ISSN: 2581 – 3633
PubMed - National Library of Medicine - ID: 101745081

International Journal of Medical Science and Advanced Clinical Research (IJMACR)

Available Online at:www.ijmacr.com

Volume – 9, Issue – 2, April – 2026, Page No.: 74 – 83

Knowledge, Attitudes and Practices Regarding Skin Donation among Undergraduate Medical Students - A Questionnaire-Based Study

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How to citation this article: Dr Niranjana Anil, Dr Sukumar D, Dr Girish P N, Dr Aryambika Krishnan, Dr Delgeena Devis Edakulathur, "Knowledge, Attitudes and Practices Regarding Skin Donation among Undergraduate Medical Students - A Questionnaire-Based Study", IJMACR – April – 2026, Volume – 9, Issue – 2, P. No. 74 – 83.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Skin donation plays a vital role in the management of extensive burns and complex wounds, particularly when autografting is not immediately feasible. Despite its clinical importance, the availability of donated skin remains inadequate in many developing countries. Medical students, as future healthcare professionals, can significantly influence public perception and promotion of skin donation. This study aimed to assess the knowledge and attitudes regarding skin donation among undergraduate medical students.

Methodology: A descriptive cross-sectional questionnaire-based study was conducted over one month among 422 undergraduate medical students at a tertiary care teaching hospital. A pre-structured, validated, self-administered questionnaire was used to collect data. Descriptive statistics were applied, and associations between knowledge, attitude, and socio-demographic variables were assessed using the chi-square test, with a p-value <0.05 considered statistically significant.

Results: Among the participants, 84.4% were aware of skin donation and 70.6% were aware of skin banks.

Adequate knowledge regarding skin donation was observed in 56.4% of students. While most participants perceived skin donation as a noble (81.0%) and life-saving act (87.2%), only 60.2% expressed willingness to donate their own skin after death. A significant association was found between knowledge level and attitude toward skin donation ($p < 0.001$). Knowledge was also significantly associated with age, year of study, and source of information.

Conclusion: Although medical students demonstrated good general awareness and positive attitudes toward skin donation, gaps in detailed knowledge persist. Strengthening undergraduate medical education through targeted teaching and awareness programs may improve advocacy and support for skin donation.

Keywords: Skin donation; Medical students; Knowledge; Attitude; Skin banking; Burn management

Introduction

Skin is the largest organ of the human body and plays a crucial role in protection, thermoregulation, sensation, and immune defense. Loss of skin integrity, particularly in conditions such as extensive burns, traumatic injuries, and certain surgical procedures, can lead to significant morbidity and mortality. In such situations, skin grafting remains a cornerstone of management, with cadaveric skin allografts serving as a temporary yet life-saving biological dressing when autografting is not immediately feasible [1,2]. Skin donation, therefore, represents a vital component of modern burn care and reconstructive surgery.

Skin donation involves the retrieval of skin from deceased individuals, typically within six hours of death, under sterile conditions, followed by preservation and storage in skin banks[3]. Unlike solid organ transplantation, skin donation does not cause disfigurement of the body and does not delay funeral rites, facts that are often poorly understood by the general population[4]. Despite its immense clinical value, the availability of donated skin remains grossly inadequate in many low- and middle-income countries, including India, where the burden of burn injuries is among the highest globally [5].

India reports millions of burn cases annually, with a significant proportion requiring skin grafting for survival and recovery [6]. However, the number of functional skin banks and voluntary skin donors remains limited, resulting in a persistent gap between demand and supply [7]. Lack of awareness, misconceptions, cultural beliefs, and inadequate promotion of skin donation programs have been identified as major barriers to skin donation [8]. Addressing these barriers requires not only public education but also active involvement of healthcare professionals who serve as key influencers in shaping public attitudes toward donation.

Medical students represent the future workforce of the healthcare system and play a pivotal role in disseminating accurate information and counseling patients and their families regarding organ and tissue donation[9]. Their knowledge, attitudes, and perceptions toward skin donation are particularly important, as they are often the first point of contact in hospital settings and are expected to advocate evidence-based practices. A positive attitude and adequate knowledge among medical students can translate into increased public awareness and improved donation rates [10].

