

# Awareness and Attitude about Heart Transplantation among Undergraduate Nursing Students: An Institution-Based Survey in India

Suresh K. Sharma, Hemlata Sadhanu, Manisha Naithani<sup>1</sup>, Anshuman Darbari<sup>2</sup>, Jyoti Bharadwaj<sup>3</sup>, Maneesh Sharma

Departments of College of Nursing, AIIMS Rishikesh, <sup>1</sup>Biochemistry and <sup>2</sup>CTVS, AIIMS, Rishikesh, <sup>3</sup>Faculty (Nutrition), State Nursing College, Dehradun, Uttarakhand, India

## Abstract

**Introduction:** Heart transplantation is the currently available and established lifesaving therapy for the end stage heart failure. Considering the paucity of data about nurses' awareness and attitude about heart transplantation, this survey was undertaken. The aim of this study was to assess the awareness and attitude regarding heart transplantation among undergraduate nursing students. A questionnaire based cross sectional survey was conducted among undergraduate nursing students studying in an institute of national importance in India. **Materials and Methods:** A prevalidated questionnaire was administered among 147 randomly selected participants who were willing to participate in the study. **Results:** All the students (100%) were aware about organ donation, but majority (77.5%) informed that their source of information on this topic is by Internet/media. Around 18.4% of participants had already pledged permission for organ donation after death and 70.8% were willing to donate the organ after death. **Conclusion:** Results showed the gap existence and need of addressing this among undergraduate nursing students regarding organ donation and heart transplantation.

**Keywords:** Heart transplantation, nursing education, organ donation, transplantation

## INTRODUCTION

Extraordinary inventions in modern medical sciences of organ transplantation had saved thousands of lives and given a new life. In spite of the complexity of the organ donation procedure, it is acknowledged as the gold standard treatment of end-stage organ failure, especially the heart and other organs.<sup>[1]</sup> As per the current data extracted from the World Health Organization, the Global Observatory on Donation and Transplantation showed that worldwide, over 139,024 solid organ transplantation happened, which is estimated as <10% of the global need.<sup>[2]</sup> In spite of this current global trend, India is still lagging far behind than other countries. Furthermore, there is a huge difference in the access and availability to these services between various country regions.

Worldwide, every year, around 26 million people are globally affected by end-stage heart failure with regular increasing burden of heart failure in the coming decades for which the heart transplantation is the gold standard method for

getting new lease of life.<sup>[3]</sup> Heart transplantation is defined as the replacement of the patient (diseased) heart with a donor (healthy) heart. The first heart transplantation was performed by Christiaan Bernard on December 3, 1967 at Cape Town, South Africa,<sup>[4,5]</sup> whereas in India, it was performed in the year 1994 by Dr. Venugopal at All India Institute of Medical Sciences (AIIMS), New Delhi.<sup>[6]</sup> As per the report by the National Organ and Tissue Transplant Organization (NOTTO), India is the second only country after the United States to perform a higher number of transplants.<sup>[7]</sup> Even then, there is a huge and demanding gap between those requiring transplant and organ available from donors. The obvious reason could be the lack of awareness, myths, and false perception regarding organ donation and heart transplantation. Therefore, the present study was carried out to assess the awareness and attitude

**Address for correspondence:** Dr. Anshuman Darbari,  
Department of CTVS, AIIMS, Rishikesh - 249 203, Uttarakhand, India.  
E-mail: darbarianshu@gmail.com

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regarding heart transplantation among undergraduate nursing students of our institute.

## MATERIALS AND METHODS

This cross-sectional survey was conducted among undergraduate nursing students studying in a medical institute of national importance in India to assess the awareness and attitude about heart transplantation. The survey participants were enrolled among undergraduate students studying in the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> year of Bachelor of Science in the nursing program.

The survey was carried out on 147 randomly selected participants during the month of October–December 2018. The sample size was estimated using formula  $(Z = \frac{1-a}{2})^2 (p)(q)/d^2$  with absolute error of 5%, confidence interval 95%, and minimum estimated sample size proposed of 134 participants, while considering 10% nonresponse rate, a total sample size of 147 participants were considered for this present study.<sup>[8]</sup> A total of 147 participants were randomly selected using a simple random sampling technique.

Before starting this study, proper ethical approval with permission was obtained from the institutional ethics committee under protocol number- IRB/AIIMS/IEC/16/18. Participating students were clearly informed about the basic purpose of research. A written informed and voluntary participation consent was obtained from each study participant before this study with ensuring anonymity and confidentiality of the information.

A prevalidated questionnaire consisting of 34 questions was used to collect the data by self-reporting technique after conduction of the pilot study. The average time taken by participants was 15 min. The questionnaire consists of two sections. Section one assessed the awareness and willingness regarding organ for which the participants were to answer either yes, no, or not sure. Section two assessed the awareness and attitude of participants toward heart transplantation.

