

## Factors Influencing on Attitude Toward Organ Donation of University Students in Korea

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**Abstract:** The purpose of this study is to investigate the knowledge and attitude regarding organ donation among university students in Korea and to identify the factors influencing on organ donation attitude. A survey was carried out among university students in C Province of Korea from November 11 to December 17, 2016. They responded questionnaires of attitude, knowledge and subjectivity regarding organ donation. About 250 questionnaires were collected and 231 questionnaires were analyzed except for the incomplete one. Data were analyzed using t-test, one-way ANOVA, Scheffe test, descriptive analysis, Pearson's correlation coefficients and multiple regression analysis. The participant's attitude regarding organ donation according to general characteristics showed statistically differences in age ( $F = 3.980, p = 0.009$ ), grade ( $F = 5.810, p = 0.002$ ), major in university ( $F = 9.590, p < 0.001$ ), monthly income ( $F = 3.559, p = 0.015$ ), blood donation experience ( $t = -2.398, p = 0.017$ ), educational experience on organ donation ( $t = 3.623, p < 0.001$ ) and subjectivity on organ donation ( $F = 7.727, p < 0.001$ ). The mean score of attitude regarding organ donation of university students was  $64.37 \pm 8.43$  point (range 18-90), the lowest score was 35 point and the highest score was 87 point. Attitude regarding organ donation showed a significant positive correlation with the knowledge to organ donation ( $r = 0.313, p < 0.001$ ) and the intention to organ donation ( $r = 0.680, p < 0.001$ ). Participant's attitude regarding organ donation was affected significantly by utilitarian life-seeking ( $\beta = 0.741, t = 17.093, p < 0.001$ ) and blood donation experience ( $\beta = 0.117, t = 2.687, p = 0.008$ ) and these variables explained 56.9% ( $F = 152.610, p < 0.001$ ). In order to activate organ donation, it is necessary to form positive perspectives about organ donation in a long term perspective and to support altruistic activities such as blood donation.

**Key words:** Organ donation, university students, utilitarian, blood donation, attitude, regarding

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### INTRODUCTION

Organ transplantation gives hope of new-life to patients who have organ function impaired and can no longer be normalized (Smith *et al.*, 2015). As organ transplantation becomes possible, many patients who can no longer cure are transplanted with new organs and live a new life (Moon, 2015).

According to data from Korean Network for Organ Sharing (KONOS), the number of organs donation by brain-dead is 268 cases in 2010, 416 cases in 2013 and 501 cases in 2015 (Anonymous, 2015). It is gradually increasing but smaller than other countries such as the US, Spain and Italy.

In Korea, the "Act on Transplantation of Organs" was enacted in February 1999 in order to overcome the phenomenon that organ donors were absolutely lacking compared to requiring organ transplantation (Anonymous, 2009). About 1 year later, amendments that brain deaths must be reported was passed (Kwon and Yeun, 2000). KONOS which is responsible for organ transplantation as a national organization has been newly established and private organizations such as the

"Korean Organ Donor Program" (Choi and Hwang, 2012), "Life Sharing Practice Headquarters" (Kim and Kim, 2013) and "One-mind, one-body organ donation center" (Shon and Cho, 2002) have been continuously engaged in promoting the importance of organ donation through various education and publicity.

Despite of the fact that the law promulgated and KONOS established for organ transplantation, the donation of organs by brain dead donors has not been as satisfactory as expected (Kim, 2003). The cause comes from lack of consensus on brain death, the rejection of post-mortem damage, family-centered thinking, lack of awareness of altruism (Kim, 2003) and lack of effective organ acquisition system (Ndlovu *et al.*, 1998).

In the previous research results, factors affecting the organ donation attitude were marital status and educational experience of organ transplantation (Jeon, 2012), organ donation intention of family, rejection of post-mortem body damage, recognition of organ transplantation (Kim and Lee, 2011), altruism (Matten *et al.*, 1991). However, research on organ donation for the general public is still lacking in Korea.

In this context, the value of university students in a society is an important factor in deciding future society (Kang, 1999), it is necessary to understanding the perception and attitude of organ transplantation among the students and to develop a program for organ donation. This study attempted to identify the knowledge and attitudes of organ donation among university students in Korea and to identify the factors affecting organ donation attitude and to contribute to the development of future organ donation activation program.

## MATERIALS AND METHODS

**Research design:** This study is designed a descriptive research to identify factors influencing on organ donation attitude of university students.

