Assessment of factors affecting willingness to blood donation among Hawassa town Population Southern, Ethiopia, 2020.

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Abstract

Background: Blood donation is a unique act to save the lives of people who face serious surgical and medical conditions. Since the request for blood supply is too high, there is a shortage of blood which causes significant morbidity and mortality. To increase blood supply and maintain adequate quantity of blood, regular and volunteer blood donation practice is needed. Ethiopia is one of the lowest annual donation rates which is 0.8/1000 population. This study assesses factors affecting willingness to donate blood among Hawassa town southern Population.

Objectives: To assess the factors affecting willingness to blood donation among Hawassa town population Southern, Ethiopia.

Methods: Community based cross-sectional study was conducted in Hawassa town in November 2020. A multi-stage sampling procedure was used to select study population. At Stage one, three Kebele are selected from total 32 Kebele, at stage two using systematical sampling method used to draw the total sample size, proportional to the population of each kebele and each study units are selected randomly from Each household. Data was collected using structured interviewer questionnaire. Data entered and analyzed using SPSS version 20.

Result: A total of 633 participants were included in the final analysis (response rate = 100%). Among which 212 (33.5%) was Female and 421 (66.5%) were Male. The mean age was 30.95 ±2.0 years. Among the study participants, 490 (77.4) are willing to donate blood in the future and 125 (22.9%) of them had blood donation practices in the past. The most prominent factors that affect willingness of participant for blood donation was, Unfit to donate, fear of needle prick and Not approached to donate (45.2%,38.5% and 11.7%) respectively. Majority of the respondents 382 (60.3%) reported that voluntary donor is the best source of safe blood. Desire to help other and age of study Participant age greater 25 years are significantly associated factor for increased willingness to blood donation (AOR 2.146 (0.028, 0.753) and (AOR = 1.8 (95% CI 1.1, 3.0) respectively.

Conclusion: Only minor proportion of the participants donate blood in the past, but Majority of the participant was willing to donate blood in the future. The major factors that participant not willing to donate blood are Unfit to donate, fear of needle prick and Not approached to donate. There is a need to improve awareness on who and when a person able to donate a blood and organizing campaign to increase awareness on important of blood donation for those who are willing to donate blood in the future, to create a pool of eligible blood donors.

Background

Blood is an essential element of human life and there are no substitutes for it (2). World Health Organization (WHO) proposes countries to focus on young people to achieve 100% non-remunerated voluntary blood donation by 2020 Dhingra (1). Donated blood can be life saving for individuals who have lost large volumes of blood from serious accidents, obstetric and gynecological hemorrhages, or surgery and stem cell transplant patients. as well as for individuals who have symptomatic anemia from medical or hematologic conditions or cancers. Therefore, blood is an important concern to the society. The use of these lifesaving products may be complicated by infectious and immunological diseases some of which could be life threatening (3). The blood donation is the only source of blood, but the recruitment of voluntary, non-remunerated donors is the most important challenge throughout the world (4). Blood is the heart of life and is one of the most precious donations. Blood services are facing shortage of blood all over the world. Demand for blood is rising worryingly and current blood donation is inadequate to meet the demand (5). The only source of blood is by blood donation (6). Universally, 80 million units of blood are donated each year, but only two million units are donated in sub-Saharan Africa where the need is very high (7). In sub-Saharan Africa (SSA), out of the estimated need of 18 million units of safe blood per year, purely about 15% were collected (8). Adequate and safe
blood supply has remained a challenge in developing countries like Ethiopia (9). In Ethiopia, there has been gross inadequacy and in equitability in access to blood.

The national requirement for blood in Ethiopia is between 80,000 and 120,000 units per year but only 43% is collected (10).

Blood banks have a duty to provide adequate and safe blood to the community. Generally, donors are classified as voluntary, family replacement remunerated or paid donors, and autonomous donors. The risk of transfusion transmissible diseases is highest with the use of blood procured from remunerated donors. A person who needs money is more likely to secrete his/her real state of health condition (3, 18). Many studies have been conducted to determine people's knowledge, attitude, and practice of blood donation. However, factors motivating or discouraging about blood donation is still in need of further investigation. Hence, this study was aimed to assess factors and blood donation practices among Hawassa town residents.