Data were coded and then entered to excel sheets, and Free version of Statistical package for social sciences (SPSS) statistics v21.0 software from IBM, USA, last modified 16<sup>th</sup> April-2020 was used for statistical analysis. Data were compiled, followed by analysis using descriptive statistics. All the quantitative variables were presented as frequency and percentages.

## RESULTS

The results have been presented in three tables and one figure. Table 1 shows the awareness and willingness of organ donation in participants. All (100%) the participants were aware about organ transplantation, but for majority (72.79%), the source of income was the Internet/media. Less than one-fourth (18.37%) of the participants had pledged for organ donation after death. Table 2 depicts the awareness and attitude about heart transplantation among participants with source of information and associated legalities to this. About 98.64% of

**Table 1: Awareness and willingness of organ donation in participants (n=147)**

Parameters	Frequency (%)
Aware about organ transplantation	
Yes	147 (100)
Source of your information	
Internet/Media	107 (72.79)
Newspaper/Magazines	25 (17.01)
Movies	7 (4.76)
Academic books	3 (2.04)
General/colleagues	5 (3.40)
Organs can be transplanted	
Eye	146 (99.32)
Heart	145 (98.64)
Kidney	146 (99.32)
Liver	112 (76.19)
Lung	86 (58.5)
All the above	52 (35.37)
Family/friend undergone organ donation/transplantation	
Yes*	1 (0.68)
No	146 (99.32)
Discussed about organ donation with family/friends	
Yes	63 (42.85)
No	84 (57.14)
Pledged/permission for organ donation after death	
Yes	27 (18.37)
No	120 (81.63)
Willingness to donate organs after death	
Yes	104 (70.75)
No	0
Not sure	43 (29.25)

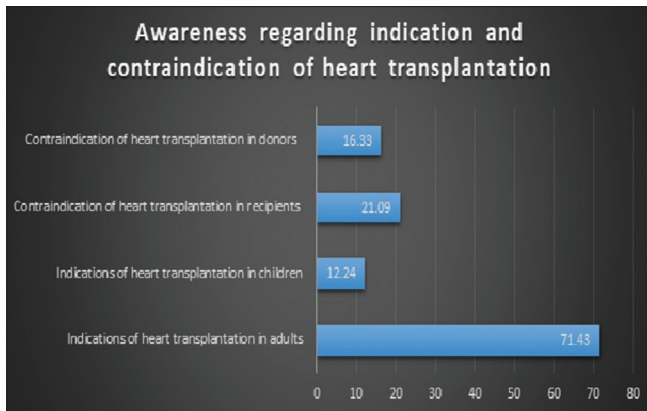
\*Eye

the participants were aware about heart transplantation. Figure 1 depicts the awareness of the participants regarding the indication and contraindication of heart transplantation. In Table 3, data show the result of participant's knowledge on further exploring the topic and show their willingness to learn more about heart transplantation. Figure 2 depicts the participant's willingness to learn about heart transplantation. Figure 3 shows the expected sources for heart transplant procedures among participants to further gain knowledge on this topic.

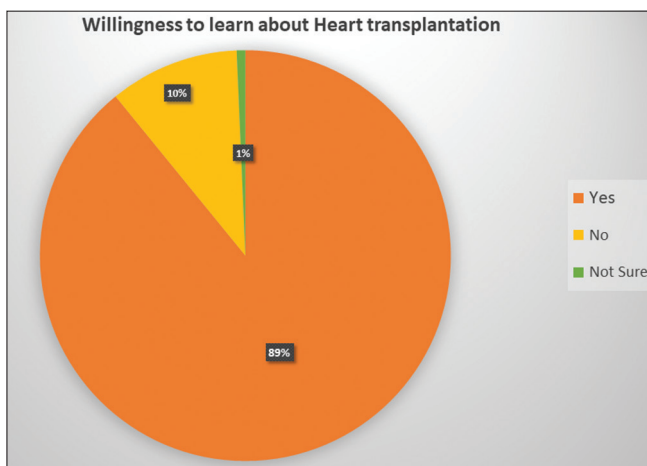
## DISCUSSION

The NOTTO has taken the burden in order to increase the procurement and distribution of organ and tissue transplantation. As per the recent data on the NOTTO website, around 10,340 organ donations occurred in the last year, but only 51 heart transplantations have been occurred in 2018.<sup>[7]</sup>