**Data collection:** The participants of this study were university students in C Province of Korea and data were collected from 11 November to 17 December, 2016. G\*Power 3.1. Program was used to get a sample size for this study. The required sample size was 138 with the significant level ( $\alpha$ ) 0.05, power of test ( $1-\beta$ ) 0.95, effect size ( $p$ ) 0.3 and the number of predictors 5. In considering the dropout rate, 250 university students participated in the survey after informed consent and except for the 19 questionnaire that had missing values and were responded improperly, a total of 231 questionnaires were used for the data analysis of this study.

**Measurements:** The general characteristics of the participants included gender, age, grade, blood type, religion, major, income level, experience of blood donation, experience of education and type of attitude to organ donation.

**Attitude of organ donation:** Attitude of organ donation was measured by modified ‘the attitude of organ and tissue donation and transplantation’ used by Kim and Lee (2011) in accordance with the purpose of this study. This measurement consists of 18 questions on 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) and the total score range is 18-90. The higher the score, the more positive attitudes. Cronbach’s alpha for attitude of organ donation in this study was 0.80.

**Knowledge of organ donation:** Knowledge of organ donation was measured by modified ‘Knowledge of organ and tissue donation and transplantation’ developed by Matten *et al.* (1991) in accordance with the purpose of this study. This measurement consists of 23 questions: 6 items of important knowledge about definition of brain

dead organ donation, 4 items of medical knowledge questions, 10 items of knowledge about law and management system and 3 items of questions about current status and actual knowledge. For each item, the correct answer was 1 point and the wrong answer was 0 point and the scores for the 23 items were added up. The total score range is 0-23 points and the higher the score, the higher the knowledge of organ donation.

**Type of attitudes about organ donation:** The type of attitudes about organ donation was measured by modified previous research of subjectivity on organ donation and transplantation (Kwon and Yeun, 2000). This scale has a total of 33 items can be divided into five categories: “utilitarian life seeking type”, “individualistic thinking type”, “familistic thinking type”, “cynical thinking type” and “deontological life seeking type”. Cronbach’s alpha for type of attitudes toward organ donation in this study was 0.78.

**Data Analysis:** This study used SPSS Win 22.0 for statistical analysis of the data and conducted descriptive statistics for the general characteristics, t-test and one-way ANOVA for difference analysis of variables according to the general characteristics and analyzed the relation between variables with Pearson correlation coefficients. This study used multiple regressions for finding factors affecting on attitude toward organ donation of university students.

**Ethical consideration:** Prior to data collection, this study considered the ethical aspects by providing participants with the purpose and method of research, utilization of research results, survey data to be used only for the study purpose, anonymity and confidentiality of research participants and a description of stopping during the creation of the questionnaire and by receiving the consent from participants. It took 10-15 min to complete the survey questionnaire items and after the questionnaire items were fulfilled, a predetermined gift was provided for participants.

**Limitations:** This study was constricted by convenience sampling which limited generalization to a broad population.

## RESULTS AND DISCUSSION

**Organ donation attitude according to general characteristics:** Table 1 shows the organ donation attitude according to general characteristics. Participant’s attitudes regarding organ donation were found to differ

Table 1: Organ donation attitude according to general characteristics (n = 231)

