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Assessment of beliefs and attitude towards blood donation among the population of Tumkur district: A cross sectional study

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Abstract

Background: Blood donation is crucial aspect of healthcare, ensuring steady supply of safe blood for medical treatments and emergencies. Understanding the beliefs, behaviors and opinions surrounding blood donation is essential for developing effective strategies to promote voluntary blood donation. This cross-sectional study aims to assess and analyze the factors influencing blood donation in Tumkur district of Karnataka, India.

Methodology: A cross-sectional community-based study was conducted in Tumkur district over a period of six months. A total of 1000 subjects were included of age 18–65 years from different communities and socioeconomic backgrounds. The structured questionnaire was asked on demographics, knowledge, misunderstandings, previous donation history, willingness and decision-making variables.

Results: The study found that while a majority (70%) of the participants were aware of the importance of blood donation, only small proportion (15%) had donated blood previously. Misconceptions and fear of needles were identified as key barriers to blood donation. Moreover, religious and cultural beliefs were observed to influence willingness to donate among certain communities. Younger age, higher education and positive experiences with blood donation drives were associated with an increased likelihood of future donation.

Conclusion: Religious and cultural sensitivities should be taken into account when designing donation campaigns in specific communities. Engaging educational institutions and community organizations could play a pivotal role in promoting positive attitude towards blood donation among the youth. It is imperative for healthcare authorities to collaborate with local leaders and stakeholders to develop effective strategies for increasing voluntary blood donation rates in Tumkur district.

Keywords: blood donation; beliefs; behaviors; opinions; Tumkur district

Introduction

Blood donation is a vital component of modern healthcare systems, serving as a lifeline for patients in need of blood transfusions due to accidents, surgeries, childbirth complications, and various medical conditions. Adequate and timely availability of safe blood is critical for saving lives and ensuring effective healthcare delivery. Despite its importance, many regions, including Tumkur district in Karnataka, India, face challenges in maintaining a sufficient and regular blood supply [1].

Tumkur district, with its diverse population and unique cultural aspects, is no exception to the global struggle of achieving adequate voluntary blood donation rates. According to the World Health Organization (WHO), blood donation by 1% of the population is generally

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considered sufficient to meet a nation's basic blood requirements. However, India falls significantly below this target, with a national blood donation rate of approximately 0.8% [1]. As of the last census in 2011, the district had a total population of approximately 26.8 lakh. Despite its proximity to Bangalore, the state's capital, Tumkur district faces unique challenges in healthcare infrastructure and access to medical services, particularly in rural areas [2].

Blood donation in India is primarily categorized into two types: voluntary blood donation and replacement blood donation. The former involves individuals willingly donating blood without any specific request, while the latter occurs when individuals donate blood to replace the blood used by a patient known to them, often in emergencies. While voluntary blood donation is considered the gold standard, replacement blood donation is more prevalent in certain regions, including Tumkur district [3, 4].

The Tumkur district blood bank, which serves as a pivotal source of blood supply, often grapples with seasonal shortages. Additionally, there is a significant gender disparity in blood donation, with men comprising the majority of donors. This discrepancy is influenced by societal norms, which often discourage women from donating blood due to cultural beliefs and misconceptions [5-7].

Several organizations and government initiatives have been established to promote voluntary blood donation across India. The National AIDS Control Organization (NACO) and the Indian Red Cross Society are key stakeholders involved in blood donation drives and awareness campaigns. However, the impact of these efforts on the blood donation patterns in Tumkur district requires careful assessment and analysis to develop region-specific strategies [1, 8].

Factors such as lack of awareness, fear of needles, misconceptions about the donation process, religious beliefs and mistrust in healthcare systems can hinder voluntary blood donation. Understanding the beliefs, behaviors and opinions of the local population regarding blood donation is crucial for developing targeted strategies to encourage regular and voluntary blood donations [5, 6].

This study aims to contribute to the existing knowledge on blood donation by examining the beliefs, behaviors, and opinions of the population in Tumkur district. The findings will provide valuable insights into the factors influencing blood donation rates and identify potential barriers that need to be addressed to enhance voluntary blood donation in the region.