**Methods**

**Study design and study setting**

Community based cross-sectional study was conducted to assess the factors affecting the willingness to donate blood among adults in Hawassa town on November, 2020. Hawassa town is the capital city of southern nation nationality and people regional state and function as Sidama special zone. It is located 273Km from the capital of Ethiopia, Addis Ababa. According to the 2007 Census conducted by the central statistical agency (CSA) of Ethiopia reports Hawassa town has a total population of 376,539 out of which 187,517 are Male and 189,022 are females. A total of 76,845 Households were counted (8).

**Source and study population**

All adults aged 18 to 65 years residing in Hawassa town were the source population. Those adults who were selected by multi-stage sampling technique and lived in the study area for at least six months were included. Study participants who had serious illness during the data collection period and unable to hear were excluded from the study.

**Sample size determination**

The sample size (n) was calculated using formula for single population proportion:

\[ n = \frac{Z^2 \cdot \alpha/2 \times P \times (1-P)}{D^2} \]

and the following assumptions:

Since there is no similar community-based study on Willingness for non-remunerated blood donations a proportion of 50% were taken to obtain the maximum sample size. 95% confidence interval, 5% margin of error and 10% added for possible non-response during the actual survey. The total sample size with design effect of 1.5 was multiplied by the sample size calculated. \( n = \frac{Z^2 \cdot \alpha/2 \times P \times (1-P)}{D^2} = \frac{(1.96)^2 \cdot (0.5) \times (0.5)}{(0.05)^2} = 384 + 10\% = 633 \text{ Subjects} \)

**Sampling techniques**

Multi-stage sampling technique was used to recruit the study participants. At stage one, three kebele (the lowest administrative unit in Ethiopia) was selected from the total of 32 kebeles of the town by lottery method. At stage two, systematic random sampling technique was used to select households with proportional allocation to the size of the
kebeles population. Finally, lottery method was employed to select one study participant from households with more than one eligible individual (aged 18–65 years old). The selected houses were identified by the supervisors and data collectors few days before the actual data collection. If someone (study subject) was missed from the household during data collection period, revisit was done and interviewed.

Data collection

A pre-tested and structured Amharic version questionnaire was used to collect the data from study subjects via interviewing. The questionnaire was first prepared in English and then translate into Amharic and back to English by different individuals to check consistency and conceptual similarity among the survey teams. The questionnaire was pre-tested (with 10% of the sample size) before actual data collection in an area not included in the research.

Data quality control

To ensure the quality of data, two well-trained degree level supervisors were assigned to assist the data collectors. The investigator direct and monitors the whole data collection processes for consistency, completeness, and accuracy. Training of data collectors and supervisor, daily data checkup for completeness, and use of pretested tool were some of the quality assurance measures employed.

Data processing and analysis

The collected data were entered and analyzed using SPSS version 20. Binary logistic regression analysis was used to see the relationship between variables. Descriptive statistics was show results Crude and adjusted odds ratio with 95% confidence interval was calculated to assess the association between the dependent and independent variables. The level of statistical significance and final decision was determined based on a p value of less than 0.05, AOR at 95% confidence level.

Result

Socio-demographic characteristics of the respondents

A total of 633 participant were sampled and all are interviewed. From The total study participant 347 respondents are age greater than 25 years (mean age was 30.95 ± 2.0 years). Four hundred sixty-seven (73.8%) are married. Five hundred one (79.1%) of Respondents are educated (more than High school Education). Three hundred seventy-six 376 (60%) of the study participants were Orthodox religion followers, four hundred thirty-seven 437(69%) were government employee and one hundred forty-Eight 148 (23.4%) were Sidama in ethnicity (table 1).

Blood donation practices among study participants

In this study 633 respondents were responding for question to toward the willingness to donate blood, 77.4% are willing to donate blood Voluntarily in near future and the remaining 22.9% of respondent have at least one time life blood donation experiences.

Reasons for willing to donate blood.