Characteristics/categories	N(%), M±SD	Attitude to organ donation	
		M±SD	t(p)/F(p)/Duncan
<b>Gender</b>			
Male	76(32.9)	63.20±8.70	-1.488 (0.138)
Female	155(67.1)	64.95±8.26	
<b>Age (years)</b>			
Average	21.69±1.85		3.980
18-19 <sup>a</sup>	34(14.7)	61.71±6.30	(0.009) <sup>*</sup>
20-21 <sup>b</sup>	65(28.1)	62.49±8.68	a,b<c,d
22-23 <sup>c</sup>	97(42.0)	66.04±7.63	
≥24 <sup>d</sup>	35(15.2)	65.83±9.84	
<b>Grade</b>			
1st <sup>e</sup>	44(19.0)	60.86±8.45	5.810 (0.002) <sup>*</sup>
2nd <sup>b</sup>	51(22.1)	63.08±8.71	
3rd <sup>c</sup>	34(14.7)	84.82±8.82	
4th <sup>d</sup>	102(44.2)	66.38±7.61	
<b>Blood type</b>			
A	83(35.9)	64.47±8.15	0.237 (0.870)
B	68(29.4)	63.81±9.32	
O	62(26.8)	65.00±7.93	
AB	18(7.8)	63.89±8.32	
<b>Religion</b>			
Yes	76(32.9)	64.50±8.41	-0.161 (0.872)
No	155(67.1)	64.31±8.46	
<b>Major</b>			
Medicine <sup>a</sup>	73(31.6)	67.62±7.55	9.590 (<0.001) <sup>**</sup>
Humanities and social science <sup>b</sup>	80(34.6)	64.61±8.18	
Engineering <sup>c</sup>	46(19.9)	62.50±8.25	
Music and physical <sup>d</sup>	32(13.9)	59.06±8.12	
<b>Income level (10,000 won)</b>			
<300 <sup>a</sup>	64(27.7)	66.75±7.85	3.559 (0.015) <sup>*</sup>
300-400 <sup>b</sup>	81(26.4)	63.28±8.31	
400-500 <sup>c</sup>	40(17.3)	61.68±7.30	
>500 <sup>d</sup>	66(28.6)	64.71±9.19	
<b>Experience of blood donation</b>			
Yes <sup>a</sup>	159(68.8)	65.26±8.27	-2.398 (0.017) <sup>**</sup>
No <sup>b</sup>	72(31.2)	62.42±8.49	
<b>Experience of education</b>			
Yes <sup>a</sup>	28(12.1)	69.64±9.45	3.623 (<0.001) <sup>**</sup>
No <sup>b</sup>	203(87.9)	63.65±8.03	
<b>Types of attitude to organ donation</b>			
Utilitarian life-seeking type <sup>a</sup>	76(32.9)	67.96±8.38	7.727 (<0.001) <sup>**</sup>
Cynical thinking type <sup>b</sup>	64(27.7)	64.13±7.13	
Individualistic thinking type <sup>c</sup>	20(8.7)	63.40±8.69	
Familistic thinking type <sup>d</sup>	49(21.2)	62.06±7.19	
Deontological life-seeking type <sup>e</sup>	22(9.5)	58.73±9.71	

\*p<0.05, \*\*p<0.001

among groups according to age (F = 3.980, p = 0.009), grade (F = 5.810, p = 0.002), income level (F = 3.559, p = 0.015), experience of blood donation (t = -2.398, p = 0.017), experience of education (t = 3.623, p<0.001), and type of attitudes of organ donation (F = 7.727, p<0.001). That is, as the age and grade increased, the attitude score for organ donation was higher and the major in medicine was higher than the other major. The group with <3 million won monthly income, the group who has experience of blood donation, the group with education on organ donation and the utilitarian life-seeking group showed higher score of organ donation attitude than the other groups.

In a study on public's attitude of organ transplants and factors influencing attitudes, the attitude score for organ donation was higher in the 30s than in the 20s (Shon and Cho, 2002) but nursing college students reported no difference in scores between the 20s and 30s (Kang, 1999). The attitude of organ donation showed various results according to age and grade in previous studies. In this study showed that there was a difference between the age and the grade. It seems that the students experienced more various volunteer activities, education of organ donation, blood donation experience as time passed, rather than merely increase in age and grade. I think it is because of the increased interest in donation or

altruistic activities. The results of this study also showed that health and medical service students, people who were educated at organ donation, experienced blood donation have altruistic mind had higher attitude regarding organ transplantation.

Therefore, it is necessary to cultivate an altruistic thinking by increasing opportunities for university students who are in the process of forming values through adulthood, to participate in various service activities, blood donation, promotion and education activities for organ donation.

**Attitude, knowledge and intention of organ donation:**

Descriptive statistics for attitude of organ donation, knowledge of organ donation and intention of organ donation are shown in Table 2. The mean level of attitude of organ donation was 64.37±8.43 point (range 18-90), the lowest score was 35 point and the highest score was 87 point. The mean of knowledge of organ donation was 15.12±2.78 point (range 0-23), the lowest score was 7 point and the highest score was 21 point. The mean of intention of organ donation was 3.51±1.11 point (range 1-5), the lowest score was 1 point and the highest score was 5 point.

The mean score of attitude of organ donation among university students was 64.37 point which was 3.58 point when converted into 5 points. This was slightly lower than 3.61 points of Kang (1999)'s study which measured the attitude regarding nursing student's organ donation by another measurement of 22 items and higher than the 3.52 points in the Choi and Hwang (2012)'s study which measured the attitude toward organ donation of the public.

It is difficult to discuss about the attitude regarding organ transplantation because we have not many studies and the tools and subjects are different. However, the results of Table 1 show that, the medicine major when compared with the other major, showed a significantly higher attitude regarding organ donation. It can be explained that the university students in the medical department often choose their majors for more altruistic reasons and have more opportunities to think about organ donation. And university students are more likely to have a better attitude regarding organ donation than the public because university students have more opportunities to get information about organ donation in education and activities than the general population.

