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Original Article

AWARENESS AND WILLINGNESS TOWARDS VOLUNTARY BLOOD DONATION AMONG PATIENT ATTENDERS IN A RURAL TERTIARY CARE HOSPITAL: A SEMI QUANTITATIVE STUDY

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ABSTRACT

Objective: Voluntary blood donation (VBD) is essential for a safe and sustainable blood supply. In India, blood is classified as a drug under the Drugs and Cosmetics Act, 1940, making its quality and safety a critical public health and regulatory responsibility. Evidence on blood donation knowledge, attitudes, and practices in rural populations is limited, underscoring the need to address this gap.

Methods: A mixed-method study was conducted over a period of one year at a rural tertiary care hospital. Quantitative data were collected from 150 patient attenders through random sampling using pretested validated questionnaire. Two in-depth focus group discussions were conducted as qualitative interviews to generate themes to explore underlying motivations, fears, and barriers. Descriptive statistics and thematic analysis were used to interpret findings of recorded data.

Results: Awareness of voluntary blood donation was high (88.7%); however, knowledge of donor eligibility criteria was limited. Although majority considered blood donation a moral duty (92.7%), only 26% had ever donated. Key barriers included misconception of having insufficient blood, fear of needles, and poor access to blood banks (85.3%). Qualitative findings revealed the influence of family approval and persistent misconceptions. Willingness to donate if incentives were offered was also noted, highlighting need for community-based awareness programmes.

Conclusion: A significant attitude–practice gap exists in rural communities pertaining to voluntary blood donation. Presence of awareness and positive perceptions do not consistently translate into donation behavior. A comprehensive, community-centered approach combining education, accessibility, reassurance, and positive donor engagement is therefore essential to improve and sustain voluntary blood donation practices in rural settings.

Keywords: Blood donation, Hospital, Patient participation, Knowledge

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INTRODUCTION

In India, blood is legally classified as a "drug" under the Drugs and Cosmetics Act, 1940 and is regulated accordingly to ensure its safety, quality, and proper distribution. Though blood units are crucial in saving lives, recruiting suitable donors particularly for voluntary blood donation remains a challenge in both developed and developing countries with the difficulty being even greater in rural communities [1, 2]. Safe blood requirements and shortages are still critical problems in many developing countries including India [3]. The World Health Organization recommends that at least 1% of the population should donate blood to meet the country's essential blood requirement [4]. Despite technological advancements there remains no alternative or ideal substitute to blood, hence the human blood donated is currently the sole option for replacement of blood and its various components [1]. Voluntary non–remunerated blood donors are the safest source of blood and research suggests that people are more likely to donate voluntarily if they are sufficiently motivated or incentivized [5]. Blood donation is a remarkably safe medical procedure; however, it is a complex phenomenon affected by attitudes, beliefs, and knowledge levels of people [2]. Despite increased awareness efforts, voluntary blood donation rates remain deficient and replacement donation continues to dominate [5].

Patient attenders represent a unique and relatively underexplored population in studies assessing awareness of blood donation. Unlike general community, patient attenders are directly exposed to hospital environments and often witness firsthand the critical need for blood transfusion in emergency, surgical, obstetric, and critical care settings. Their emotional proximity to illness and personal experience with healthcare services may influence their perceptions, attitudes, and willingness toward voluntary blood donation. Despite this potential, limited research has specifically focused on evaluating awareness levels among this group. By targeting patient attenders, the present study aims to explore an important yet underutilized segment that could serve as a valuable pool for promoting voluntary blood donation through hospital-based awareness strategies. This focus constitutes the novel contribution of our study. In such contexts, patient attenders-those accompanying or caring for patients-represent a unique group with potential to become voluntary blood donors and have received limited attention in voluntary blood donation research.

MATERIALS AND METHODS

A mixed-method study was conducted in a rural region of Karnataka at a tertiary care hospital from June to December 2025. Inclusion Criteria-Patient attenders aged between 18 and 60 y staying for more than eight hours a day at the hospital and who willingly provided informed consent to participate. Exclusion criteria – Patient attenders who were just visitors to see patients and those aged above 60 y or below 18 y. For the quantitative component, the sample size was

calculated using the formula $n = \left(\frac{Z\alpha}{2}\right) 2pq \frac{}{d2}$ where n represents sample size, Zα/2 = critical value of the normal distribution, p = prevalence, q = 100-p, d =10% of p. Based on these parameters, a total of 150 participants were included in the quantitative survey.