However, existing literature suggests that while medical students may possess basic knowledge about organ donation, their awareness and understanding of tissue donation, particularly skin donation, is often limited [11]. Studies conducted in various regions have highlighted

gaps in knowledge regarding eligibility criteria, procedures, legal aspects, and benefits of skin donation, along with ambivalent or hesitant attitudes toward the practice [12,13]. These gaps may stem from insufficient coverage of tissue donation topics in the undergraduate medical curriculum and limited exposure to skin banking services.

Assessing the knowledge and attitudes of medical students toward skin donation is essential to identify deficiencies and misconceptions that can be addressed through targeted educational interventions. Such assessments can inform curriculum development, workshops, and awareness programs aimed at strengthening the role of future physicians in promoting skin donation [14]. Furthermore, understanding students' attitudes can provide insights into their willingness to donate skin themselves and to motivate others, which is critical for the sustainability of skin banking services.

In this context, the present study aims to assess the knowledge and attitudes regarding skin donation among medical students. By evaluating their level of awareness, perceptions, and readiness to support skin donation initiatives, this study seeks to highlight existing gaps and emphasize the need for structured educational strategies. Enhancing knowledge and fostering positive attitudes among medical students may contribute significantly to improving skin donation rates and, ultimately, to better outcomes for patients requiring skin grafts.

Methodology

This study was designed as a descriptive cross-sectional questionnaire-based study to assess the knowledge and attitudes regarding skin donation among medical students. The study was conducted over a period of three months, in March 2026 in a tertiary care teaching hospital attached to a medical college. Ethical principles were strictly adhered to throughout the study. Participation was voluntary, and no personal identifiers were collected. The data obtained were used exclusively for research purposes.

The study population consisted of undergraduate medical students enrolled in the Bachelor of Medicine and Bachelor of Surgery (MBBS) course during the study period. Students from all academic years were considered eligible for participation. Medical students who were willing to participate and provided informed consent were included in the study, while those who were absent during data collection, unwilling to participate, or returned incompletely filled questionnaires were excluded.

The sample size for the present study was calculated based on the findings of Saleem et al.,[14] who reported that 62% of participants had adequate knowledge regarding organ donation. A confidence level of 95% was considered and a allowable error of 5%, the sample size was calculated as 398 participants. However, a total of 422 medical students' data was included in the final analysis.

A convenience sampling technique was used, and eligible students available during the study period were recruited until the required sample size was achieved.

Data were collected using a pre-structured, validated, self-administered questionnaire developed after reviewing relevant literature. The questionnaire was prepared in English and consisted of four sections. The first section collected socio-demographic information such as age, gender, year of study, and prior exposure to information regarding skin donation. The second section assessed knowledge related to skin donation, including awareness of skin banks, eligibility criteria, timing of skin retrieval, uses of donated skin, and legal and ethical

aspects. The third section evaluated attitudes toward skin donation using statements measured on a Likert scale, focusing on willingness to donate skin, support for skin donation programs, and perceptions of cultural or religious concerns. The fourth section assessed practices and intentions related to skin donation, including prior discussions and willingness to motivate others.

The questionnaire was pretested among a small group of medical students who were not included in the final study to assess clarity and reliability. Necessary modifications were made based on feedback obtained during the pretesting phase.

After obtaining approval from the Institutional Ethics Committee, data collection was carried out with permission from the concerned academic authorities. Participants were informed about the purpose of the study, and confidentiality and anonymity were assured. Written informed consent was obtained from all participants prior to administration of the questionnaire. The questionnaires were distributed in person, and sufficient time was provided for completion to ensure independent and unbiased responses.

The collected data were coded and entered into Microsoft Excel and subsequently analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Knowledge and attitude scores were categorized based on predetermined cut-off values. Associations between knowledge, attitude, and selected socio-demographic variables were assessed using appropriate statistical tests such as the chi-square test. A p-value of less than 0.05 was considered statistically significant.

