



Regional Survey of Tissue Donation Among the General Public and Medical Staffs Around Osaka, Japan

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ABSTRACT

Background. Because tissue transplantation (TTx) has not been familiar to the general public or even to medical staffs in Japan, awareness of TTx is very important to increase tissue donation. Our primary aim was to describe the current status of awareness of TTx in medical staffs and in the general public around Osaka.

Methods. Between July 2014 and February 2015, 1015 general public citizens, 203 medical staff members working in emergency hospitals, and 168 cardiothoracic surgeons were invited to complete a letter or web-based survey through the use of a self-designed questionnaire.

Results. In the general public citizens, only 25.1% knew about TTx, whereas 54.7% knew about organ transplantation (OTx); 25.4% agreed to donate their organs or tissues and 17.3% disagreed to donate their organs or tissues. In medical staff members working in emergency hospitals, 58.7% knew about TTx; 82.3% agreed to support organ or tissue procurement and 10.8% disagreed to do so. Among cardiothoracic surgeons, 78.7% knew about TTx; 33.2% had used valve or vascular homografts and 57.4% wanted to use them if possible.

Conclusions. According to these surveys, public awareness of TTx has been less than that of OTx, but willingness to donate tissue was not different from that of donating organs. Awareness of TTx in medical staffs in emergency hospitals was higher but still not satisfactory. To increase tissue donation in Japan, the East and West Japan Tissue Transplant Network, in collaboration with cardiothoracic surgeons, should make more effort to carry out dissemination and awareness regarding TTx to the general public and to medical staffs.

IN Japan, organ donation has been conducted much less often than in other countries, and tissue donation has occurred even less often. One of the reasons is that tissue procurement has not been regulated by law, whereas organ and cornea procurement have been regulated by the Organ Transplantation Act (for brain-dead donors since 1997 and for donors after cardiac death since 1979). In these circumstances, in Japan, some university hospitals and national centers have developed their own tissue banks since the late 1980s. Finally, The Guidelines for Tissue Procurement were established by the Japanese Society of Tissue Transplantation in 2001, and the East and West

Japan Tissue Transplant Network started to coordinate tissue procurement. Five tissue banks were joined together in the Japanese Tissue Transplant Network (skin in 1, heart valves in 2, and bone in 2). Because the size of tissue banks is small, every bank cooperates together on tissue procurement, but they cannot entirely cover Japan. With regard to