For quantitative study, a pre-designed semi structured questionnaire was prepared which included three sections. The first section was to assess knowledge, second to assess attitude towards voluntary blood donation (VBD) and third on practices regarding VBD questionnaire. The questionnaire was validated independently by two experts in blood banking and had a content validity index of 0.98. Data was collected by the principal investigator by interacting with patient attenders.

For the qualitative study, three focus group discussions (FGDs) were conducted, each comprising eight participants selected from various wards to capture diverse perspectives. Participants with similar baseline educational status and age were recruited. Prior to discussions, a comprehensive review guide was developed to streamline conversation and ensure consistency. Principal investigator served as moderator, leading discussions with patient attenders who had willingly consented to participate. During each session, moderator introduced himself, gave a summary about the need of study and obtained consent. Using interview guide questions, responses generated were documented both in written form and through audio recording. Since the FGD was in Kannada, the local language, the audio recording was transcribed into Kannada first and then translated verbatim into English. The transcription and translation were done by a person fluent in both Kannada and English Analysis was done in six steps as per the Braun and Clarke method. The first stage comprised getting familiarized with the data by careful and repeated reviewing of recorded responses and transcripts. Significant information was then combined to generate codes in the second stage. Coding was performed using the software – Notebook LM. Discrepancies were resolved by mutual discussion. Codes were framed in a language of understanding closest to the participants' responses. In the fourth stage, the themes were further reviewed to rule out redundancy and for refinement. Fifth and the sixth stage comprised of defining the codes and interpretation of results respectively. In the next step, codes with similar meaning were clustered together to synthesize themes. The themes were labeled to ensure that they were appropriate and comprehensive in describing data. Institutional ethical committee approval was taken before undertaking of the study (Letter no: CDSIMER/MR/0061/IEC/2026). No artificial intelligence (AI) or AI-assisted tools were used in the writing, data analysis, or creation of fig. for this manuscript.

RESULTS

In the quantitative study comprising of 150 participants, male participants formed the majority (62%), with 38% being females. Majority were in the age group of 25-34 y (40%), followed by 35-44 y (28.6%). Secondary school education was the most common educational status (27.3%), with 8% of participants being categorized as illiterate.

Half of the respondents (50%) were aware about their own blood group. Awareness regarding the existence of voluntary blood donation was high (88.7%). A large majority of participants (95.3%) were aware about the eligibility of women to donate blood. However, 40.6% of respondents incorrectly believed that a pregnant woman can donate blood. Around 50.6% of respondents were aware about the age limits for donation and 54.6% knew the minimum weight required. With respect to donation frequency, 61.4% of participants were aware of the recommended blood donation interval, whereas 38.6% lacked this awareness. An overwhelming 88% correctly disagreed with the belief that blood can be produced artificially in an emergency [table 1].

Table 1: Knowledge about voluntary blood donation among participants

S. No.	Questions	Responses	Frequency	Percentage (%) *
1	Do you know your blood group?	Yes	75	50.0
		No	75	50.0
2	Are you aware about existence of voluntary blood donation?	Yes	133	88.7
		No	17	11.3
3	Can a woman donate blood?	Yes	143	95.3
		No	7	4.7
4	Can a pregnant woman donate blood?	Yes	61	40.6
		No	89	59.4
5	Do you know about the existence of age limits for blood donation?	Yes	76	50.6
		No	74	49.4
6	Do you know the minimum weight required for blood donation?	Yes	82	54.6
		No	68	45.4
7	Do you know how frequently a person can donate blood?	Yes	92	61.4
		No	58	38.6
8	Do you know a place where you can donate blood voluntarily?	Yes	131	87.4
		No	19	12.6
9	Do you know the volume of blood drawn during blood donation	Yes	52	34.6
		No	98	65.4
10	Do you believe blood can be produced artificially in emergency situations?	Yes	18	12.0
		No	132	88.0

*Percentages may not total 100 due to rounding. Q4-Pregnant women are typically deferred from blood donation

Regarding attitude, 53.3% of respondents were unwilling to donate blood voluntarily. A large majority (68.7%) disagreed that the idea of donating blood made them feel anxious or afraid. Almost all respondents (92.7%) believed donating blood is a moral and social responsibility. Also, 88% agreed that seeing someone benefit from a transfusion increased their willingness to donate. A strong consensus (88.7%) was observed stating that more awareness programs should be conducted in rural areas. If regular camps were held in rural areas, 71.3% indicated they would attend and donate blood. Most respondents (72%) trusted the hospital to conduct safe and hygienic donation procedures. A large percentage (85.3%) stated they would donate more often if transportation to the donation center was more convenient [table 2].

