

Original Article**Knowledge, Attitude and Ethical Perception Regarding Organ Donation among Undergraduate Students of a Medical College at Biratnagar, Nepal****Barsika Katwal, Jwala Kandel, Manoj Hang Limbu**

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Article Received: 15th May, 2026; Accepted: 28th June, 2026; Published: 30th June, 2026**DOI: <https://doi.org/10.3126/jonmc.v15i1.96432>****Abstract****Background**

Organ donation; a community service that saves lives have been the subject of extensive interest both nationally and internationally over the past decade. Transplantation is the only form of treatment for people with life-threatening diseases and injuries. Even though Organ Transplant Act Nepal 2016 has opened doors for the cadaveric organ donation and transplantation, till date only limited transplant has been done. This study aimed to understand public sentiment and different barriers toward organ donation from the perspective of medical students in Nepal.

Methods and Methods

A cross-sectional study was conducted among medical students of Nobel Medical College, Biratnagar, Nepal, from September 2025 to April 2026. The study included undergraduate medical students, willing to participate. The questionnaire were distributed through online portal to the students after providing the necessary instruction and explaining the study in detail.

Results

This study assessed the knowledge and attitudes regarding organ donation among undergraduate medical and nursing students (n=205) at a medical college in eastern Nepal. The findings demonstrated a moderate level of knowledge (mean score: 10.3 ± 2.0 out of 15) and a generally positive attitude toward organ donation (mean score: 46.6 ± 5.1 out of 60).

Conclusion

Undergraduate medical and nursing students demonstrated moderate knowledge and positive attitudes toward organ donation. Significant differences in knowledge were observed by gender and in attitudes by ethnicity, highlighting the need for targeted educational and awareness programs to further promote organ donation among future healthcare professionals.

Keywords: *Medical students, Nepal, Organ donation, Organ transplantation*

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Introduction

Organ transplantation is the replacement of non-functional cells, tissues, or organs with healthy counterparts obtained from living or deceased donors and remains the only life-saving treatment for many end-stage diseases and severe injuries [1]. Organ donation and transplantation have received increasing national and international attention over the past decade due to the growing disparity between organ demand and availability worldwide [2]. Although transplantation from living donors is practiced, the World Health Organization advocates transplantation from brain-dead donors because it poses no risk to the donor [3]. Since the first successful kidney transplantation between identical twins in Boston, USA, in 1954, organ transplantation has evolved into a major achievement of modern medicine [4, 5].

In Nepal, organ transplantation began with the first successful living-donor kidney transplantation at Tribhuvan University Teaching Hospital in 2008, followed by the first liver transplantation at Shahid Dharma Bhakta National Transplant Center in 2016. The country also introduced paired-exchange kidney transplantation in 2016 and free kidney transplantation services in 2017 [6]. While corneal transplantation has been practiced since the establishment of an eye bank in 1997, legislative support was strengthened through the Human Body Organ Transplantation (Regulation and Prohibition) Act (HBOTA) 2055 in 1998 and subsequent regulations in 2002, which permitted organ donation from close relatives and deceased donors with appropriate consent [7–9]. Amendments to HBOTA in 2016 expanded the donor pool by introducing paired organ exchange, broadening the definition of close relatives, and establishing provisions for transplantation from brain-dead donors [10, 11].

Despite these legal and medical advancements, organ donation from brain-dead donors remains limited in Nepal. Lack of public awareness, inadequate knowledge, and persistent religious, cultural, and social misconceptions continue to hinder organ donation and contribute to organ shortages [3]. Consequently, waiting lists for kidney, liver, and heart transplantation continue to grow worldwide. Although understanding public attitudes and barriers is essential for improving donation rates, evidence from Nepal remains scarce. Therefore, this study aimed to explore public perceptions and barriers toward organ donation from the perspective of medical students in Nepal.

Methods and Methods

A cross-sectional study was conducted among undergraduate medical students at Nobel Medical

College, Biratnagar, Nepal, from September 2025 to April 2026. Ethical approval was obtained from the Institutional Review Committee (IRC) of Nobel Medical College. B.Sc. Nursing, MBBS second and third year students willing to participate were included while first-year MBBS were excluded due to limited exposure to transplantation-related teaching, fourth and fifth year were unavailable during data collection because of clinical postings and examination schedules. The sample size was calculated using Cochran's formula with a 95% confidence level, 5% margin of error, and 50% assumed prevalence. After finite population correction for approximately 400 students and allowing a 5% non-response rate, the final sample size was 205.