Results

The present study was conducted among 422 undergraduate medical students at a tertiary hospital. The majority of participants were aged between 21 and 23 years (55.9%), followed by those aged ≤20 years (27.9%), while students aged 24 years and above constituted 16.1% of the sample. Gender distribution was nearly equal, with females accounting for 51.2% and males for 48.8% of the participants. With respect to academic year, final-year students formed the largest group (30.3%), followed by third-year (24.6%), second-year (23.2%), and first-year students (21.8%). Regarding sources of information on skin donation, the internet and social media were the most common sources (39.8%), followed by lectures or academic teaching (31.3%), television or newspapers (17.1%), and healthcare professionals (11.8%). (Table 1)

Table 1: Socio-demographic Characteristics of the Study Participants (n = 422)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	≤20	118	27.9
	21–23	236	55.9
	≥24	68	16.1
Gender	Male	206	48.8
	Female	216	51.2
Year of study	First year	92	21.8
	Second year	98	23.2

	Third year	104	24.6
	Final year	128	30.3
Source of information on skin donation	Lectures / Academic teaching	132	31.3
	Internet / social media	168	39.8
	Television / Newspapers	72	17.1
	Healthcare professionals	50	11.8

A high proportion of participants (84.4%) were aware of skin donation, and 70.6% were aware of the existence of skin banks. Knowledge that skin can be donated after death was reported by 78.7% of students. However, only about half of the participants (50.7%) correctly identified the ideal time for skin retrieval as within six hours of death. Misconceptions were also observed, as 34.6% believed that skin donation causes body disfigurement. A majority of students (75.4%) correctly knew that donated skin is primarily used for burn patients, while 57.8% were aware of the legal requirement of consent for skin donation. These findings suggest that while general awareness was satisfactory, gaps existed in procedural and legal aspects of skin donation. (Table 2)

Table 2: Knowledge Regarding Skin Donation among Medical Students (n = 422)

Knowledge Parameter	Correct Response	Frequency (n)	Percentage (%)
Awareness of skin donation	Yes	356	84.4
Awareness of skin banks	Yes	298	70.6
Knowledge that skin can be donated after death	Yes	332	78.7
Ideal time for skin retrieval (within 6 hours)	Yes	214	50.7
Skin donation causes body disfigurement	No	276	65.4
Donated skin mainly used for burn patients	Yes	318	75.4
Legal consent required for skin donation	Yes	244	57.8

More than half of the medical students (56.4%) demonstrated adequate knowledge regarding skin donation, while 43.6% had inadequate knowledge. These finding highlights that although a majority possessed sufficient knowledge, a substantial proportion of students lacked comprehensive understanding, emphasizing the need for targeted educational interventions. (Table 3)

Table 3: Overall Knowledge Level Regarding Skin Donation

Knowledge Level	Frequency (n)	Percentage (%)
Adequate knowledge	238	56.4
Inadequate knowledge	184	43.6

A large majority of participants agreed that skin donation is a noble act (81.0%) and that it can save lives (87.2%). Willingness to donate one's own skin after death was expressed by 60.2% of students, while 24.2% were neutral and 15.6% were unwilling. Support for the promotion of skin donation was observed in 75.4% of participants. Nearly half of the respondents (47.9%) disagreed with the statement that religious beliefs

discourage skin donation, whereas 21.8% agreed and 30.3% remained neutral. Overall, the findings reflect a predominantly positive attitude toward skin donation, although some hesitation and uncertainty persist. (Table 4)

Table 4: Attitudes toward Skin Donation Among Medical Students (n = 422)

Attitude Statement	Agree n (%)	Neutral n (%)	Disagree n (%)
Skin donation is a noble act	342 (81.0)	62 (14.7)	18 (4.3)
Skin donation can save lives	368 (87.2)	40 (9.5)	14 (3.3)
I am willing to donate my skin after death	254 (60.2)	102 (24.2)	66 (15.6)
I support promotion of skin donation	318 (75.4)	74 (17.5)	30 (7.1)
Religious beliefs discourage skin donation	92 (21.8)	128 (30.3)	202 (47.9)

Among students with adequate knowledge, 83.2% exhibited a positive attitude, whereas only 52.2% of those with inadequate knowledge demonstrated a positive attitude. Conversely, a higher proportion of students with inadequate knowledge (47.8%) had a negative attitude compared to those with adequate knowledge (16.8%). The association between knowledge level and attitude was found to be statistically significant ($p < 0.001$), indicating that better knowledge regarding skin donation is strongly associated with a more positive attitude toward it. (Table 5)