In terms of practice, 74% of respondents had never donated blood voluntarily in the past. Among those who had donated, 37% had donated twice, and 32.5% had donated more than thrice. The main motive for willingness to donate was 'To save life' (78.3%). Most willing donors (82.6%) preferred to donate for 'anyone in need'. The primary reason for unwillingness to donate was assumption of 'Not having enough blood' (35.8%) (table 3)

Table 2: Attitude of participants regarding voluntary blood donation

S. No.	Questions	Strongly disagree*	Disagree*	Neutral*	Agree*	Strongly agree*
1	I am willing to donate blood voluntarily	-	80(53.3%)	-	70(46.7%)	-
2	The idea of donating blood makes me feel anxious/afraid	3(2%)	103(68.7%)	8(5.3%)	34(22.7%)	2(1.3%)
3	I would encourage my family and friends to donate blood voluntarily	1(0.7%)	1(0.7%)	16(10.7%)	130 (86.7%)	2(1.3%)
4	There should be more awareness programs in rural areas about blood donation.	-	2(1.3%)	10(6.7%)	133 (88.7%)	5(3.3%)
5	I trust the hospital to conduct safe and hygienic blood donation procedures.	-	1(0.7%)	40(26.7%)	108(72%)	1(0.7%)
6	If there were regular camps in rural areas, I would attend and donate blood.	-	21(14%)	20(13.4)	107(71.3%)	2(1.3%)
7	Providing incentives can positively influence people's attitude towards voluntary blood donation.	-	73(48.7%)	11(7.3%)	65(43.3%)	1(0.7%)
8	I believe donating blood is a moral and social responsibility.	-	-	10(6.7%)	139(92.7%)	1(0.7%)
9	Seeing someone benefit from a transfusion increases my willingness to donate	-	3(2%)	13(8.7%)	132(88.0%)	2(1.3%)
10	I would donate more often if transportation to the donation centre was more convenient.	-	7(4.7%)	14(9.3%)	128(85.3%)	1(0.7%)

*Percentages may not total 100 due to rounding. Responses were measured on a 5-point Likert scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

Table 3: Practices of participants towards voluntary blood donation

S. No.	Questions		Frequency	Percentage (%)*
1	Have you ever tested your blood for hemoglobin? **	Yes	92	61.5
		No	58	38.5
2	What would be your main motive to donate blood? **	Service to society	48	20.3
		To save life	98	78.3
		To get paid	04	01.4
3	To whom would you prefer to donate your blood? **	For anyone in need	97	82.6
		Relatives	50	14.5
		Friends	03	02.9
4	Have you ever donated blood voluntarily in the past?**	Yes	39	26.0
		No	111	74.0
4A	If donated, how many times you donated blood voluntarily?n=39	Once	11	30.0
		Twice	15	37.0
		>Thrice	13	32.5
4B	If you have not donated blood till date what is the main reason? *"^b^ n=111	Fear of needle/pain	13	11.7
		Never asked to donate	7	6.3
		Fear of becoming anemic	28	25.2
		Not having enough blood	36	32.4
		Fear of weight loss	2	1.8
		Desire to donate in future	15	13.5
		Fear of getting infections	9	8.1
		Wanted to be paid for donation	1	0.9

*Percentages may not total 100 due to rounding *"^b^ Multiple responses were not permitted; ** Answered by all participants (n=150)

Table 4: Themes generated regarding voluntary blood donation

Theme	Theme definition	Representative codes
Awareness and communication strategies	Need for structured and targeted awareness programmes, particularly for younger populations.	Visual media more effective than talks; witnessing benefits of donation inspires participation; inclusion of blood donation education in schools and colleges; greater youth engagement through digital platforms.
Incentives and donor recognition	Recognition and practical benefits that motivate repeat and sustained donation.	Provision of certificates or digital badges; prioritization of previous donors for future blood needs; organization of regular rural donation camps.
Role of healthcare providers	Active involvement of doctors and nurses in motivating and sustaining voluntary donors.	Healthcare staff encouraging voluntary donation; creation of donor databases for prioritization; nurses leading community-based awareness activities.
Visual and digital communication	Use of simple, engaging, and pictorial messaging to counter myths and improve reach.	Use of infographics, videos, and social media; messaging on rapid blood recovery and life-saving impact; keeping campaigns simple and engaging.
Peer and social influence	Influence of family, friends, and shared experiences on donation decisions.	Encouragement from friends and family; motivation through observing others benefit from donation.