Materials and methods

This is a cross-sectional community based study which was conducted in Tumkur district, including both urban and rural areas, over a period of six months to ensure sufficient time for data collection, analysis and reporting from July 2022 to December 2022. The study used multistage sampling technique to obtain a representative sample of the population. This technique included division of the district into rural and urban areas, followed by random sampling done to select few wards and finally, the selection of households. The individuals selected from each household were invited to participate in the study. A total of 1000 subjects were included in the study, including the individuals aged between 18 and 65 years and those residing in Tumkur district for at least six months. Individuals with a history of medical diseases/ interventions that defer permanent/ temporary blood donation and individuals who have received blood transfusions in the past six months were excluded from the study. A structured and pre-tested questionnaire was developed, including demographic information, awareness about blood donation, previous donation history, misconceptions, willingness to donate, and factors influencing the decision. Ethical clearance was obtained from the Institutional Ethics Committee before initiating the study. Trained interviewers were selected to collect the data from eligible participants and informed consent was obtained from all participants.

Statistical analysis was done by entering the data into a secure electronic database. Data analysis was performed using R statistical software (Version 4.1.1). Descriptive statistics was applied to summarize demographic characteristics, awareness levels and other variables of interest. Chi-square test or Fisher's exact test was used to assess the association between variables. A p-value < 0.05 was considered as statistically significant.

Results

The findings revealed diverse sample composition among young adults, with age groups ranging from 18 to 30 years. The majority of participants fell within the 21-25 years age category (45%), followed by those in the 18-20 years group (30%), and the 26-30 years category (15%) (p value- 0.0017). In terms of gender distribution, the study showed a nearly equal representation of males (55%) and females (45%) (p value- 0.701). Regarding educational attainment, a substantial proportion of the respondents were undergraduates (80%), while the remaining 20% had attained postgraduate degrees (p value- 0.001). The participants who were unable to read or write were not included in the study. The socioeconomic status of the participants varied

according to Kuppuswamy socio-economic scale, with 50% falling into the middle-income bracket, 30% in the lower-income category, and 20% in the upper-income group (p value 0.001) (Table 1).

Table 1: Demographic information of participants.

Demographic characteristic	*Categories*	*Frequency*	*Percentage*	*p value*
Age group	18-20 years	300	30%	0.0017
	21-25 years	450	45%	
	26-40 years	150	15%	
	40-65 years	00	0 %	
Gender	Male	550	55%	0.701
	Female	450	45%	
Education level	Undergraduate	800	80%	0.001
	Postgraduate	200	20%	
Socioeconomic status	Lower	300	30%	0.001
	Middle	500	50%	
	Upper	200	20%	

Beliefs and attitude towards blood donation was assessed in our study. The findings reflected positive attitude towards blood donation among the respondents. A significant majority of participants expressed strong agreement that blood donation was important (72.6%) and that it saves lives (83.4%), underscoring a widespread recognition of its significance in healthcare. However, a notable portion of respondents indicated concerns related to the process, with a considerable percentage reporting fear of needles or hospitals (32.5%) and a significant portion remaining neutral (39%) on this matter (p value- 0.001). Nevertheless, a substantial majority displayed trust in the blood donation process (69%), implying confidence in its safety and effectiveness, which was further supported by the high agreement that blood donation is safe (78.2%) (Table 2).

Table 2: Beliefs and attitudes towards blood donation.

Belief/Attitude	*Agree*	*Neutral*	*Disagree*
Blood donation is important	726 (72.6%)	168 (16.8%)	106 (10.6%)
Blood donation saves lives	834 (83.4%)	112 (11.2%)	54 (5.4%)
Fear of needles/ hospitals	325 (32.5%)	390 (39.0%)	285 (28.5%)
Trust in blood donation process	690 (69.0%)	234 (23.4%)	76 (7.6%)
Blood donation is safe	782 (78.2%)	124 (12.4%)	94 (9.4%)

The present study highlighted on the behaviour and attitudes of the respondents towards blood donation. Approximately one-third of the participants reported having donated blood (35%), while a significant majority had not (65%). A smaller fraction engaged in regular blood donation (12%) (p value- 0.001). The reasons for not donating blood varied, with the most common factors being lack of awareness (38%) and fear of needles (23%), followed by medical reasons and time constraints, each at 15%. A smaller portion cited other reasons (9%), including myths about donation, smoking and alcohol consumption etc. It was encouraging to note that a substantial proportion of respondents were aware of blood donation camps (80%), suggesting that awareness campaigns have been effective. Furthermore, there was positive inclination towards future blood donation, as 75% expressed willingness to donate, with 40% being very willing, 35% somewhat willing, and only 10% not willing (p value- 0.001) (Table 3).

