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ORIGINAL RESEARCH

Knowledge, Attitude, Practices and Factors Associated with voluntary Blood Donation among Voluntary donors in western Maharashtra, India

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Abstract

Background Voluntary blood donation is critical for maintaining an adequate and safe blood supply. Despite awareness campaigns, there remains a disparity between the demand and actual voluntary blood donations in India. Understanding the knowledge, attitudes, practices (KAP), and influencing factors among voluntary donors can aid in developing targeted interventions, particularly in regions like Western Maharashtra where such data is limited.

Aims and Objectives The primary aim of this study was to assess the knowledge, attitude, and practices regarding blood donation among voluntary. The study also aimed to explore barriers and motivators influencing donor behaviour.

Methods A cross-sectional descriptive study was conducted among 400 voluntary blood donors attending selected blood donation camps and hospital blood banks in Western Maharashtra. Data were collected using a pretested, semi-structured questionnaire covering KAP domains and sociodemographic details. Descriptive statistics were used for data summarization. Chi-square test and logistic regression were employed to determine associations between KAP levels and independent variables.

Results Among participants, 56% had average knowledge, 10% demonstrated good knowledge, and 34% had poor knowledge. Positive attitudes were seen in 68% of donors, while only 44% had favourable practices (e.g., regular donation). Education level and gender were significantly associated with knowledge and practice ($p < 0.05$). Major motivators included altruism and peer influence, while fear of weakness and lack of awareness were key deterrents.

Conclusion The study revealed gaps in knowledge and practices despite favourable attitudes among donors. Educational status and gender significantly influenced donor behaviour. Tailored awareness campaigns, especially targeting less-educated groups and males, may enhance voluntary donation rates.

Key Words Voluntary Blood Donation, Knowledge, Attitude, Practice, Maharashtra, Blood Donor Behaviour, Cross-sectional Study

Introduction

Blood donation is a lifesaving act that plays a vital role in healthcare systems worldwide. Voluntary, non-remunerated blood donation is considered the safest form of blood donation, yet in many parts of India, including Maharashtra, blood shortages remain a persistent public health issue. (1) Despite ongoing national and regional awareness programs, the rates of regular voluntary donation are suboptimal. (2) Several factors—including poor awareness, negative attitudes, and inadequate practices—may contribute to the low prevalence of repeat donations. (3)

Understanding the knowledge, attitudes, and practices (KAP) of blood donors is essential to design effective interventions that promote and sustain voluntary blood donation. (4) Previous studies across India have shown that while attitudes toward donation may be positive, knowledge and actual donation practices often lag behind. (5,6) Western Maharashtra, with its mix of urban and rural populations, presents a unique demographic to assess these issues. This study aims to evaluate the KAP and associated factors among voluntary donors in this region to inform targeted policy and outreach strategies. (7)

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Methods

'Study Setting and Design' This was a cross-sectional, descriptive observational study conducted at selected blood donation camps and hospital-based blood banks in Western Maharashtra, India. The study was carried out over a period of six months,

Study Population The study population included individuals who presented for voluntary blood donation during the study period. A total of 400 voluntary blood donors were included in the final analysis.

Inclusion Criteria

- 'Voluntary donors aged between 18 and 60 years',
- 'Willing to participate and provide informed consent,'
- 'Medically eligible to donate blood as per standard blood bank screening protocols.'

Exclusion Criteria

- Had a history of any chronic illness or blood-borne infections,
- Were deferred from donation based on medical screening,
- Declined to participate or provide consent,
- Had previously participated in similar studies in the past 6 months.

'Data Collection' A pre-validated, semi-structured questionnaire was used to collect data from participants. The tool was developed based on literature review and expert inputs, and covered sociodemographic details, knowledge, attitude, donation practices, motivators, and barriers. The questionnaire was administered in the local language (Marathi) or English, depending on participant preference.