*Themes and codes were generated from three focus group discussions (FGDs) with a total of 24 participants."

Qualitative analysis

The qualitative study generated related codes and themes regarding perceptions and practice of voluntary blood donation. Altruistic Motivation, driven by desire to save lives and fulfill a social duty, was a key theme for donation. Emotional Gratification, including feeling proud and gaining self-worth, was also a motive. Habitual and Health-Based Motivation included repeat donations and belief

that the act is good for health. Barriers fell under fear and misbelief that blood does not regenerate post donation. Social and Gender Barriers involved family members or peers discouraging participation particularly of women. Lack of awareness and knowledge included confusion about recovery time and not knowing age or weight requirements. Improvement points focused on enhanced communication strategies and suggested pictorial/video communication being effective than lectures. Incentives and recognition for donors, such as giving certificates or digital badges, were recommended. The role of healthcare providers was perceived as critical, requiring staff to actively promote voluntary donation and hospitals to build donor databases. Finally, peer and social influence played a significant role as many participants mentioned that encouragement from friends and family increased interest in donation, and also that witnessing others benefit from voluntary blood donation motivated them to participate in VBD.

DISCUSSION

India-one of the most populous countries in the world has nearly70% of population residing in rural areas. Majority of voluntary blood donation (VBD) research available in medical literature has been concentrated in urban communities, college students, and medically trained groups. India faces a substantial and growing need for blood transfusion and meeting this demand depends largely on consistent VBD from healthy donors-a resource that is abundant but underutilized in rural regions [5]. Despite presence of a large pool of eligible donors in rural areas, there is limited evidence explaining why rural individuals do not donate blood, the barriers they face, their level of knowledge, the motivations of existing donors, and the prevailing donation practices in these communities. Literature focusing specifically on patient attenders is particularly limited, even though they represent a readily accessible and largely healthy population. To address this critical gap the present study was conducted among patient attenders visiting a tertiary care hospital from rural backgrounds offering insights into a target group that has been largely neglected. Furthermore, this study employed a mixed methods design wherein quantitative findings guided an in-depth qualitative exploration to understand real-world fears, motivations, misconceptions, and experiential factors influencing blood donation in this population.

Quantitative insights: Quantitative findings of the present study demonstrated high overall awareness regarding voluntary blood donation with 88.7% of participants reporting familiarity with the concept of VBD. However, eligibility-related details were poorly understood. This pattern is consistent with prior studies in India which have showed poor understanding of donor eligibility criteria in particular, hemoglobin cut-offs and weight criteria [6].

Chauhan *et al.* in their study reported only 61% participants as having adequate knowledge about VBD. Agrawal *et al.* found 70% having adequate knowledge and Kumari *et al.* documented 52.8% knowledge adequacy reflecting the eligibility-specific gap as in our study [7-9]. Not only in rural areas, these data were consistent with urban studies such as by Chaurasia *et al.* which reported high general knowledge but significant gaps in eligibility criteria in an urban Bengaluru field study [10]. In a study by Uma *et al.* fewer than half of volunteer donors correctly identified donation intervals [11]. Even amongst medical students' similar findings were reported coupled with low actual blood donation rates, although they had good knowledge and positive attitude [12]. Attitudinal support was strong in our study, with 92.7% recommending blood donation as a moral duty. However, actual donation practice remained at 26%, indicating a pronounced attitude–practice gap. Farooqui *et al.* reported comparable mismatches in some communities [13]. Chauhan *et al.* found 79% study population with positive attitude but with only 18% being actual donors. Kumari *et al.* documented 88% having positive attitudes with only 21% having ever donated blood [7-9]. Collectively this data reinforces that strong positive attitudes rarely translate into practice consistent with the findings of our study.