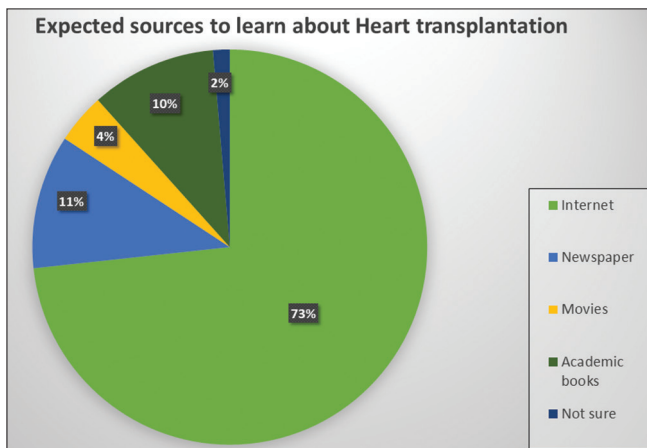
Although the numbers are not very significant to make the changes, it is a positive trend and need of the hour. This needs to be more emphasized and strengthened to run into the demand of the heart and other organ transplantation requirements which is ever increasing. The attitude and awareness regarding the organ



**Figure 1:** Participant's awareness regarding indication and contraindication of heart transplantation (shown in percentage)



**Figure 2:** Participant's willingness to learn about heart transplantation (shown in percentage)



**Figure 3:** Expected sources to learn about heart transplant procedure (shown in percentage)

and heart transplantation are definitely going to have a major role in the increasing these numbers and helping a lot of patients.

Nurses play a vital role in promoting organ donation and disseminating the information and wakefulness regarding heart

transplantation for which they need to have updated knowledge and awareness. In addition, the positive attitude of health-care workers toward organ donation is very essential. Unsatisfactory knowledge of primary medical caregiver with failure to identify the potential donor and unable to convince them can be major contributing factors for organ shortage. Very few studies were conducted to assess and evaluate the knowledge and attitude of undergraduate nursing students, on heart transplantation. As these nursing students are the roots of the future health-care system, this study was designed and aimed to assess the awareness and attitude of the undergraduate nursing students regarding organ donation and heart transplantation.

### Awareness regarding organ donation

In the present study, results showed that all (100%) the nursing undergraduates were aware about the organ donation, which is consistent with another study by Bharambe *et al.*<sup>[9]</sup> and by Manojan *et al.*<sup>[10]</sup> The reason could be more exposure of nursing undergraduates to the patient requiring organ donation. Surprisingly, the majority (72.8%) of participant's source of information regarding organ donation was media/Internet and only 2% is academic books, which is inconsistent with a study conducted by Vijayalakshmi *et al.*<sup>[11]</sup> The reason could be a lack of organ donation process or emphasis on the organ donation content in the curriculum, and further studies may be conducted in order to analyze the reason behind it.

Further questions explored the knowledge and awareness of participants regarding various other organs donation. More than three-fourth of the participants were aware about the other organs' donation such as eye and kidney (99.3%), heart (98.6%), and liver (76.2%), whereas more than half (58.5%) were aware about lung transplantation, which is consistent with the study conducted by Agarwal<sup>[12]</sup> and Payghan *et al.*<sup>[13]</sup>

It was disappointing to note that being in the health-care profession, only 18.4% of the participants had pledged for organ donation after death, which is similar to the results of a study conducted by Babaie *et al.*<sup>[14]</sup> from Iran and Sachdeva *et al.*<sup>[15]</sup> The reason could be less awareness about the program and advertisement of organ donation pledge/permission and related documentation.

The study results enlightened that nearly three-fourth (70.8%) of participants were willing to donate organs after death, which is similar to the results of a study conducted by Payghan *et al.*<sup>[13]</sup> This can be because of better understanding of the concept of transplantation as the established form of treatment for the organ failure or may be felt that it is ethically and morally correct to donate the organ. Further, more than one-fourth (29.3%) were not sure about organ donation, which is consistent with a study conducted by Payghan *et al.*<sup>[13]</sup> The reason could be inappropriate knowledge about organ donation procedure and negative perception toward the transplantation and its legalization. Similar types of studies among medical students have also raised nearly the same type of concern with the solution for early and adequate knowledge.<sup>[16,17]</sup>

