | 0.19        |
|                                               | - No          | 155 (58.1%)                | 60 (53.1%)        | 77 (64.2%)        | 18 (52.9%)           |          |             |
| Age Group                                     | - 18-22 years | 70 (26.2%)                 | 32 (28.3%)        | 32 (26.7%)        | 6 (17.6%)            | 5.22     | 0.51        |
|                                               | - 23-27 years | 69 (25.8%)                 | 24 (21.2%)        | 35 (29.2%)        | 10 (29.4%)           |          |             |
|                                               | - 28-35 years | 83 (31.1%)                 | 35 (31.0%)        | 34 (28.3%)        | 14 (41.2%)           |          |             |
|                                               | - 36-40 years | 45 (16.9%)                 | 22 (19.5%)        | 19 (15.8%)        | 4 (11.8%)            |          |             |
| Sex                                           | - Male        | 170 (63.7%)                | 78 (69.0%)        | 74 (61.7%)        | 18 (52.9%)           | 3.30     | 0.19        |

|                                       |                       |             |             |            |            |      |       |
|---------------------------------------|-----------------------|-------------|-------------|------------|------------|------|-------|
|                                       | - Female              | 97 (36.3%)  | 35 (31.0%)  | 46 (38.3%) | 16 (47.1%) |      |       |
| Awareness                             |                       |             |             |            |            |      |       |
| Blood donation is safe & saves lives. | - Yes                 | 229 (85.8%) | 103(91.2 %) | 96 (80.0%) | 30 (88.2%) | 7.29 | 0.08‡ |
|                                       | - To some extent      | 36 (13.5%)  | 10 (8.8%)   | 22 (18.3%) | 4 (11.8%)  |      |       |
|                                       | - No                  | 2 (0.7%)    | 0 (0%)      | 2 (1.7%)   | 0 (0%)     |      |       |
| Barriers                              |                       |             |             |            |            |      |       |
| Barriers that stop you from donating  | - Fear                | 36 (13.5%)  | 13 (11.5%)  | 19 (15.8%) | 4 (11.8%)  | 9.50 | 0.30  |
|                                       | - Lack of time        | 68 (25.5%)  | 31 (27.4%)  | 28 (23.3%) | 9 (26.5%)  |      |       |
|                                       | - Health reasons      | 55 (20.6%)  | 17 (15.0%)  | 29 (24.2%) | 9 (26.5%)  |      |       |
|                                       | - Lack of Information | 23 (8.6%)   | 11 (9.7%)   | 12 (10.0%) | 0 (0%)     |      |       |
|                                       | - None                | 85 (31.8%)  | 41 (36.3%)  | 32 (26.7%) | 12 (35.3%) |      |       |

†Monte Carlo estimate of exact significance was used because the expected cell assumptions of the Pearson chi-square test were not satisfied.

## Discussion

This study aimed to provide a fast community-based assessment of blood donation awareness, motivations, perceived barriers, previous donation experience, and future donation intentions among adults aged 18-40 years in Misurata. We found that although (41.9%) participants had previously donated blood, (73.2%) of previous donors reported that their most recent donation had occurred more than six months earlier. Our results show that general awareness of blood donation was high, with (85.8%) participants reporting that they knew blood donation was safe and could save lives. Social media was the most frequently reported source of information, while humanitarian responsibility and saving a life were the leading factors encouraging donation. At the same time, (68.2%) of participants reported at least one perceived barrier to donation, with lack of time being the most frequently reported barrier. Furthermore, previous donation history differed significantly according to age, sex, occupation, and weight category.

In contrast, previous donation history with age, sex, general awareness, and reported barriers were not significantly associated with willingness to participate in future donation campaigns. With all data taken together, this suggests that favourable awareness and humanitarian motivation are common in our study population, but they do not necessarily translate into recent or sustained donation behaviour. Yet, this theory needs to be discussed in greater detail. Although general awareness was high in our study, the questionnaire assessed whether participants knew that blood donation is safe and can save lives; it did not assess knowledge of eligibility criteria, donation intervals, contraindications or adverse effects. Goldsmith et al. similarly described relatively high awareness and receptivity among Libyan respondents while emphasising that knowing blood donation is beneficial does not necessarily result in actual donation behaviour [2]. This distinction is particularly relevant to our findings: despite 85.8% reporting general awareness, a considerable 96 participants still gave a conditional response, "Depends", regarding future participation. Overall, the proportion of previous donors in our study was consistent with previous Libyan findings.