Table 5: Association between Knowledge Level and Attitude Toward Skin Donation

Knowledge Level	Positive Attitude (%)	Negative Attitude (%)	Total	p-value
Adequate knowledge	198 (83.2)	40 (16.8)	238	<0.001*
Inadequate knowledge	96 (52.2)	88 (47.8)	184	

Age showed a statistically significant association with knowledge level ($p = 0.012$), with students aged 21–23 years and those aged 24 years and above demonstrating a higher proportion of adequate knowledge compared to students aged 20 years or below. This indicates an improvement in knowledge with increasing age.

Gender was not significantly associated with knowledge regarding skin donation ($p = 0.086$), although a higher proportion of female students (60.2%) exhibited adequate knowledge compared to male students (52.4%). Year of study demonstrated a statistically significant association with knowledge level ($p = 0.004$). Adequate knowledge was observed to increase progressively from first-year students (45.7%) to final-year students (65.6%), suggesting that advancement in medical education contributes to better awareness and understanding of skin donation.

Source of information on skin donation was also significantly associated with knowledge level ($p = 0.021$). Students who obtained information through lectures or academic teaching showed the highest proportion of adequate knowledge (66.7%), followed by those who cited the internet or social media. In contrast, lower levels of adequate knowledge were observed among students relying on television, newspapers, or healthcare professionals as their primary source of information. (Table 6)

Table 6: Association between Socio-demographic Factors and Knowledge Regarding Skin Donation Among Medical Students (n = 422)

Socio-demographic Variable	Category	Adequate Knowledge n (%)	Inadequate Knowledge n (%)	Total (n)	p-value
Age (years)	≤20	54 (45.8)	64 (54.2)	118	0.012*
	21–23	142 (60.2)	94 (39.8)	236	
	≥24	42 (61.8)	26 (38.2)	68	
Gender	Male	108 (52.4)	98 (47.6)	206	0.086
	Female	130 (60.2)	86 (39.8)	216	
Year of study	First year	42 (45.7)	50 (54.3)	92	0.004*
	Second year	50 (51.0)	48 (49.0)	98	
	Third year	62 (59.6)	42 (40.4)	104	
	Final year	84 (65.6)	44 (34.4)	128	
Source of information	Lectures/Academic teaching	88 (66.7)	44 (33.3)	132	0.021*
	Internet / Social media	90 (53.6)	78 (46.4)	168	
	TV / Newspapers	34 (47.2)	38 (52.8)	72	
	Healthcare professionals	26 (52.0)	24 (48.0)	50	

Discussion

The present study assessed the knowledge and attitudes regarding skin donation among undergraduate medical students and demonstrated a generally satisfactory level of awareness accompanied by a predominantly positive attitude. However, important gaps were identified in procedural, legal, and practical aspects of skin donation. These findings are significant because medical students represent future healthcare professionals who play a critical role in educating the public and facilitating tissue donation.

In the present study, 84.4% of participants were aware of skin donation, and 70.6% were aware of the existence of skin banks. These findings are comparable with the observations of Gelidan et al., who reported moderate to high awareness regarding skin allograft donation, although detailed knowledge was limited [8]. Similar levels of awareness have been documented among healthcare professionals and medical students in studies assessing organ and tissue donation, where general awareness was satisfactory but in-depth understanding was lacking [10,11]. The relatively higher awareness observed in the present study may be attributed to the academic exposure of medical students.

Despite good general awareness, only 50.7% of students correctly identified the ideal time for skin retrieval as within six hours of death. This reflects a notable deficiency in procedural knowledge and is consistent with findings from previous studies that reported limited understanding of technical aspects of tissue donation among medical students and healthcare workers [11,14]. Kearney emphasized that timely retrieval of skin is essential for maintaining graft viability and clinical effectiveness [3]. Lack of knowledge in this area may

adversely affect the ability of future physicians to counsel donor families effectively.

Misconceptions regarding body disfigurement were evident in the present study, with 34.6% of participants believing that skin donation causes disfigurement. Similar misconceptions have been reported in studies conducted among the general population and healthcare trainees, where fear of mutilation was identified as a major barrier to donation [8,14]. This highlights the need for clear education regarding the non-disfiguring nature of skin retrieval and its compatibility with customary funeral practices [3].