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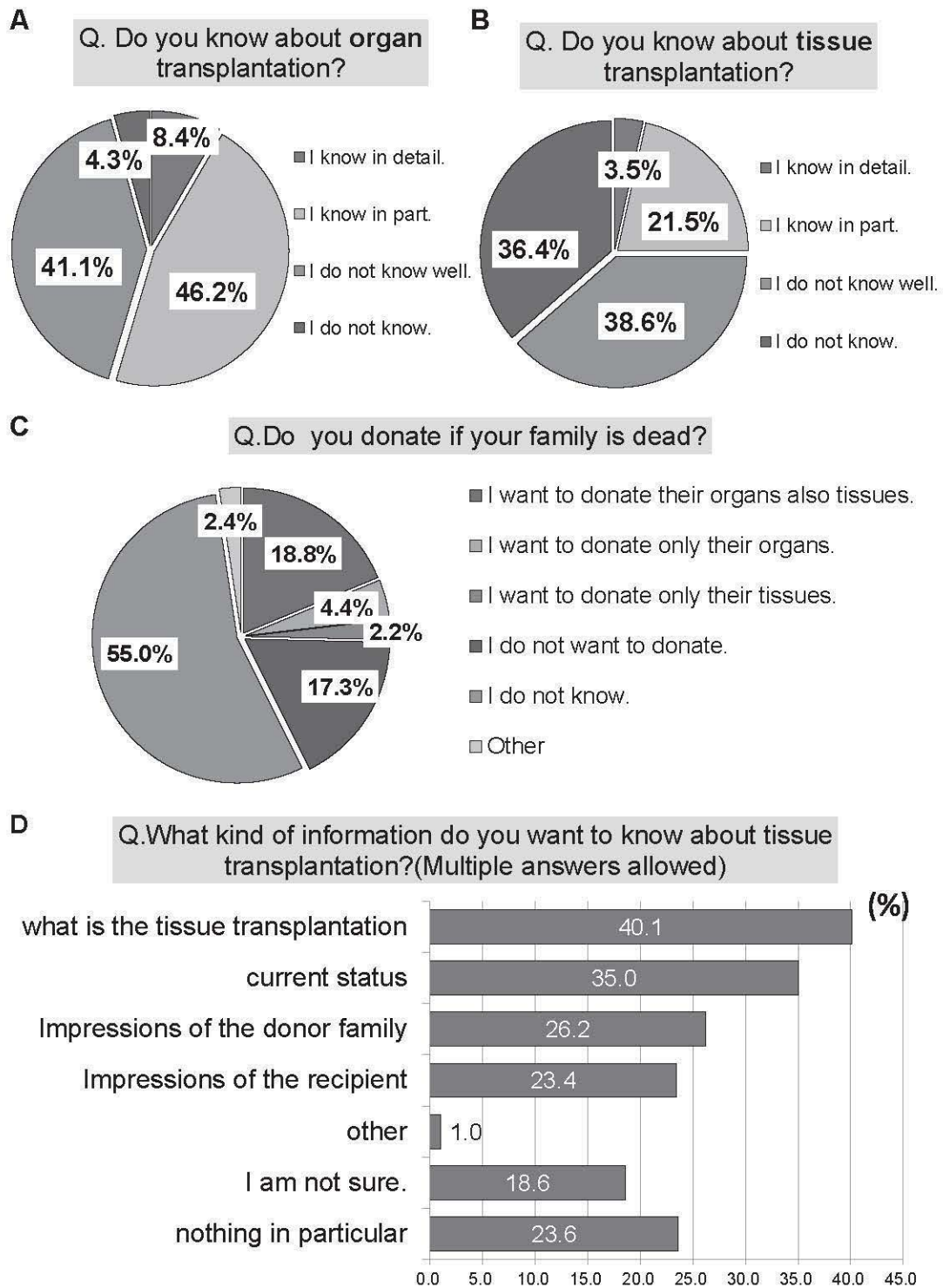


Fig 1. Questionnaire survey results in general publics. **(A)** Awareness of organ transplantation: Answer to “Do you know about organ transplantation?” **(B)** Awareness of tissue transplantation: Answer to “Do you know about tissue transplantation?” **(C)** Donation intention of organ and tissue: Answer to “Do you donate if your family is dead?” **(D)** Desired information about tissue transplantation and donation: Answer to “What kind of information do you want to know about tissue transplantation?” (multiple answers allowed).

heart valve/vessel transplantation, 2 tissue banks, which are located in Tokyo and Osaka, have organized heart valve and vascular procurement only around Tokyo and Osaka.

To increase tissue donation in Japan, awareness of tissue transplantation and donation to the general public and to medical staffs, especially in the emergency department, are very important. To date, such a trial on tissue transplantation has not been implemented in Japan. In 2014, we conducted a questionnaire survey to describe the current status of awareness of tissue transplantation in the general public around Osaka as well as in medical staffs (physicians and nurses including in-hospital procurement coordinators working in emergency hospitals) and cardiovascular surgeons in Japan.

The primary aim of this study was to describe the current status of awareness of tissue transplantation in medical staffs including cardiovascular surgeons and the general public around Osaka through the use of these surveys.

METHODS

Questionnaire Survey to General Public Citizens

We developed a self-completed questionnaire that queried: (1) awareness of tissue and organ transplantation; (2) intention to donate their tissue or organs; and (3) need for learning about tissue and organ donation. The survey was conducted with the use of a web-based, anonymous questionnaire between August 12 and 18, 2014. A total of 1008 general public citizens (15–75 years old) responded to this survey.