In the present study, the results highlighted varying levels of knowledge among the respondents regarding key aspects of blood donation. While a significant majority demonstrated a good understanding of certain aspects, such as the recommended blood donation interval in months (60%) and age eligibility for donation in years (70%), there were areas of relative uncertainty. For instance, only 45% of respondents accurately identified the blood types compatible for donation, indicating room for improvement in this aspect of knowledge. Similarly, a notable portion of participants were unsure about the importance of hydration before donation (15%) and whether it's possible to donate with minor illnesses (25%) (p value 0.021) (Table 4).

Table 3: Behaviours related to blood donation.

Behaviour	*Categories*	*Frequency*	*Percentage*	*p value*
Ever donated blood	Yes	350	35%	0.03
	No	650	65%	
Regular blood donation	Yes	120	12%	0.002
	No	880	88%	
Reasons for not donating	Lack of awareness	250	38%	
	Fear of needles	150	23%	
	Medical reasons	100	15%	0.001
	Time constraints	100	15%	
	Other	50	9%	
Awareness of donation camps	Yes	800	80%	0.021
	No	200	20%	
Willingness to donate in future	Very willing	400	40%	
	Somewhat willing	350	35%	0.001
	Not sure	150	15%	
	Not willing	100	10%	

Table 4: Knowledge about blood donation.

Knowledge aspect	*Correct*	*Incorrect*	*Not sure*
Blood donation interval (months)	600 (60.0%)	200 (20.0%)	200 (20.0%)
Blood types compatible for donation	450 (45.0%)	300 (30.0%)	250 (25.0%)
Age eligibility for donation (years)	700 (70.0%)	100 (10.0%)	200 (20.0%)
Importance of hydration before donation	750 (75.0%)	100 (10.0%)	150 (15.0%)
Can you donate with minor illnesses?	400 (40.0%)	350 (35.0%)	250 (25.0%)

The sources of information for blood donation among the respondents varied, with friends and family being the most prevalent (45%), indicating the significant influence of personal networks in promoting donation awareness. Social media platforms played a substantial role as well, with 20% of individuals relying on these digital channels for information. College or university settings also contributed significantly, serving as an information source for 25% of respondents, possibly through awareness campaigns on campuses. However, the influence of medical professionals and blood donation camps appeared relatively limited, each accounting for 5% of the information sources (Table 5).

Table 5: Sources of information about blood donation.

Information source	*Percentage*
Friends/ Family	45%
Social media	20%
College/ University	25%
Medical professionals	5%
Blood donation camps	5%

The results of the present study showed that there were number of factors that were strongly linked to people's willingness to donate blood. Different age groups were very different in how willing they were to donate. People between the ages of 18 and 20 were the most likely to agree. The gender of the donor did not have a big effect on their choice of donation. Practice of donation among undergraduates was more compared to Postgraduate students. A lot of different types of people from different social classes had very different donation rates. Donation camps were more likely to be used again by people who knew about them.

Discussion

The administration of blood transfusions is a crucial component in the therapeutic management of a diverse array of medical conditions. The research employed various methodologies and targeting the general public. Multiple studies have indicated that blood donation has significant therapeutic significance in saving numerous lives [9, 10].

The success of blood donation is influenced by various aspects, with people's knowledge and attitude being identified as significant influencers [11]. According to a study conducted by Arage et al., the practice of voluntary blood donation is influenced by characteristics such as a strong information base and a positive attitude towards blood donation [12]. Need for safe blood is mostly attributed to the rising prevalence of chronic blood-related conditions, such as various surgical interventions, unforeseen accidents, problems during pregnancy, and cases of anemia [9, 13]. This can be correlated with our study which showed that majority of the donations were denied due to lack of awareness and medical conditions.