Overall, 56.4% of the participants demonstrated adequate knowledge regarding skin donation. This finding is comparable to the study by Schaeffner et al., which reported moderate levels of knowledge regarding organ donation among medical students and physicians [11]. However, the presence of inadequate knowledge in 43.6% of students suggests insufficient emphasis on tissue donation and skin banking within the undergraduate medical curriculum. Similar gaps have been observed in studies from developing countries assessing knowledge and attitudes toward organ and tissue donation [10,14].

Attitudes toward skin donation were largely positive in the present study. A majority of students perceived skin donation as a noble act (81.0%) and acknowledged its life-saving potential (87.2%). These findings are consistent with previous studies reporting favorable attitudes toward organ and tissue donation among medical students and healthcare professionals [10,11]. Willingness to donate one's own skin after death was expressed by 60.2% of participants, which is comparable to findings reported by Saleem et al. in their study on organ donation attitudes [14]. Nonetheless, the proportion of neutral and unwilling respondents indicates persistent hesitation that may stem from incomplete knowledge and personal beliefs.

Religious concerns were not perceived as a major deterrent by most participants, with nearly half disagreeing that religious beliefs discourage skin donation. This observation aligns with findings from Gelidan et al. and Sque et al., who reported that cultural and religious barriers are often overestimated and that lack of awareness is a more significant obstacle [8,13]. Addressing these concerns through culturally sensitive educational strategies may further improve acceptance.

A statistically significant association was observed between knowledge and attitude toward skin donation in the present study ($p < 0.001$). Students with adequate knowledge demonstrated a more positive attitude compared to those with inadequate knowledge. This finding is consistent with earlier studies that identified knowledge as a key determinant of positive attitudes and willingness to donate (10,11,14). Improving knowledge through structured educational interventions may therefore directly enhance attitudes and advocacy for skin donation.

The study also revealed that age, year of study, and source of information were significantly associated with knowledge levels. Senior students demonstrated better knowledge than junior students, a finding similar to that reported by Schaeffner et al., where increasing years of medical education were associated with improved awareness and attitudes [11]. Students who obtained information through lectures and academic teaching showed higher knowledge levels, underscoring the importance of formal medical education in shaping accurate understanding. This supports the observations of Bidigare and Ellis, who emphasized the role of

physicians and medical education in promoting organ and tissue donation [9].

Thus, the findings of the present study are in agreement with existing literature, indicating that while medical students generally exhibit positive attitudes toward skin donation, significant gaps in detailed knowledge persist. Integrating structured teaching on skin donation and skin banking into the undergraduate curriculum, along with clinical exposure and awareness programs, may strengthen the role of future physicians in promoting skin donation. Given the high burden of burn injuries in India and the persistent shortage of donated skin (5,6), improving knowledge and attitudes among medical students could contribute substantially to enhancing skin donation rates and burn care outcomes.

This study was conducted at a single tertiary care medical institution, which may limit the generalizability of the findings to medical students in other regions or settings. The use of a self-administered questionnaire introduces the possibility of response and social desirability bias. Convenience sampling may have resulted in selection bias. Additionally, the cross-sectional design precludes assessment of causal relationships between knowledge, attitude, and practice regarding skin donation.

Conclusion

The present study highlights that while undergraduate medical students possess a satisfactory level of awareness and a predominantly positive attitude toward skin donation, significant gaps remain in detailed procedural and legal knowledge. Although a majority recognized skin donation as a noble and life-saving act, willingness to donate was not universal, reflecting the influence of misconceptions and incomplete understanding. The strong association observed between knowledge and attitude underscores the importance of education in shaping favorable perceptions toward skin donation. Higher knowledge levels among senior students and those exposed to academic teaching further emphasize the role of structured medical education. Integrating focused teaching on skin donation, skin banking, and ethical–legal aspects into the undergraduate curriculum, along with interactive awareness programs, may enhance students' confidence and advocacy. Strengthening knowledge and attitudes among future physicians has the potential to improve public awareness, increase voluntary skin donation, and ultimately contribute to better outcomes in burn care and reconstructive surgery.

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