Data were collected through an online survey using a pre-validated questionnaire developed by Vinay et al. [12]. The questionnaire comprised three sections: sociodemographic information, knowledge regarding organ donation, and attitude/ethical perceptions toward organ donation. Knowledge was assessed using 15 questions scored as 1 for each correct response and 0 for incorrect or "don't know" responses, yielding a maximum score of 15. Scores of 12–15, 8–11, and <7 indicated good, average, and poor knowledge, respectively. Attitude and ethical perceptions were assessed using six clinical scenarios with 12 Likert-scale items scored from 5 (strongly agree) to 1 (strongly disagree), with a score of 35 considered neutral.

Data were analyzed using SPSS version 16. Descriptive statistics were presented as frequencies, percentages, means, and standard deviations. As knowledge and attitude scores were not normally distributed, the Mann–Whitney U test and Kruskal–Wallis test were used for group comparisons. A p-value < 0.05 was considered statistically significant.

Results

The bar diagram illustrates the percentage of correct responses to 15 knowledge-based questions among B.Sc. Nursing, MBBS 2nd-year, and MBBS 3rd-year students. A progressive improvement in correct responses was observed from B.Sc. Nursing, MBBS 2nd year and MBBS 3rd year respectively for most questions. Indicating knowledge regarding organ donation increases with advancing medical education and clinical exposure. B. Sc. Nursing Students generally show the lowest correct response rates indicating limited depth of knowledge compared to MBBS students. While MBBS 2nd-Year Students showed moderate improvement over nursing



students but still demonstrate gaps in complex questions. MBBS 3rd-Year Students achieved the highest scores across most questions which demonstrated better consistency and fewer extreme low scores reflecting the impact of more clinical exposure as well as increased awareness and practical relevance.

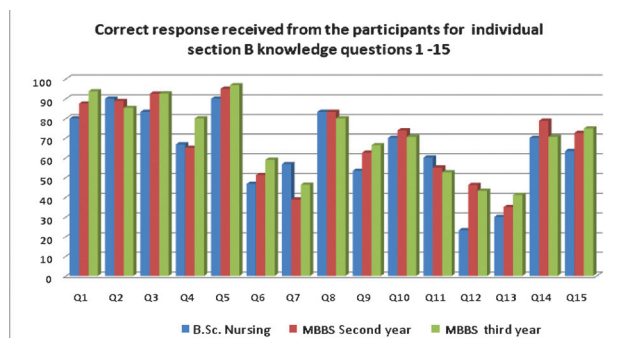


Figure 1: correct response for individual knowledge questions (1-15) by different group of participants

Table 1: Socio-demographic status of study participants (n=205)

Gender	B.Sc. Nursing	MBBS (2 nd year)	MBBS (3 rd year)	Total
Male	-	47 (44.3%)	59 (55.7%)	106
Female	30 (30.3%)	33 (33.3%)	36 (36.4%)	99
Total	30 (14.6%)	80 (39%)	95 (46.4%)	205
Ethnicity				
Brahmin/chhetri	5 (13.9%)	13 (36.1%)	18 (50%)	36
Dalit/ Janajati/ Others	25 (14.8%)	67 (39.6%)	77 (45.6%)	169

The study included a total of 205 participants, comprising 106 males (51.7%) and 99 females (48.3%). Among males, the majority were from MBBS 3rd year (59) followed by MBBS 2nd year (47). Among females, representation was relatively balanced across groups: B.Sc. Nursing (30), MBBS 2nd year (33), and MBBS 3rd year (36). Regarding ethnicity 36 Brahmin/Chhetri constituted a smaller proportion (17.6%) while 169 Dalit/Janajati/Others formed the majority (82.4%).

Table 2: Mean age and mean scores of knowledge/attitude concerning organ donation (n=205)

Year of MBBS	Mean age (years)	Age range (years)	Knowledge scores	Attitude scores
B.Sc. Nrsing (n = 30)	22.3	20-24	9.7± 1.7 (SD)	46.3± 4.7 (SD)
2 nd year (n = 80)	22.3	18-27	10.2± 2.1 (SD)	46.6± 5.2 (SD)
3 rd year (n = 95)	23	18-26	10.6± 2.0 (SD)	46.6± 5.2 (SD)
Total (n = 205)	22.6 ± 1.55 (SD)	18-27	10.3± 2.0 (SD)	46.6± 5.1 (SD)

The mean age of participants was 22.6 ± 1.55 years (range: 18–27 years). Knowledge scores

showed a gradual increase with academic progression, from 9.7 ± 1.7 among B.Sc. Nursing students to 10.2 ± 2.1 among second-year MBBS students and 10.6 ± 2.0 among third-year MBBS students. The overall mean knowledge score was 10.3 ± 2.0, indicating a moderate level of knowledge regarding organ donation. Attitude scores were consistently high across all groups, with mean scores ranging from 46.3 ± 4.7 to 46.6 ± 5.2. The overall mean attitude score was 46.6 ± 5.1, which is above the neutral threshold of the scale and suggests a generally positive attitude toward organ donation among the participants. Only minimal variation in attitude scores was observed between the different student groups.