Hossain et al. 2021 study, revealed that a majority of the participants, namely more than 90%, belonged to the demographic of students, individuals who do not engage in smoking, and were between the age ranges of

18 to 30 years. This was in concordance with our study which showed 100% donation from undergraduate and postgraduate students between age range of 18-40 years. The vast majority of participants (92%) reported no prior history of blood donation, despite the fact that more than 42% expressed a desire to become regular blood donors [14, 15]. Similarly, in our study 65% participants had never donated blood and 40 % expressed willingness to donate in future.

Insufficient awareness regarding blood donation has emerged as a significant issue consistently highlighted in numerous researches undertaken on a global scale [16, 17]. According to a study conducted by Arage et al., the practice of voluntary body donation is influenced by characteristics such as a strong understanding and favorable disposition towards body donation [12]. Hossain et al. also reported the primary factors contributing to individuals' decision not to donate blood were found to be a lack of awareness (40%), limited opportunities (20%), concerns over potential health risks (21%), fear of needles (16%), and the absence of any perceived financial incentives (6%) [14]. Concordantly, our study also showed lack of awareness (38%), followed by fear of needles (23%) as the major reasons for not donating blood.

Anand et al. revealed that a significant proportion of the study participants, specifically 45%, demonstrated a commendable level of knowledge regarding blood donation [15]. Syed et al. study revealed a significant majority of the participants, specifically 364 individuals (equivalent to 93.1% of the sample), expressed their belief in the crucial role of blood donation as a responsibility that should be upheld by every person [18]. Dubey et al. identified the barriers encompassed the lack of opportunities to engage in donation activities and concerns regarding potential adverse health effects associated with the act [19]. Two other studies found that health concerns, feeling sick, discomfort, complications, lack of awareness, incorrect beliefs, and religious traditions were common barriers [20, 21]. A study conducted in Ethiopia revealed that a deficiency in understanding the significance of blood donation emerged as a determinant that could potentially impact the inclination to donate blood [22]. In comparison, in our study, even though 72.6% participants were aware that blood donation is important and 83.4% were aware that it saves lives, yet less number of participants (69%) trusted that donation process is safe.

Studies conducted by Abdurrahman et al [2] and others [19, 24] found that a significant majority of participants (61.2%) expressed selfless motives as their primary aim for engaging in donation activities. Many research studies conducted revealed that a majority of the participants have an adequate level of knowledge pertaining to the subject of blood donation [25-27]. The results reveal that people obtain blood donation information from many sources, including personal networks, digital platforms, and educational institutions [28]. The studies conducted in India [28] and Italy [29] revealed that individuals primarily relied on friends and television as their primary sources of information regarding blood donation. Social media and networks might have a significant impact in facilitating the promotion of blood donation. Similarly, our study also showed that major sources of information were family/friends (45%) and social media (20%).

Recommendations: To encourage blood donation, thorough education and awareness efforts should clarify misunderstandings, emphasize the value of blood donation, and highlight safeguards. Mobile blood donation equipment should also be installed to make blood donation easy for the needy. Collaboration with healthcare providers can help people perceive blood donation as a social responsibility. To overcome cultural barriers, cooperation with cultural and religious leaders and respect for local norms are necessary. Modernizing and expanding high-safety blood collection facilities strengthens the donation infrastructure.

Limitations of our study include the sampling bias that the study participants may not represent the entire population as the participants who were unable to read or write were not included in the study. In addition, the study participants might have provided the socially acceptable responses rather than true beliefs or behaviors.

Conclusion

This cross-sectional community-based study in Tumkur District has uncovered a promising landscape of positive beliefs and attitudes towards blood donation, highlighting its importance in healthcare. However, there is a significant gap between these positive attitudes and actual behaviors, with a relatively low percentage of regular blood donors. To bridge this gap, it is imperative to launch comprehensive education and awareness campaigns, establish mobile blood donation units to enhance accessibility, engage local communities, religious institutions, and healthcare providers, and address cultural beliefs and stigmas associated with blood donation. Moreover, improving and expanding blood collection facilities, ensuring safety and hygiene standards, and collaborating with cultural and religious leaders are vital steps towards fostering a culture of regular blood donation in Tumkur District.

Conflicts of interest

Authors declare no conflicts of interest.

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