Questionnaire Survey to Medical Staffs Working in Emergency Hospitals

We developed a self-completed questionnaire that queried: (1) awareness of tissue and organ transplantation; (2) intention to support tissue or organ donation in their hospital; and (3) need for learning about tissue and organ donation. Survey letters were sent to medical staffs working in emergent hospitals who attended to the 111st annual meeting of Kinki branch of Japan Association of Acute Medicine and in-hospital procurement coordinators in Fukuoka and Hyogo Prefecture between July 12, 2014, and February 8, 2015; 203 completed and returned the survey.

Questionnaire Survey to Cardiovascular Surgeons

We developed a self-completed questionnaire that queried (1) awareness of tissue and organ transplantation; (2) experience of surgery with the use of homografts; and (3) need for homografts. Survey letters were given by hand to cardiovascular surgeons, who visited the booth of our tissue bank opened at 3 cardiovascular surgery-related meetings between July 12, 2014, and February 18, 2015; 169 cardiovascular surgeons completed and returned the survey.

RESULTS

Questionnaire Survey to General Public Citizens

Among general public citizens, 54.2% answered that they knew about organ transplantation in detail or in part

(Fig 1A); only 25.0% answered that they knew about tissue transplantation in detail or in part (Fig 1B). However, 25.4% answered the question “Do you donate if your family is dead?” that they wanted to donate organs or tissue; 55.0% did not answer the question (Fig 1C). Regarding the need for information of tissue and organ donation, more than one third wanted to know something about tissue transplantation (tissue transplantation itself in 40.1%, current status in 35.0%, impressions of the donor family in 26.2%, and impressions of the recipients in 23.4%) (Fig 1D).

Questionnaire Survey to Medical Staffs Working in Emergency Hospitals

Among medical staff members working in emergency hospitals, 58.7% answered that they knew about tissue transplantation in detail, but only 22.7% had an experience of tissue donation (Fig 2A). However, 82.5% had an intention to support tissue or organ donation in their hospital. Regarding the need for information of tissue and organ donation, 57.1% wanted to attend an education program in the future and 51.2% wanted to support establishment of an in-hospital procurement manual in their hospital; 42.4% wanted to know the current status of tissue transplantation in Japan (Fig 2C).

Questionnaire Survey to Cardiovascular Surgeons

Of the participants questioned, 88.7% answered that they knew about tissue transplantation in detail, but only 36.7% had an experience of tissue transplantation (Fig 2A). However, 32.4% had used any type of homograft (heart valves or vessels) from the domestic bank (24.3%) or international bank (8.1%) (Fig 3B); 57.4% wanted to use any type of homograft in the future (Fig 3C).

DISCUSSION

In Japan, a national survey to determine the current beliefs and attitudes of Japanese citizens toward organ and tissue donation was conducted several times by the Cabinet Office, Government of Japan [1]. According to the recent survey conducted in 2013, 57.8% of 1855 responders were interested in the topics; 43.1% were willing to donate their organs after brain death and 42.2% were willing to donate their organs after cardiac death [1]. However, no large survey regarding tissue donation has been conducted in Japan. Therefore, our survey was the first large survey regarding this topic in Japan. In the present study, we separately asked about tissue and organ transplantation. Although there was a difference in survey methods between the national survey and our survey, awareness of organ donation was not different. However, the intention to donate organs in our survey was a little less than that in the national survey.