Normality of the knowledge and attitude scores was assessed using the Shapiro–Wilk test. Both knowledge scores ($W = 0.967$, $p < 0.001$) and attitude scores ($W = 0.977$, $p = 0.002$) were not normally distributed. So, Mann–Whitney U and Kruskal–Wallis tests were used to compare scores between groups. A p-value < 0.05 was considered statistically significant.

Table 3: Mean knowledge and attitude score in nursing, second and third year MBBS students

Students	Knowledge scores (Mean Rank)	Attitude scores (Mean Rank)
B.Sc. Nrsing	82.6	101.2
2 nd year	100.6	106.1
3 rd year	110.4	100.9
	$\chi^2_{5.325} = 2$, $df = 2$, $p = 0.070$	$\chi^2_{0.367} = 2$, $df = 2$, $p = 0.833$

The Kruskal–Wallis test revealed no statistically significant difference in knowledge scores among B.Sc. Nursing, second-year MBBS, and third-year MBBS students ($\chi^2 = 5.325$, $df = 2$, $p = 0.070$), although third-year MBBS students demonstrated the highest mean rank (110.39). Similarly, attitude scores did not differ significantly among the three groups ($\chi^2 = 0.367$, $df = 2$, $p = 0.833$), indicating comparable attitudes toward organ donation across academic groups.

Table 4: Mean knowledge and attitude score in male and female participants (n=205)

Variables	Male	Female	Mann-Whitney U	P value
Knowledge score (Mean Rank)	116.93	86.89	3664	<0.001
Attitude score (Mean Rank)	109.83	95.68	4522.5	0.087

Male participants demonstrated significantly higher knowledge scores than female participants.



pants, with mean ranks of 116.93 and 86.89, respectively. The difference was statistically significant (Mann–Whitney U = 3664, $p < 0.001$), indicating better knowledge regarding organ donation among male students. Although male participants also showed higher attitude scores (mean rank = 109.83) than female participants (mean rank = 95.68), the difference was not statistically significant (Mann–Whitney U = 4522.5, $p = 0.087$). This suggests that attitudes toward organ donation were comparable between male and female students.

Table 5: Mean knowledge and attitude score in different ethnic group (n=205)

Ethnicity	Brahmin/Chhetri	Janajati/Dalit/Others	Mann-Whitney U	P value
Knowledge score	100.46	102.94	2950.5	0.817
Attitude score	123.17	98.70	2316.0	0.024

Knowledge scores did not differ significantly between Brahmin/Chhetri and Janajati/Dalit/ Others students (mean rank: 100.46 vs. 102.94; Mann–Whitney U = 2950.5, $p = 0.817$). However, Brahmin/Chhetri students demonstrated significantly higher attitude scores than Janajati/Dalit/ Others students (mean rank: 123.17 vs. 98.70; Mann–Whitney U = 2316.0, $p = 0.024$), indicating a more favorable attitude toward organ donation among the former group.

Discussion

This study assessed the knowledge and attitudes regarding organ donation among undergraduate medical and nursing students at a medical college in eastern Nepal. The findings demonstrated a moderate level of knowledge (mean score: 10.3 ± 2.0 out of 15) and a generally positive attitude toward organ donation (mean score: 46.6 ± 5.1 out of 60). At the global level, research among medical students indicates that although awareness of organ donation is widespread, in-depth understanding particularly concerning brain death, legal aspects, and procedural details remains insufficient. Study by Wakefield CE et al. highlight that supportive attitudes toward organ donation often coexist with significant knowledge gaps [13]. Similar findings from developed regions, including Europe and North America, suggest that positive attitudes are frequently influenced by ethical and values rather than comprehensive academic knowledge [14]. In the South Asian context, findings are large-

ly comparable. Studies conducted in countries such as India and Pakistan report moderate knowledge levels accompanied by favorable attitudes, although misconceptions regarding key aspects of organ donation persist. Annadurai K et al. documented gaps in understanding brain death and organ allocation among medical students, [15] while Saleem T et al. emphasized the influence of cultural beliefs, religious considerations, and limited formal education on knowledge and perceptions [16]. These observations are consistent with the present study, indicating that knowledge deficiencies remain a significant issue in developing settings despite generally positive attitudes. Within Nepal, previous studies have similarly reported low to moderate knowledge and favorable attitudes among healthcare students. Research by Adhikari S et al. underscored the need for improved educational interventions to address these gaps [17]. Compared to earlier findings, the current study demonstrates a slight improvement in knowledge, particularly among MBBS students, which may be attributed to enhance academic exposure and evolving curricula. Nevertheless, the persistence of gaps in certain knowledge domains suggests that existing educational approaches may still be inadequate.