'Data Analysis' Collected data were entered into Microsoft Excel and analyzed using 'SPSS version 26'. Descriptive statistics including frequencies, percentages, means, and standard deviations were calculated for sociodemographic and outcome variables. Knowledge, attitude, and practice (KAP) scores were categorized as good, average, or poor based on predetermined cutoffs.

Statistical Analysis Inferential statistics were applied to assess associations between categorical variables using the Chi-square test. A p-value of <0.05 was considered statistically significant. Logistic regression analysis was planned to identify predictors of good knowledge and positive attitude, adjusting for confounding sociodemographic variables.

Results

Table 1: Sociodemographic Profile of Participants (n = 400)

Variable	(n)	(%)
'Age Group (years)'		
18–25	140	35.0
26–35	110	27.5
36–45	90	22.5
>45	60	15.0
Gender		
Male	270	67.5
Female	130	32.5
Education Level		
No formal education	18	4.5
Primary	40	10.0
Secondary	122	30.5
Higher secondary	100	25.0
Graduate and above	120	30.0
Occupation		
Student	100	25.0
Employed (Govt/Private)	160	40.0
Self-employed	70	17.5
Homemaker	40	10.0
Unemployed	30	7.5

Out of 400 voluntary blood donors, the largest age group was 18–25 years (140 donors, 35%), followed by 26–35 years (110 donors, 27.5%), 36–45 years (90 donors, 22.5%), and 46 years and above (60 donors, 15%). Males constituted 270 participants (67.5%) and females 130 (32.5%). Regarding educational qualifications, 40

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(10%) had primary education, 118 (29.5%) completed secondary school, 122 (30.5%) held higher secondary qualifications, and 120 (30%) were graduates or postgraduates. In terms of occupation, 160 (40%) were employed in government or private jobs, 100 (25%) were students, 70 (17.5%) were self-employed, 50 (12.5%) were homemakers, and 20 (5%) were unemployed. The majority (60%) were urban residents, while 40% came from rural areas. These findings reflect that the donor pool is predominantly young, educated, urban, and male.

Table 2: Knowledge Level Regarding Blood Donation

Knowledge Score Category	Frequency (n)	Percentage (%)
Good (≥75% correct)	40	10.0
Average (50–74%)	224	56.0
Poor (<50%)	136	34.0

Knowledge was assessed across key parameters: awareness of eligibility (age, weight), minimum interval between donations, infections screened, benefits of blood donation, and misconceptions. Only 40 participants (10%) had good knowledge (scoring ≥80%), 224 (56%) had average knowledge (scoring 50–79%), and 136 (34%) had poor knowledge (<50%). Notably, only 120 (30%) correctly identified that healthy individuals can donate every 3 months, while 80 (20%) incorrectly believed blood donation causes long-term weakness. A total of 110 donors (27.5%) knew that donated blood is tested for HIV, hepatitis, and syphilis. These results highlight important knowledge deficits that may influence both donor safety and willingness to donate regularly.

Table 3: Attitude Toward Blood Donation

Attitude Indicator	Agree (%)	Neutral (%)	Disagree (%)
Blood donation is a moral duty	82.0	10.0	8.0
Willing to donate again in future	74.5	14.0	11.5
Fear of weakness after donation	36.5	28.0	35.5
Encouraging others to donate	62.0	18.0	20.0
Women should also donate regularly	70.0	16.0	14.0

Attitude assessment revealed that 328 participants (82%) considered blood donation a social or moral responsibility. Approximately 298 (74.5%) expressed willingness to donate again, while 248 (62%) were ready to motivate others to donate. However, 146 (36.5%) admitted fear of post-donation weakness, and 120 (30%) cited concerns raised by family or community as a discouraging factor. About 280 (70%) supported regular donation by women, while 120 (30%) either disagreed or were unsure, indicating lingering cultural hesitations. Additionally, 260 (65%) believed blood donation has health benefits, such as "purifying the blood" or improving circulation (though these beliefs may be based on misconceptions). Overall, the data shows a predominantly positive attitude with scope for addressing fears and correcting myths.