According to the national survey conducted by the Canadian Council for Donation and Transplantation in 2005, 93% of Canadians have heard about organ and tissue transplantation [2]. Other studies showed similar results regarding awareness of organ and tissue transplantation in many

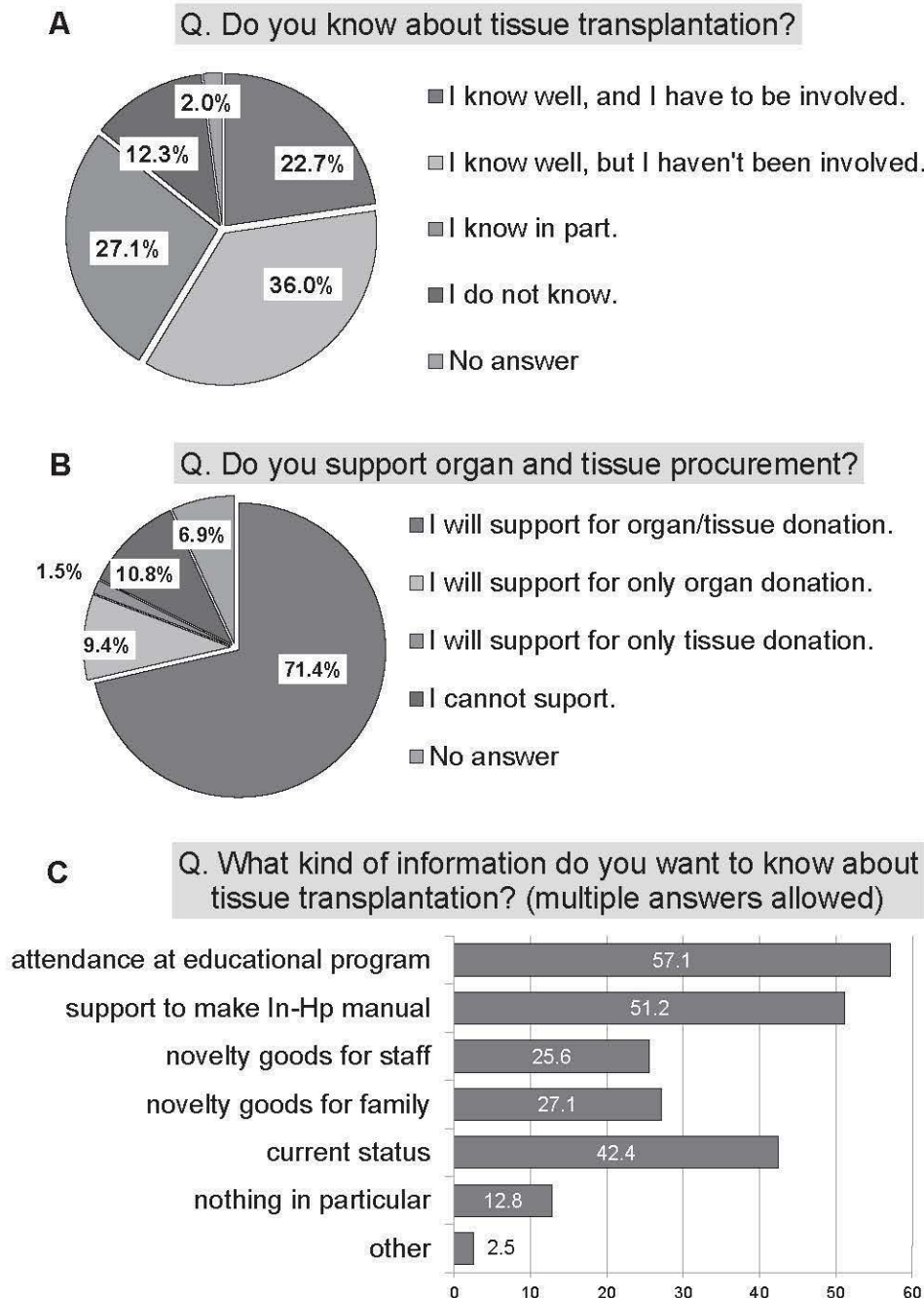


Fig 2. Questionnaire survey results in medical staffs in emergency departments. **(A)** Awareness of tissue transplantation: Answer to “Do you know about tissue transplantation” **(B)** Support organ and tissue procurement intention: Answer to “Do you support organ and tissue procurement as medical staff” **(C)** Desired information about tissue transplantation and donation: Answer to “What kind of information do you want to know about tissue transplantation?”. Abbreviation: In-Hp, in hospital.

countries, including developing countries [3,4]. However, the intention to donate organs or tissue after brain death in developing countries was less frequent in developed countries, as well as in Japan, than that in developed countries [3] such as the United States, Canada [2], and Spain.