Goldsmith et al. reported approximately 39% of blood donors in a multi-city Libyan survey, while Elzahaf et al. reported that 45.9% of participants in Derna had donated at least once [2,3]. A recent study on medical students in Syria similarly reported previous donation in 43.4% of participants, whereas lower rates have been reported among university populations in several other settings, including 29.0% of the students in Jazan, Saudi Arabia [5,6]. Differences between studies are likely to reflect variation in age, eligibility, recruitment methods, and whether participants were drawn from the general population or university settings. Nevertheless, the finding that more than half of our participants had never donated indicates that high potential remains for first-time donor recruitment in Misurata. Previous donation history in our study was significantly associated with age, sex, occupation, and weight category. The association with sex is particularly relevant in the Libyan context. The Derna study found that 95.4% of previous donors were male, while previous national work has described marked underrepresentation of women within the Libyan donor population [2,3].

More recent national research has identified a combination of health concerns, misconceptions regarding anaemia and eligibility, privacy, availability of female staff, and wider social factors as potential barriers to female participation [7]. Our findings therefore add local evidence that a sex difference in previous donation remains present in Misurata. However, sex was not significantly associated with future willingness in our analysis, suggesting that the lower previous donation rate among women may not necessarily reflect lower willingness to donate in the future. Although our analysis showed an observed association with weight, it should be interpreted more cautiously, as this relationship could partly reflect blood donation eligibility criteria rather than differences in willingness to donate. Our study showed social media was selected as a source of information by 137 (51.3%) participants, making it the most frequently reported in our study, followed by

awareness campaigns, selected by 115 (43.1%). This differs from older research in Pakistan, where family and friends were the predominant information source and social networks played a smaller direct role in blood donation information, despite widespread internet use [8]. However, our finding is consistent with more recent changes in Libya. The 2025 MENDAMI assessment reported a major shift toward digital communication, with 72.5% of surveyed respondents preferring social media, particularly Facebook and WhatsApp, for donation messaging [7]. This suggests that social media may now provide an important path for reaching potential young donors in Misurata.

However, exposure is not the same as knowledge. Therefore, Digital campaigns should be encouraged and prioritise delivering reliable, simple information about blood donation. Furthermore, the most frequent motivations identified in our study were predominantly altruistic. Humanitarian responsibility was selected by 183 (68.5%) participants and saving a life by 165 (61.8%). This pattern is consistent with both Libyan and international evidence. Goldsmith et al. identified altruism, community support, and charitable giving as important motivations among Libyan respondents. The recent MENDAMI assessment similarly found that saving lives and helping others were among the leading motivations reported in Libya [2,7]. These consistent findings suggest that donor recruitment campaigns in Misurata may benefit from portraying true examples of the immediate human impact of donation and its contribution to the community. At the same time, most participants in our study reported some form of barrier to donation. Lack of time was the most frequently selected barrier. The predominance of lack of time differs from the 2025 Libya-wide MENDAMI assessment, in which the leading reasons among never donors were never having considered donation, insufficient information, limited initiatives, and difficulty accessing donation centres, while lack of time was reported less frequently [7].

Differences in questionnaire structure, response options and sample size may explain this variation. In our population, lack of time could reflect competing work, study, or family obligations, the convenience and timing of donation opportunities, or other practical considerations; however, these mechanisms were not directly assessed and should be examined in future studies. Likewise, fear should not simply be attributed to low education. Previous Libyan research has documented fears involving infection, dizziness, weakness, adverse health effects, and misuse of donated blood [2,7]. Therefore, more detailed assessment is required to establish what participants in Misurata specifically mean when they identify fear as a barrier. An important finding was the apparent gap between favourable attitudes and sustained donation behaviour. Although 41.9% of participants had donated previously, nearly three-quarters of those donors reported that their most recent donation was more than six months earlier. This suggests that donor retention and re-engagement may be as important as first-time donor recruitment. The recent MENDAMI assessment similarly identified donor follow-up as a weakness in the Libyan system: only 37.6% of previous donors reported being re-contacted, although earlier Libyan data showed high willingness to donate again among donors who were contacted [7].