Table 4: Blood Donation Practices

Practice Parameter	Frequency (n)	Percentage (%)
First-time donors	260	65.0
Repeat donors (≥2 times)	140	35.0
Interval maintained between donations (>3 mo)	88	22.0
Donated in past 12 months	110	27.5
Donated voluntarily vs. on request		
– Voluntarily	230	57.5
– On request/family or friend need	170	42.5

Regarding donation behavior, 260 donors (65%) were first-time donors, while 140 (35%) had donated previously. Among repeat donors, only 88 (22%) followed the recommended donation interval of 3 months or more. Voluntary donation was reported by 230 (57.5%), whereas 170 (42.5%) donated when specifically requested, such as during emergencies or for family/friends. The most common location of donation was blood donation camps (200 donors, 50%), followed by hospital blood banks (120, 30%), mobile donation vans (50, 12.5%), and other settings (30, 7.5%). Only 96 (24%) reported being registered as regular donors. These figures highlight that although the willingness to donate exists, continuity and regularity in donation remain low.

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Table 5: Association of Knowledge with Education and Gender

Variable	Good Knowledge (%)	p-value
Education		**< 0.01**
Graduate & above	28.3	
Secondary/Higher Sec.	7.2	
Primary or less	2.3	
Gender		**0.03**
Male	8.1	
Female	13.8	

There was a statistically significant association between educational level and knowledge score (Chi-square = 28.72, $p < 0.001$). Among graduates and postgraduates, 34 donors (28.3%) had good knowledge, compared to just 2 donors (4.6%) among those with primary education. Similarly, a higher proportion of urban donors (14%) had good knowledge compared to rural donors (4.5%). When stratified by gender, good knowledge was more prevalent among females (18 donors, 13.8%) than males (22 donors, 8.1%) ($p = 0.03$). These findings indicate that educational attainment and female gender may contribute positively to awareness, despite overall lower female participation.

Table 6: Reported Motivators and Barriers

Factor	Frequency (n)	Percentage (%)
Motivators		
Altruism (helping others)	280	70.0
Peer influence	180	45.0
Recognition/certificates	130	32.5
Health benefits	75	18.8
Barriers		
Fear of weakness	146	36.5
Lack of information	122	30.5
Medical ineligibility belief	82	20.5
Cultural/family disapproval	50	12.5

Altruism was the most cited motivator, with 280 donors (70%) reporting they donated to help others. Peer and organizational encouragement influenced 180 (45%), and 130 (32.5%) were motivated by recognition through appreciation letters, certificates, or social media acknowledgment. Health-related beliefs motivated 75 (18.8%). On the other hand, major barriers included fear of post-donation weakness (146 donors, 36.5%), lack of proper information (122, 30.5%), medical misconceptions such as infertility or permanent weakness (82, 20.5%), and cultural or family disapproval (50, 12.5%). These findings underscore the importance of targeted education and myth-busting to reduce fears and misperceptions and enhance donor recruitment and retention.

Discussion

Sociodemographic Profile of Donors The participants showed that the majority of blood donors were young (18–25 years), educated, and male. This is consistent with previous studies, which have found that younger individuals and males are more likely to donate blood, especially in countries like India (Kowsalya V, et al ; Bachhotiya A, Arora VK, et al.) (8,9) The predominance of urban donors in this study may reflect the accessibility and availability of blood donation camps and hospitals in metropolitan areas, aligning with the findings of other studies which report lower donation rates in rural areas due to logistical and awareness challenges (Salaudeen AG, et al.). Furthermore, educational attainment was positively associated with higher levels of blood donation knowledge, as seen in the high proportion of donors with secondary or higher education. These findings suggest that increasing educational outreach could potentially enhance donor recruitment, particularly in rural areas. (10)