Most of the respondents were motivated or willing to donate blood for the reason of desire to help other, especially when a recipient is family members 513(81%), considering that blood donation is lifesaving practices 82(13%) and
some of the participant need Momentary gain items 26(4.1%) such as, refreshments, recognition badges, certificates, and clothes (Table II).

**Reasons for non-willing to donate blood.**

The most commonly affecting factors for not willing to donate blood are Unfit to donate, fear of needle prick and not approached to donate were the leading factors (45.2%, 38.5% and 11.7%) respectively and Very few people avoid blood donation for lack of time (4.6%) as shown in. (Table III)

**Table-1**: Socio-demographic characteristics of the participants (n=633), Hawassa town, Ethiopia 2020.
| Variables               | Frequency | Percentage |
|-------------------------|-----------|------------|
| **Age (in years)**      |           |            |
| <25                     | 286       | 45.18      |
| >25                     | 347       | 54.82      |
| **Sex**                 |           |            |
| Female                  | 212       | 33.5       |
| Male                    | 421       | 66.5       |
| **Marital Status**      |           |            |
| Married                 | 467       | 73.8       |
| Not Married             | 166       | 26.2       |
| **Education**           |           |            |
| Educated                | 501       | 79.1       |
| Non-Educated            | 132       | 20.9       |
| **Religion**            |           |            |
| Orthodox                | 376       | 59.4       |
| Protestant              | 143       | 22.6       |
| Muslim                  | 81        | 12.8       |
| Catholic                | 33        | 5.2        |
| **Occupation**          |           |            |
| Merchant                | 155       | 24.5       |
| Daily Laborer           | 41        | 6.5        |
| Government Employee     | 437       | 69.0       |
| **Ethnicity**           |           |            |
| Sidama                  | 148       | 23.4       |
| Oromo                   | 130       | 20.5       |
| Gedo                    | 48        | 7.6        |
| Tigre                   | 77        | 12.2       |
| Amhara                  | 113       | 17.9       |
| Gurage                  | 32        | 5.1        |
| Silte                   | 14        | 2.2        |
| Wolyita                 | 65        | 10.9       |

Table 2: Reason to donate blood (n=633), Hawassa Ethiopia 2020.
| Reason for donating          | Frequency | Percentage |
|------------------------------|-----------|------------|
| Desire to help other         | 513       | 81         |
| Its Good Practices           | 12        | 1.9        |
| Momentary Gain               | 26        | 4.1        |
| Its Life Saving              | 82        | 13         |

Table 3: Reason for not donating blood (n=633), Hawassa Ethiopia 2020.

| Reason not donating          | Frequency | Percentage |
|------------------------------|-----------|------------|
| Not approached to donate     | 74        | 11.7       |
| Unfit to Donate              | 286       | 45.2       |
| Fear of Needle               | 244       | 38.5       |
| Lack of Time to Donate       | 29        | 4.6        |

1.4 Magnitude of blood donation experiences in relation of socio demographic characteristic

| VARIABLE          | DONATE n (145) | NOT DONATE, n (488) |
|-------------------|----------------|---------------------|
| SEX               |                |                     |
| MALE              | 14             | 370                 |
| FEMALE            | 10             | 239                 |
| AGE               |                |                     |
| <25               | 6              | 150                 |
| >25               | 31             | 446                 |
| RELIGION          |                |                     |
| ORTHODOX          | 15             | 192                 |
| PROTESTANT        | 14             | 100                 |
| MUSLIM            | 10             | 150                 |
| CATHOLIC          | 12             | 140                 |
| EDUCATION         |                |                     |
| NOT EDUCATED      | 15             | 150                 |
| EDUCATED          | 18             | 450                 |