Systematic reminders through SMS, WhatsApp, or other communication channels after donors again become eligible may therefore represent a relatively simple strategy worth considering. Future willingness to participate in donation campaigns was not clearly explained by the factors examined in this study. Previous donation, age, sex, general awareness, and reported barriers were not significantly associated with future willingness. Awareness showed the closest association, but it remained statistically not significant. However, this does not mean that awareness or barriers are unimportant. Participants could answer “yes,” “no,” or “depends,” and the reasons behind a “depends” response were not explored. Factors such as time, location, convenience, or the circumstances of the blood request may influence this decision. Future studies should examine these factors in more detail to better understand what determines willingness to donate. This study has several strengths; it provides recent community-level data specifically from Misurata, and direct field recruitment across a range of public and private settings also allowed participation beyond a single university or healthcare institution. In addition, the study had a practical community component. Participants who were willing to be contacted for future donation activities could voluntarily provide their phone number and blood group. A total of 73 participants provided such information, creating a potential group of donors who could be contacted by local blood bank services when appropriate. Although this does not demonstrate that these individuals will ultimately donate, it represents a direct practical outcome of the study and shows how community-based research may contribute not only to understanding donor behaviour but also to supporting future donor recruitment. However, our findings should be interpreted with several limitations. Convenience sampling was used, and the final analytical sample of 267 participants was below the conventional target of 384; consequently, the sample cannot be considered statistically representative of all adults aged 18-40 years in Misurata.

In addition, Recruitment proved challenging, and passive QR-code recruitment generated almost no participation, resulting in our research team completely shifting to field recruitment and community networking. Individuals willing to participate in the survey may differ systematically from those who declined, introducing selection bias; Furthermore, the questionnaire was researcher-developed and underwent expert review but was not formally validated or assessed. The awareness component was limited and did not provide a comprehensive knowledge score. Data were self-reported and may therefore be affected by recall and social desirability bias. However, these limitations also identify clear directions for future research. A larger study using a validated knowledge, attitude, and practice instrument would allow for better assessment of donation behaviour in Misurata and identify the specific factors strongly related to donation.

Future studies could also explore poorly understood issues such as the meaning of fear, reasons underlying lack of time, and what participants mean when they answer “depends” regarding future donation. Previous Libyan qualitative research has also identified culturally relevant themes including Hijama and perceptions of female eligibility, which could be explored systematically rather than inferred from incidental comments [2,7]. Most importantly, future research should move beyond stated intention and prospectively examine whether specific interventions such as social media campaigns, workplace or university donation drives, clear eligibility education, and donor re-contact actually increase first-time and repeat voluntary donation. Finally, our findings indicate that the challenge in Misurata is unlikely to be a simple absence of positive attitudes toward blood donation. Participants generally recognised its life-saving value and expressed strong humanitarian motivations, yet more than half had never donated, and many previous donors had not donated recently. The go-to home message is that awareness should be paired with opportunities for action; for example, convenient and visible donation campaigns, direct calls to action, and systematic follow-up of eligible donors. Addressing the gap between knowing that blood donation is valuable and converting that knowledge into regular voluntary donation should be the main focus of future blood donation movements in Misurata.

## Conclusion

This study found high general awareness of the lifesaving role of blood donation and strong humanitarian motivation among adults aged 18-40 years in Misurata, yet more than half of participants had never donated, and most previous donors had not donated within the preceding six months. Previous donation was associated with age, sex, occupation, and weight, yet none of the selected factors examined was significantly associated with future willingness to participate in blood donation campaigns. These findings highlight a gap between the positive ideology of blood donation and actual sustained donation behaviour. Future work should combine reliable education with strong, accessible campaigns, digital outreach, and community involvement. Finally, future research should use validated instruments and more representative sampling to identify the specific factors that would convert willingness into regular voluntary blood donation.

## Conflicts of interest

There are no conflicts of interest.

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