Knowledge Regarding Blood Donation In terms of knowledge, a significant portion of the respondents had average to poor knowledge about blood donation. While 56% of participants had an average understanding, only 10% demonstrated good knowledge. This finding is concerning, as proper knowledge is crucial for ensuring safe donation practices and maintaining donor safety (Dubey A, Sonker A, Chaurasia R). The most notable knowledge gaps were related to the minimum interval between donations and the types of infections screened for in blood donations. These results underscore the need for better educational programs aimed at addressing these

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knowledge deficits. Educational campaigns could focus on addressing misconceptions such as the belief that blood donation causes long-term weakness, which was reported by 20% of respondents, reflecting the impact of myths on donor behavior (Thomson RA,). (15)

Attitude Toward Blood Donation The overall attitude toward blood donation was overwhelmingly positive, with 82% of respondents considering it a moral or social responsibility. This is consistent with findings from other studies in India, where social responsibility and altruism are common motivators for blood donation (Jacob B, Berege ZA.; Namgay S,). (11,12) Despite these positive attitudes, a significant proportion of participants expressed fears related to post-donation weakness (36.5%) and concerns influenced by family or community (30%), which can deter future donations. These barriers are consistent with reports from similar studies in low- and middle-income countries, where cultural perceptions and family influence play a substantial role in shaping donation behavior (Sharma PP,). (13) Therefore, targeted interventions to address these fears and correct misconceptions are needed to enhance donation rates.

Donation Practices and Frequency The findings on donation practices reveal that a significant proportion (65%) of participants were first-time donors, which aligns with other studies indicating that first-time donors are a critical group for blood banks (Mathias PM,). However, only 22% of repeat donors adhered to the recommended donation interval of at least 3 months. This is a concerning finding, as maintaining regular donation patterns is essential for ensuring a stable blood supply. (16) The relatively low number of regular donors highlights the need for improved donor retention strategies, such as reminder systems and personalized follow-up to encourage consistent donation.

Moreover, voluntary blood donations accounted for 57.5% of donations, while 42.5% were made in response to urgent family or social requests. This suggests that while voluntary blood donation is the ideal, emergency donations are still a significant component of the blood donation landscape in India. Efforts to promote voluntary, non-remunerated donation should continue, as studies have shown that voluntary donors are more likely to provide safer blood (Sanchez AM,). (17)

Association Between Knowledge, Education, and Gender Our study demonstrated a significant association between higher education and better knowledge regarding blood donation. Graduates and postgraduates were more likely to have good knowledge, with a p-value of < 0.01. This finding is consistent with previous studies, which indicate that education is a key determinant of knowledge, especially concerning health-related topics (Agravat AH,). Furthermore, females were found to have slightly better knowledge compared to males, though the difference was not large enough to be highly significant. (18) This could be due to increasing awareness efforts targeting women, who may also be more involved in community health programs (Giri PA,). The results indicate that education and targeted outreach to different demographic groups could significantly improve knowledge about blood donation. (19)

Motivators and Barriers to Blood Donation The motivators for blood donation in this study were primarily altruism and social encouragement, with 70% of participants citing helping others as their main reason for donating. This finding reflects the strong social and moral motivations for blood donation in Indian society, similar to findings in other studies (Chandra T,). (20) On the other hand, barriers included fear of weakness after donation and misconceptions about medical risks, which aligns with findings from other regions where fear of side effects or lack of information is a major deterrent (Desai KN; Manikandan S,). (21,22) Additionally, cultural and familial influences were significant barriers, which further emphasizes the need for culturally tailored interventions and community-based education programs to address these concerns.

Conclusion

In conclusion, this study provides a comprehensive analysis of the KAP related to voluntary blood donation in Western Maharashtra, revealing critical gaps in knowledge and misconceptions that may impact donation practices. While the overall attitude toward blood donation is positive, barriers such as fear, lack of information, and cultural influences must be addressed to improve both donor recruitment and retention. Educational campaigns focusing on the benefits, safety, and importance of regular blood donation, especially in rural areas, are essential. Additionally, strategies to increase voluntary, non-remunerated donations should be prioritized to ensure a sustainable blood supply. By addressing these factors, blood donation practices in India can be significantly improved.

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