Table 5: Output of Binary logistic regression analysis (n=633), Hawassa Ethiopia, 2020.
| Sex              | Male | 5 | 207 | 1.0 | Female | 3 | 418 | 3.37(0.8,14.2) * | 0.539(0.05,6.2) |
|------------------|------|---|-----|-----|--------|---|-----|-----------------|----------------|
| Age              | <25  | 100 | 205 | 1.0 | >25    | 43 | 285 | 6.1(1.75,49.89) * | 5.18 (0.6,46) ** |
| Marital Status   | Not Married | 5 | 161 | 1.0 | Married | 3 | 464 | 4.8(1.14,20.32) * | 1.27 (0.1, 15) |
| Ethnicity        | Sidama | 1 | 148 | 1.0 | Oromo   | 0 | 136 | 1.7 | 2.9 |
|                  | Gedeo | 6 | 48  | 1.7 | 1.977 |
|                  | Tigre | 20 | 77  | 1.7 | 1.731 |
|                  | Amhara | 13 | 110 | 0.25(0.025,2.41) | 0.2(0.025,2.1) |
| Perception to Ward Blood donation | Bad | 2 | 16 | 1.0 | Good | 6 | 609 | 12.687(2.375,67.77) * | 4.365(0.510,37.371) |
| Patient Family Should asked to donate | No | 6 | 570 | 1.0 | Yes | 2 | 55 | 1.289(0.057,1.46) * | 0.559 (0.073, 4.284) |
| Motivating Factors | Its life saving | 5 | 77 | 1.0 | Its good Practices | 0 | 12 | 9.321 | 1.977 |
|                  | Momentary Gain | 0 | 26 | 9.32 | 1.509 |
|                  | Desire to help other | 3 | 510 | 1.91(0.021,0.38) * | 2.03(0.028,0.7) ** |

COR, crude odds ratio, AOR, adjusted odds ratio  
*P-value < = 0.25, **P-value < 0.05

Discussion

In this study was assessed the willingness of blood donation and associated Factors among Hawassa town population, southern Ethiopia. Accordingly, only 22.9% respondents had ever donated blood in their life. Similarly, study conducted in Addis Ababa University health science students almost similar 23.5% &24% (19, 18) and this result somewhat lower than with the findings of institution based a cross-sectional study conducted among University of Gondar Hospital, Addis Ababa health Facilities and Saudi Army force hospital is 33.2%,32.6%,58.2%(12, 14, 15) and this study somewhat higher than studies done in Dhaka in Bangladesh and Nigeria and Madawalabu University.
Students Ethiopia, 16%, 15.3% and 18.4%, respectively (13, 7, 16). In this study 77.4% of the participant are willing to donate blood in the coming future time. In this study, somewhat higher than study conducted in Nigeria 73%, this difference may be due the study setting, sample size & differences in study population (17). This study revealed that Age greater than 25 years and Desire to help others, especially family member are Significant predictor variables for willingness to blood donation 54.8% and 81% Similarly, study conducted in Undergraduate Medical Students in Karachi and Nigeria, 55.4% and 88.3% (9, 21) respectively. This similarity may be due to the study participant demographic characteristic condition. This study revealed that reason for willingness to donate blood is helping family members or relatives, considering that its life saving, and very low proportion of the participant motivated by momentary gain (81%, 13% & 4.1%) respectively. Again, in this study unfit to donate, fear of needle prick and Not approached to do so are major conditions that respondent not willing to donate blood (45.2%, 3.8% & 11.7%) respectively (1, 20, 11).

**Conclusion**

Willingness to donate blood was mostly based on the primordial motivation of helping the patient in need which does not translate to blood donation. There is a need to improve awareness and advocacy on blood donation among Hawassa town population.

**Declarations**

**Competing interests**

The authors declare that they have no competing interests. Availability of data and materials Datasets will not be shared to protect the participants’ confidentiality.

**Authors’ contributions:** BG-wrote the proposal & drafted the paper, HD-participated in data collection YM- analyzed the data. All authors read and approved the final manuscript.

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**Ethics approval and consent to participate.**

The purposes and the importance of the study were explained by the data facilitator to the study participants and written informed consent was secured from each participant. Confidentiality was maintained at all levels of the study by keeping the data in secure places.

**Abbreviations**

AOR, Adjusted odds ratio; COR, Crude odds ratio; ERCS, Ethiopian Red Cross Society; MOH, Ministry of Health, NBTS, National blood Transfusion services, WHO, world health Organization, VBD, Voluntary blood Donation, CSA, Central statistical agency, SPSS: statistical package for social sciences.

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