**Table 2: Knowledge about heart transplantation in participants (n=147)**

Parameters	Frequency (%)
Aware about heart transplantation	
Yes	145 (98.64)
No	1 (0.68)
Not sure	1 (0.68)
Source of your information	
Internet/media	114 (77.55)
Newspaper/magazines	11 (7.48)
Movies	8 (5.44)
Academic books	3 (2.04)
General/colleagues	11 (7.48)
Aware about first heart transplanted in the world	
Yes	7 (4.76)
No	140 (95.24)
Hospitals facilities for heart transplantation in India	
AIIMS, Delhi	106 (72.11)
PGIMER, Chandigarh	75 (51.02)
Other hospitals	30 (20.41)
Does heart transplantation facility available in Uttarakhand?	
Yes	78 (53.06)
No	57 (38.78)
Not sure	12 (8.163)
Are you aware about any NGO working on heart transplantation procedure?	
Yes	3 (2.04)
No	106 (72.10)
Not sure	38 (25.85)
Number of surgical teams required for heart transplantation	
One	104 (70.74)
Two	6 (4.08)
Three	19 (12.92)
Not sure	18 (12.24)
Does heart can be transported to other hospital for transplantation	
Yes	125 (85.03)
No	13 (8.84)
Not sure	9 (6.12)
Commonest posttransnational threat to recipient	
Infection	107 (72.78)
Rejection	30 (20.40)
Tumors	3 (2.04)
Not sure	7 (4.76)
Required posttransplantation follow-up for recipient	
One year	68 (46.25)
Five years	39 (26.53)
Life long	25 (17.00)
Not sure	25 (17.00)
Aware about the Indian laws about heart transplantation	
Yes	25 (17.00)
Not	117 (79.59)
Not sure	5 (3.40)

Contd...

**Table 2: Contd...**

Parameters	Frequency (%)
As per the Indian laws, can a live person donate heart for transplantation	
Yes	12 (8.16)
No	124 (84.35)
Not sure	11 (7.483)
Who should give consent for the heart transplantation	
Donor	42 (28.57)
Donor's family	32 (21.76)
Recipient	27 (18.36)
Recipient's family	14 (9.52)
Family members of both donor and recipient	15 (10.20)
Not sure	17 (11.56)

NGO: Nongovernment organization

**Table 3: Willingness to learn about heart transplantation in participants (n=147)**

Parameters	Frequency (%)
Willingness to learn about heart transplantation	
Yes	131 (89.11)
No	15 (10.20)
Not sure	1 (0.68)
Expected sources to learn about heart transplantation	
Internet/media	107 (72.78)
Newspaper/magazines	16 (10.88)
Movies	6 (4.08)
Academic books	15 (10.20)
Not sure	2 (1.36)

**Awareness and attitude regarding heart transplantation**

This is the first study conducted to assess the awareness regarding heart transplantation among undergraduate nursing students. It was pleasing to see that nearly all (98.6%) were aware of heart transplantation and participants were aware of the government sector hospital with heart transplantation facilities AIIMS, Delhi (72.1%), PGIMER, Chandigarh (51%). Awareness about private sector hospitals is very less despite major centers of heart transplantation (20.4%).

It was strange that only 04.8% of participants were aware of the first heart transplantation in the world and only 02.0% were aware about any nongovernment organization working on heart transplantation procedure which highlights the urgent need of more emphasis on the content matter on heart transplantation and the agencies working toward it. It was very worrisome to observe that more than three-fourth (84.4%) were not aware about the Indian laws for heart transplantation. This can be due to lack of awareness about international or national legislation regulating the process of heart transplantation.

On technical aspects of the heart transplant procedure, nearly three-fourth (70.7%) of the participants wrongly mentioned that were only one team is required for heart transplantation. However, more than three-fourth (85%) were aware that the



heart can be transported to other hospital for transplantation. About 72.8% were aware about the infection is the most common posttransnational threat to the recipient, whereas nearly one-fifth (20.40%) mentioned rejection. Nearly half of the study group (46.3%) participants wrongly replied that the recipient should be followed till 1 year after the posttransplantation.

In this study, we find the gross lack of adequate knowledge on organ donation and heart transplantation techniques among undergraduate nursing students identical to undergraduate medical students.<sup>[18]</sup> Hence, the study emphasizes the need of adequate intervention toward awareness and knowledge regarding heart transplantation.

### Limitations of the study

As the questionnaires were distributed in the lecture theater, it is also possible that some answers were copied or collectively decided after discussion. As the study purpose and topic were mentioned just before questionnaire distribution so there could be a social bias, inducing students to give “pro-transplantation” answers; thus, our study may have overestimated the number of participants with positive attitudes toward heart transplantation or organ donation.

### CONCLUSION

These nursing students will be the future front face to deal with potential donors and family to promote them for this noble task. They should be well equipped with basic knowledge and clear concepts of heart transplantation to promote and enhance transplant activity and to clear all doubts and myths of donor relatives and the public. A well-organized approach is required to raise awareness among the nursing students about various aspects of organ donation and heart transplantation which is essential to decrease the gap between demand and supply.

Moreover, other educational strategies such as campaigns, advertisements, exhibitions, and lectures will be able to improve the awareness toward heart transplantation. Since media is the major role in communication these days, they have a duty to take up the initiative of broadcasting the knowledge and legislative laws that are involved in the process of heart transplantation and the pledge of the donor.

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### Conflicts of interest

There are no conflicts of interest.

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