The most commonly reported barrier in our study was the assumption of 'not having enough blood' (35.8%) followed by fear of needle/pain (22.2%) fear of becoming anemic (14.8 %) and postponed desire to donate later in future (24.7%). Only small proportion of participants feared about weight loss (2%) and none reported fear of infections or desire for monetary compensation. These results are closely aligned with Uma *et al.* in Chennai and Farooqui *et al.* in Pune studies of whom identified fear of pain, weakness, and anemia as major barriers [11, 13]. Studies have also stated that fear profiles differ strongly between donors and non-donors with fear being highest among those who have never donated [14]. Kumari *et al.* noted fear in 33% with practical barriers like distance (41%) and timing (37%) like our findings [9]. However, misconception of "not having enough blood" being the top barrier reflects deep-rooted myths like those documented in qualitative studies from India [11, 13]. Altruism emerged as the dominant motivator in our study with 78.3% citing 'saving a life' as a major motivating factor. Farooqui *et al.* showed comparable findings where 70–80% of donors identified altruism as a key motivator [13]. International studies also evidence altruism as the principal driver [15, 16].

Practical challenges were prominent in our study with 85.3% of participants reporting difficulty in accessing a blood bank, and 71.3% preferred local donation camps. Pandey *et al.* indicated over 60% cited distance as a barrier in Jodhpur primary health centers [6]. This directly reflects the access constraints as expressed by our participants. Sachdev *et al.* reported a 25–40% increase in donations after allocation of mobile blood donation vehicles and Gupta *et al.* achieved over 90% donor rates upon conducting of outdoor camps [17, 18].

Qualitative insights: Qualitative data helped in explaining emotional and contextual factors influencing blood donation behavior. One of the strongest themes that emerged was fear. Participants commonly expressed worries such as losing too much blood, experiencing pain during the needle prick, feeling dizzy, or getting an infection. Similar concerns have been described in earlier studies that have conducted focus group discussions [11, 13, 14]. Bagot *et al.* also reported that these fears often come from a lack of clarity about the blood donation process and emotional uncertainty rather than from actual knowledge deficiency, which was in line with what our participants expressed [15]. Likewise, studies have highlighted that young first-time donors often feel anxious, expect pain, and worry about sterility and hygiene-barriers that were strongly reflected in our focus group discussions [16]. Participants repeatedly highlighted importance of donor experience, like friendly and reassuring staff, visible hygiene practices, and clear step-by-step instructions that increased willingness to donate. These findings align with studies by Sachdev *et al.* and Gupta *et al.* which reported that organizing frequent outdoor camps including facility of mobile camps enhance donor comfort and practice [17, 18]. Our participants highlighted that even one negative first time donation experience such as pain, dizziness or unfriendly staff—can discourage them from future blood donations. This observation is consistent with findings of Gillespie *et al.*, who reported that poor initial experiences significantly reduce likelihood of return donation among young donors [14]. In addition, altruism emerged as a strong emotional theme in our focus group discussions. Many participants described blood donation as a moral responsibility and expressed a genuine desire to help both strangers and people they knew. Similar motivational patterns were observed in the qualitative work of Farooqui *et al.* from Pune and study by Bagot *et al.*, where beneficiary stories and identity-based appeals strongly encouraged donation [13, 15]. These qualitative insights underscore that interventions must not only provide factual information but also address emotional fears, leverage peer influence, and ensure a positive, trustworthy donation environment to effectively convert positive attitudes into sustained donation practices.

Limitations of the study: A relatively small sample size from one rural tertiary care center which may not truly reflect generalizability beyond the region of study. Self-reported data via questionnaires and discussions could potentially include social desirability and recall bias, especially on attitudes and practices.

CONCLUSION

A significant attitude–practice gap existed regarding voluntary blood donation among attenders of patients in rural settings. Although

awareness and positive perceptions were present, these did not consistently translate into actual donation behavior. To bridge this gap and to ensure a sustainable blood donation practice, a comprehensive, community-centered approach that combines education, accessibility, reassurance, and positive donor engagement is essential.

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AUTHORS CONTRIBUTIONS

Conceptualization-Dr Archana Shetty Methodology-Dr Archana Shetty, Dr Anand Meundi Formal analysis and investigation-Mr Redappa, Dr Jessica Minal; Writing and original draft preparation: Dr. Archana Shetty, Mr. Redappa Review and editing – Dr Archana Shetty, Dr Jessica Minal, Dr Anand Meundi, Supervision: Dr Archana Shetty,Approval of final draft-Dr Archana Shetty, Dr Jessica Minal, Dr Anand Meundi

CONFLICT OF INTERESTS

Declared none

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