Because these surveys did not separate tissue and organ donation, data were limited about the differences in public awareness between tissue and organ donation. However, it is well known that tissue donation has been more frequent in the United States and Canada than that in European

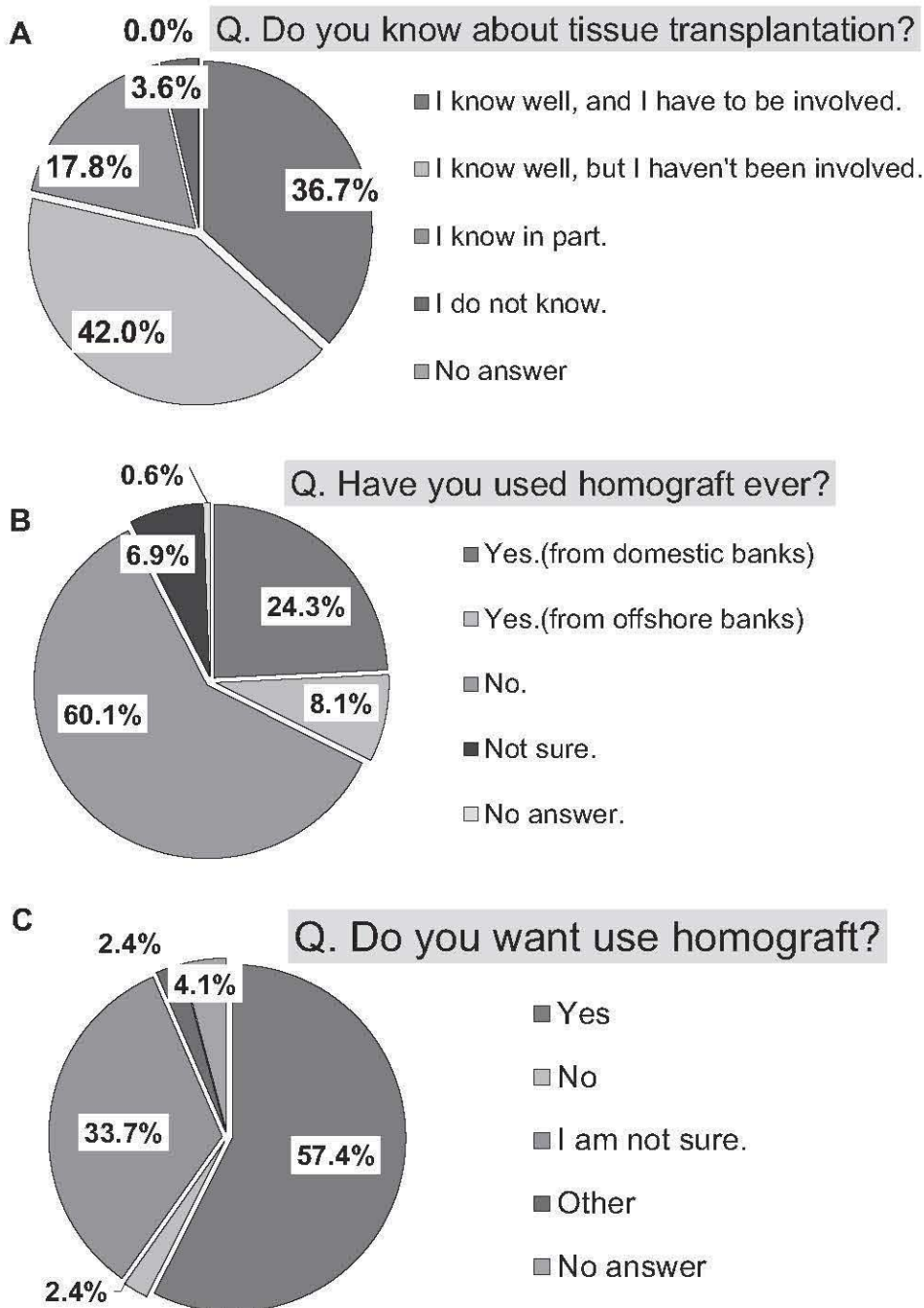


Fig 3. Questionnaire survey results in cardiovascular surgeons. (A) Awareness of tissue transplantation: Answer to “Do you know about tissue transplantation” (B) Experience of using homograft: Answer to “Have you used homograft ever” (C) Hope to use homograft: Answer to “Do you want use homograft?”.

countries. Vorstius Kruijff et al [5] reported that a higher percentage of tissue donors in these Dutch hospitals should be feasible through creating awareness and education regarding tissue donation. They concluded that physicians’ lack of sufficient knowledge of tissue donation was the main cause of adequately identifying tissue donors. Therefore, a

separate survey about tissue and organ donation is important in medical staffs in emergency hospitals as well as in the general public.

In the present study, 54.2% answered that they knew about organ transplantation in detail or in part (Fig 1A), whereas only 25.0% answered that they knew about tissue

transplantation in detail or in part. Awareness of tissue transplantation is less than that of organ transplantation in the general public in Japan. Therefore, education about tissue transplantation is important to make the general public aware of the topic.

According to our survey of medical staffs in emergency hospitals, 58.7% of medical staff members answered that they knew about tissue transplantation in detail, and 82.5% had an intention to support tissue or organ donation in their hospital. On the other hand, only 22.7% had an experience of tissue donation. Because 57.1% wanted to attend an education program in the future and 51.2% wanted to support establishment of an in-hospital procurement manual in their hospital, education of physicians and in-hospital procurement coordinators is very important to increase tissue donation, as Vorstius Kruijff et al [5] reported.