An important observation in this study is the increase in knowledge with advancing academic level, with third-year MBBS students achieving higher scores than their junior and nursing counterparts. This trend is consistent with global evidence indicating that clinical exposure and progressive medical training contribute to improved understanding of organ donation [18]. However, attitude scores did not vary substantially across academic levels, suggesting that attitudes are likely shaped early and influenced more by personal beliefs, cultural norms, and ethical considerations than by formal education alone. Gender-based analysis revealed that male participants had significantly higher knowledge scores, whereas female participants demonstrated more positive attitudes toward organ donation. Similar trends have been observed in other studies, where females tend to exhibit stronger empathetic and altruistic tendencies despite comparatively lower knowledge levels [19]. This finding further emphasizes that knowledge and attitude are influenced by distinct factors and should be addressed independently in educational strategies. In contrast to our study, a



study by Tanissha et al stated that in compared to boys, girls reported higher mean scores in knowledge and attitude. Though most of the students had adequate knowledge, gaps existed in their practices [20].

In terms of ethnicity, the study found no meaningful difference in knowledge scores between groups, but a significant variation in attitude, with participants from Janajati/Dalit/Other groups showing more favorable attitudes. This suggests that sociocultural influences may play a crucial role in shaping attitudes toward organ donation, a finding that aligns with studies conducted in diverse populations where cultural norms and social acceptance significantly affect willingness to donate [21, 22]. Despite the overall positive attitude observed, the presence of notable knowledge gaps particularly in complex and technical aspects of organ donation remains a concern. Similar shortcomings have been reported in international studies, especially in relation to brain death and legal procedures [14, 18]. These findings highlight the necessity for comprehensive and structured educational interventions, including curriculum integration, case-based learning, and enhanced clinical exposure.

To sum up, undergraduate medical and nursing students demonstrated moderate knowledge and positive attitudes toward organ donation. Knowledge tended to improve with academic progression, although differences across academic groups were not statistically significant. Significant differences were observed in knowledge according to gender and in attitudes according to ethnicity. Strengthening organ donation education within undergraduate health science curricula and implementing targeted awareness programs may further improve knowledge and foster positive attitudes toward organ donation among future healthcare professionals.

Conclusion

The present study found that undergraduate medical and nursing students demonstrated a moderate level of knowledge and a generally positive attitude toward organ donation. Although knowledge scores showed an increasing trend with advancing academic level, no significant differences were observed among B.Sc. Nursing, second-year MBBS and third-year MBBS students. Male students exhibited significantly higher knowledge scores than female students, while attitudes toward organ donation

were comparable between genders. Knowledge levels did not differ significantly across ethnic groups; however, Brahmin/Chhetri students demonstrated significantly more favorable attitudes toward organ donation than students from Janajati, Dalit, and other ethnic groups.