Table 2: Descriptive statistics for variables (N = 231)

Variables	Ranges	M±SD	Min.	Max.
Attitude to organ donation	18-90	64.37±8.43	35	87
Knowledge to organ donation	0-23	15.12±2.78	7	21
Intention to organ donation	1-5	3.51±1.11	1	5

**Correlation among main variables:** Correlation among attitude of organ donation, knowledge of organ donation and intention of organ donation are shown in Table 3. The attitude of organ donation was a significant correlation with the knowledge of organ donation ( $r = 0.313, p < 0.001$ ) and the intention of organ donation ( $r = 0.680, p < 0.001$ ).

**Factors influencing on organ donation attitude of university students:**

To identify the factors influencing the organ donation attitude of university students, the stepwise multiple regression analysis was executed by setting the general characteristics and main variables as independents variables influencing on organ donation attitude. Table 4 shows the participant's attitude of organ donation was affected significantly by utilitarian life-seeking ( $\beta = 0.741, t = 17.093, p < 0.001$ ) and blood donation experience ( $\beta = 0.117, t = 2.687, p = 0.008$ ) and these variables explained 56.9% ( $F = 152.610, p < 0.001$ ).

To identify factors influencing on attitude regarding organ donation of university students, a multiple regression analysis was executed. As a result, altruistic thinking and blood donation experience were found to be influential variables. In the study of Choi and Hwang (2012) that knows the influencing factors of organ donation of university students, religion was the only variable to influence, Kim (2003) who studied public attitudes toward public donation, significant variables were public opinion, marital status, family organ donation and awareness of organ donation. Shon and Cho (2002) who studied organ donation attitudes toward nurses, educational experience and marital status were reported as variables affecting organ donation attitudes.

When studies were combined in order to have a positive awareness and attitudes toward organ donation, it is necessary to expand the experience of altruistic activities to university students such as blood donation

Table 3: Correlation among main variables (N = 231)

Variables	Attitude to organ donation r(p)	Knowledge to organ donation r(p)	Intention to organ donation r(p)
Attitude to organ donation	1		
Knowledge to organ donation	0.313(<0.001)*	1	
Intention to organ donation	0.680(<0.001)*	0.192 (<0.001)*	1

\*p<0.001

Table 4: Factors influencing on organ donation attitude of university students (N = 231)

Variables	B	SE	$\beta$	t(p)	Adj. R <sup>2</sup>
Constant	26.714	2.188		12.208 (<0.001)	
Utilitarian life-seeking type	9.503	0.556	0.741	17.093 (<0.001)	0.557
Blood donation experience	2.115	0.787	0.117	2.687 (0.008)	0.569

F = 152.610, p<0.001\*, \*p<0.001

and organ donation educations. And it needs to develop programs that they can spread positive perception of organ donation around them.

### CONCLUSION

This study was conducted to investigate the attitude toward organ donation among university students and to identify the factors influencing the donation attitude in order to activate organ donation in Korea have relatively low organ donation. The survey was carried out on November 11-December 17, 2017. The participants of this study were the university students in C Province of Korea. We gathered 250 answer sheets and analyzed 231 except for the incomplete one. We obtain the following main result. The participant's attitude toward organ donation was significantly different from age ( $F = 3.980$ ,  $p = 0.002$ ), major in university ( $F = 9.590$ ,  $p < 0.001$ ), monthly income ( $F = 3.559$ ,  $p = 0.015$ ), blood donation experience ( $t = -2.398$ ,  $p = 0.017$ ), educational experience about organ donation ( $t = 3.623$ ,  $p < 0.001$ ) and subjectivity of organ donation ( $F = 7.727$ ,  $p < 0.001$ ). And attitude toward organ donation was affected significantly by utilitarian life-seeking ( $\beta = 0.741$ ,  $t = 17.093$ ,  $p < 0.001$ ) and blood donation experience ( $\beta = 0.117$ ,  $t = 2.687$ ,  $p = 0.008$ ) and these variables explained 56.9% ( $F = 152.610$ ,  $p < 0.001$ ).

### SUGGESTIONS

Based on the results of this study, we need to develop social education programs which students can have more utilitarian point of view for the organ donation. And it is necessary to develop various publicity strategies and policies about blood donation because the blood donation experience affected organ donation. Additionally, I suggest that researcher's interest in organ donation and the activation of research are necessary.

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