As previously reported in many countries [6–8], medical staffs need an education program of tissue transplantation and donation. According to the present survey, they were willing to know what kinds of tissue can be transplanted, the purpose of tissue transplantation, current status of tissue transplantation, and impression of donor family. As Vorstius Kruijff et al [5] reported, donor criteria and management for tissue donation is also important for medical staffs to perform tissue donation in their hospital.

Regarding public education, public campaign of organ and tissue donation should be continuously carried out. Our tissue bank is planning to establish a web-based information program. Regarding education of medical staffs, we must establish an education program for physicians as well as in-hospital procurement coordinators. The topics that they desired to learn were the role of in-hospital procurement coordinators in tissue donation, the process of tissue donation, case studies, and donor indication and management. As previously reported [6,9], education of medical students and nurses is also important to expand awareness of tissue transplantation and to increase tissue donation.

According to the present survey of cardiovascular surgeons, the need of homografts is high, but they have little experience of homograft usage. To increase tissue donation in Japan, the East and West Japan Tissue Transplantation Network, in collaboration with cardiovascular surgeons,

should make more effort to carry out dissemination and awareness regarding tissue transplantation to the general public and to medical staffs.

CONCLUSIONS

According to these surveys, public awareness of tissue transplantation (25.1%) has been less than that of organ transplantation (25.1%), but willingness to donate tissue was not different from that of organs. Awareness of tissue transplantation in medical staffs in emergency hospitals was higher (58.7%) but still not satisfactory. To increase tissue donation in Japan, the East and West Japan Tissue Transplantation Network, in collaboration with cardiovascular surgeons, should make more effort to carry out dissemination and awareness regarding tissue transplantation to the general public and to medical staffs.

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