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Conflict of interest: None

References

- [1] World Health Organization. Transplantation [Internet]. www.who.int. World Health Organization; 2023. Available from: <https://www.who.int/health-topics/transplantation>
- [2] Rudge C, Matesanz R, Delmonico FL, Chapman J, International practices of organ donation. *Br J Anaesth*. 108:S1 (2012) i48-i55. doi:10.1093/bja/aer399
- [3] Shrestha K, Brain Death Organ Donation in Nepal [Internet]. Nesot.org.np. 2025 [cited 2025 Aug 12]. Available from: <https://nesot.org.np/paper/brain-death-organ-donation-in-nepal/>
- [4] Bailey JE, Does Health Information Technology Dehumanize Health Care? *Virtual Mentor*. 13:3 (2011) 181–185. DOI: 10.1001/virtualmentor.2011.13.3.m-soc1-1103
- [5] Sayegh MH, Carpenter CB, Transplantation 50 years later-Progress, Challenges, and Promises. *N. Eng. J. Med*. 351: 26(2004) 2761– 6. DOI: <https://doi.org/10.1056/nejmon043418>.
- [6] Atreya A et al, Organ transplantation in Nepal: Ethical, legal, and practical issues', *Developing World Bioethics*. 23:3 (2022) 285–292. DOI:10.1111/dewb.12371.
- [7] Heiden D, Dr Sanduk Ruit and Corneal Transplantation in Nepal, *West J Med*. 176:1(2002) 71. DOI: <https://doi.org/10.1136/ewjm.176.1.71>
- [8] The Human Body Organ Transplantation (Regulation and Prohibition) Act-2055, (1998). Retrieved August 13, 2022, from <https://www.lawcommission.gov.np/en/wp-content/uploads/2018/10/human-body-organ-transplantation-regulation-and-prohibition-act-2055-1998.pdf>
- [9] Kidney Transplantation (Regulation and Prohibition) Rules –2058, (2002). Retrieved August 13, 2022, from <https://www.lawcommission.gov.np/en/wp-content/uploads/2018/kidney-transplantation-regulation-and-prohibition-rules-2058-2002.pdf>2|ATREYA ET AL. 14718847, 0,
- [10] The Human Body Organ Transplantation (Regulation and Prohibition) Act-2072. (2016) <https://healthlinknepal.org/uploads/files/The%20Human%20Body%20Organ%20Transplantation%20%28Regulation%20and%20Prohibition%29Act,2055%28Feb,%201998%29.pdf>



- [11] The Human Body Organ Transplantation (Regulation and Prohibition) Act-2055, (1998). Retrieved August 13, 2022, from <https://www.lawcommission.gov.np/en/wp-content/uploads/2018/10/human-body-organ-transplantation-regulation-and-prohibition-act-2055-1998.pdf>
- [12] Vinay G, SR M, Sangam M, et al, Assessing Medical Students' Perspectives on Organ Donation: A Cross-Sectional Study. *Cureus*. 16: 7 (2024) e63556. DOI:10.7759/cureus.63556
- [13] Wakefield CE, Watts KJ, Homewood J, Meiser B, Siminoff LA, Attitudes toward organ donation and donor behavior: a review of the international literature, *Prog Transplant*. 20:4 (2010) 380–91. DOI: 10.1177/152692481002000412.
- [14] Ríos A, Conesa C, Ramírez P et al, Attitude Toward Deceased Organ Donation and Transplantation Among the Workers in the Surgical Services in a Hospital With a Transplant Program. *Transplant Proc*. 37:9(2005) 3603–8. DOI: <https://doi.org/10.1016/j.transproceed.2005.08.047>
- [15] Kumar PV, Jothula KY, A study on knowledge, attitude and practice about organ donation among college students in Telangana state. *Int J Community Med Public Health* 6 (2019) 2589-94. DOI: <http://dx.doi.org/10.18203/2394-6040.ijcmph20192328>
- [16] Saleem T, Ishaque S, Habib N et al, Knowledge, attitudes and practices survey on organ donation among a selected adult population of Pakistan. *BMC Med Ethics*. 17:10 (2009). doi: 10.1186/1472-6939-10-5.
- [17] Adhikari S, Shrestha R, Sapkota S et al, Knowledge and attitude toward organ donation among medical students in Nepal. *JNMA J Nepal Med Assoc*. 56: 208 (2017) 731–6.
- [18] Tam WW, Suen LK, Chan HY, Knowledge, attitudes and commitment toward organ donation among nursing students in Hong Kong. *Transplant Proc*. 44: 5 (2012) 1196–1200. DOI: 10.1016/j.transproceed.2012.01.108
- [19] Gupta A, Jain S, Singhal S, Gender differences in knowledge and attitude toward organ donation among students. *J Educ Health Promot*. 8:12 (2019). DOI: 10.18203/2320-6012.ijrms20181764
- [20] SK T, P S, Awareness and Attitude towards Organ Donation Under Transplantation of Human Organ Act 1994 amongst Medical Students in Teaching Hospital at Chennai. *Indian J Forensic Med Toxicol* 15: 2 (2021). DOI: 10.37506/ijfmt.v15i2.14462
- [21] Morgan SE, Miller JK, Communicating about organ donation: review of the literature. *J Health Commun*. 7: 1 (2002) 17–33. <https://doi.org/10.1080/00909880216580>
- [22] Atreya A, Bastola P, Bhandari S, Nepal S, Bhandari PS, Brain Death and Organ Transplantation in Nepal: Navigating Cultural, Legal, and Ethical Landscapes. *Transpl Int*. 28: 36 (2023). DOI: 10.3389/ti.2023.11882.

